Appendix D

(Continued)

Groundwater and Soil Analytical Reports
(includes Golder Associates Historical Reports)

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:47:45 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194767-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:47:45 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194767-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194767-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194767-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194767-1	TRIP BLANK_69	Water	11/01/23 00:00	11/03/23 08:00
240-194767-2	MW-94S_110123	Water	11/01/23 13:55	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_69 — Lab Sample ID: 240-194767-1

No Detections.

Client Sample ID: MW-94S_110123 — Lab Sample ID: 240-194767-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194767-1

Client Sample ID: TRIP BLANK_69
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194767-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 19:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*11/09/23 19:38*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/09/23 19:38*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 19:38*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194767-1

Client Sample ID: MW-94S_110123
Date Collected: 11/01/23 13:55
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194767-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 19:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 22:24*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 22:24*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/09/23 22:24*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/09/23 22:24*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194767-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194767-1	TRIP BLANK_69	108	104	106	108
240-194767-2	MW-94S_110123	101	101	104	104
240-194769-H-1 MS	Matrix Spike	100	101	100	101
240-194769-I-1 MSD	Matrix Spike Duplicate	99	101	99	98
LCS 240-594104/5	Lab Control Sample	111	114	111	110
MB 240-594104/8	Method Blank	111	108	110	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194767-2	MW-94S_110123	100
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594104/8
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/09/23 18:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/09/23 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/09/23 18:02*	*1*

Lab Sample ID: LCS 240-594104/5
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.3		ug/L		109	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.1		ug/L		97	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	1.5		25.0	25.5		ug/L		96	66 - 128		
Tetrachloroethene	0.46	J	25.0	23.0		ug/L		90	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136		
Trichloroethene	0.90	J	25.0	23.6		ug/L		91	61 - 124		
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194769-I-1 MSD
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 135	2	26
cis-1,2-Dichloroethene	1.5		25.0	26.4		ug/L		100	66 - 128	4	14
Tetrachloroethene	0.46	J	25.0	23.4		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 136	0	15
Trichloroethene	0.90	J	25.0	24.0		ug/L		93	61 - 124	2	15
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194767-2	MW-94S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194767-1	TRIP BLANK_69	Total/NA	Water	8260D	
240-194767-2	MW-94S_110123	Total/NA	Water	8260D	
MB 240-594104/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594104/5	Lab Control Sample	Total/NA	Water	8260D	
240-194769-H-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194769-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_69
Lab Sample ID: 240-194767-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 19:38

Client Sample ID: MW-94S_110123
Lab Sample ID: 240-194767-2
Date Collected: 11/01/23 13:55
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 22:24
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 19:05

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194767-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_69	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-94S-110123	11/1/23	1355		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194767 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11680 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Stage	Arcadis	11/1/23 1700
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11-2-23 1023		EETNC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194767
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1C Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194767

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194767-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194767-1

		Sample Name:	TRIP BLANK_69				MW-94S_110123			
		Lab Sample ID:	2401947671				2401947672			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194767-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52110R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194767-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_69	240-194767-1	Water	11/01/2023		X	
MW-94S_110123	240-194767-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP Off-Site

Project Number: 30167538.402.04

PO # 30167538.402.04

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey

Telephone: 248-994-2240

Email: kristoffer.hinskey@arcadis.com

Sampler Name: Kent Kasper

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2240

Lab Contact: Mike DelMonico

Telephone: 330-497-9396

Analysis Turnaround Time

TAT if different from below

10 day — 3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day

TestAmerica Laboratories, Inc.

COC No:

1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_69	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-94S_110123	11/1/23	1355		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194767 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11680 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Kent Kasper	Arcadis	11/1/23 1700	Received by: Novi Cold Stage	Arcadis	11/1/23 1700
Relinquished by:	Arcadis	11/2/23 1023	Received by:	EETA	11/2/23 1023
Relinquished by:	EETA	11-2-23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_69
Lab Sample ID: 240-194767-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 19:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*11/09/23 19:38*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/09/23 19:38*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 19:38*	*1*

Client Sample ID: MW-94S_110123
Lab Sample ID: 240-194767-2
Date Collected: 11/01/23 13:55
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 19:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 22:24*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 22:24*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/09/23 22:24*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/09/23 22:24*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:44:45 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194759-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194759-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194759-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194759-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194759-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194759-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194759-1	TRIP BLANK_67	Water	11/01/23 00:00	11/03/23 08:00
240-194759-2	MW-172S_110123	Water	11/01/23 11:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194759-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_67 — Lab Sample ID: 240-194759-1

No Detections.

Client Sample ID: MW-172S_110123 — Lab Sample ID: 240-194759-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194759-1

Client Sample ID: TRIP BLANK_67
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194759-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 20:12*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 20:12*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 20:12*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/23 20:12*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194759-1

Client Sample ID: MW-172S_110123
Date Collected: 11/01/23 11:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194759-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/09/23 17:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/10/23 02:03*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 02:03*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/10/23 02:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/10/23 02:03*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194759-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194759-1	TRIP BLANK_67	106	78	100	97
240-194759-2	MW-172S_110123	106	79	103	100
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194759-2	MW-172S_110123	92
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194759-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194759-2	MW-172S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194759-1	TRIP BLANK_67	Total/NA	Water	8260D	
240-194759-2	MW-172S_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194759-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_67
Lab Sample ID: 240-194759-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 20:12

Client Sample ID: MW-172S_110123
Lab Sample ID: 240-194759-2
Date Collected: 11/01/23 11:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 02:03
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 17:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194759-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 67	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1725-110123	11/1/23	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11701 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
	Arcadis	11/2/23 1023		EEPA	11/2/23 1023
	EEPA	11/2/23 1023	Received in Laboratory by:	EETPC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194755
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 5 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194759

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194759-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194759-1

		Sample Name:	TRIP BLANK_67				MW-172S_110123			
		Lab Sample ID:	2401947591				2401947592			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194759-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52091R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194759-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_67	240-194759-1	Water	11/01/2023		X	
MW-172S_110123	240-194759-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact
Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30167538.402.04
PO # 30167538.402.04

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com
Sampler Name: Kent Kasper
Method of Shipment/Carrier:
Shipping/Tracking No:

Site Contact: Christina Weaver
Telephone: 248-994-2240

Lab Contact: Mike DelMonico
Telephone: 330-497-9396

Analysis Turnaround Time
TAT if different from below
10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day

COC No:
1 of 1 COCs
For lab use only
Walk-in client
Lab sampling
Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 67	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1725-110123	11/1/23	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194759 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11701 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Kent Kasper	Arcadis	11/1/23 1700	Received by: Novi Cold Storage	Arcadis	11/1/23 1700
Relinquished by:	Arcadis	11/2/23 1023	Received by:	EE7A	11/2/23 1023
Relinquished by:	EE7A	11/2/23 1023	Received in Laboratory by:	EETPC	11-3-23 800

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Client Sample ID: TRIP BLANK_67
Lab Sample ID: 240-194759-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 20:12*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 20:12*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 20:12*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/23 20:12*	*1*

Client Sample ID: MW-172S_110123
Lab Sample ID: 240-194759-2
Date Collected: 11/01/23 11:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/09/23 17:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/10/23 02:03*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 02:03*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/10/23 02:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/10/23 02:03*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:29:21 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194998-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194998-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194998-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-121S_110623 (240-194998-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194998-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194998-1	TRIP BLANK_27	Water	11/06/23 00:00	11/08/23 08:00
240-194998-2	MW-121S_110623	Water	11/06/23 14:55	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_27 — Lab Sample ID: 240-194998-1

No Detections.

Client Sample ID: MW-121S_110623 — Lab Sample ID: 240-194998-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194998-1

Client Sample ID: TRIP BLANK_27
Date Collected: 11/06/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194998-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 18:00*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 18:00*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/11/23 18:00*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194998-1

Client Sample ID: MW-121S_110623
Date Collected: 11/06/23 14:55
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194998-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/16/23 03:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 17:03*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 17:03*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 17:03*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 17:03*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194998-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-194998-1	TRIP BLANK_27	105	77	102	99
240-194998-2	MW-121S_110623	103	78	99	98
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-194998-2	MW-121S_110623	92
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			25.0	23.0		ug/L		92	77 - 123		
Tetrachloroethene			25.0	27.1		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			25.0	23.9		ug/L		96	75 - 124		
Trichloroethene			25.0	23.9		ug/L		96	70 - 122		
Vinyl chloride			12.5	10.7		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136		
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194998-1	TRIP BLANK_27	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194998-2	MW-121S_110623	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194998-2	MW-121S_110623	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_27
Lab Sample ID: 240-194998-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 18:00

Client Sample ID: MW-121S_110623
Lab Sample ID: 240-194998-2
Date Collected: 11/06/23 14:55
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 17:03
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 03:28

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194998-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kaspar	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 27	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-12LS_110623	11/6/23	1455		6						6					W	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194998 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11710 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Kent Kaspar	Arcadis	11/6/23 1610	Nar Cold Storage	Arcadis	11/6/23 1610
Relinquished by: Jammer Guy	Company: Arcadis	Date/Time: 11/7/23 1350	Received by:	Company: FEDEX	Date/Time: 11/7/23 1350
Relinquished by:	Company: FEDEX	Date/Time: 11/7/23 1400	Received in Laboratory by:	Company: TEC INC	Date/Time: 11823 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194998
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8 23 Opened on 11-8 23

Cooler unpacked by: Rachelle Hadet

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194998-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194998-1

Sample Name: MW-121S_110623
Lab Sample ID: 2401949982
Sample Date: 11/6/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194998-1

		Sample Name:	TRIP BLANK_27				MW-121S_110623			
		Lab Sample ID:	2401949981				2401949982			
		Sample Date:	11/6/2023				11/6/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194998-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52124R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194998-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_27	240-194998-1	Water	11/06/2023		X	
MW-121S_110623	240-194998-2	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-121S_110623 (240-194998-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

2.0/3.1

Chain of Custody Record

MICHIGAN 190

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Kent Kaspo	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_27	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-12S_110623	11/6/23	1455		6						6					W	G	λ	λ	λ	λ	λ	λ	λ	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194998 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11710 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kaspo	Arcadis	11/6/23 1610	Mar Cold Storage	Arcadis	11/6/23 1610
Jammer Bay	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Richelle Hardy	EE TNC	11823 800

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11/21/2023

Client Sample ID: TRIP BLANK_27
Lab Sample ID: 240-194998-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 18:00*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 18:00*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/11/23 18:00*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:00*	*1*

Client Sample ID: MW-121S_110623
Lab Sample ID: 240-194998-2
Date Collected: 11/06/23 14:55
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/16/23 03:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 17:03*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 17:03*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 17:03*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 17:03*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:44:15 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194758-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/13/2023 4:44:15 AM

Authorized for release by
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194758-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194758-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194758-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194758-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194758-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194758-1	TRIP BLANK_70	Water	11/01/23 00:00	11/03/23 08:00
240-194758-2	MW-173S_110123	Water	11/01/23 10:00	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194758-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_70 — Lab Sample ID: 240-194758-1

No Detections.

Client Sample ID: MW-173S_110123 — Lab Sample ID: 240-194758-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194758-1

Client Sample ID: TRIP BLANK_70
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194758-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 19:47*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 19:47*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/09/23 19:47*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/23 19:47*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194758-1

Client Sample ID: MW-173S_110123
Date Collected: 11/01/23 10:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194758-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/09/23 16:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/10/23 01:38*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 01:38*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 01:38*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/23 01:38*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194758-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194758-1	TRIP BLANK_70	104	77	102	99
240-194758-2	MW-173S_110123	103	79	101	95
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194758-2	MW-173S_110123	95
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194758-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194758-2	MW-173S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194758-1	TRIP BLANK_70	Total/NA	Water	8260D	
240-194758-2	MW-173S_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194758-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_70
Lab Sample ID: 240-194758-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 19:47

Client Sample ID: MW-173S_110123
Lab Sample ID: 240-194758-2
Date Collected: 11/01/23 10:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 01:38
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 16:43

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194758-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Kent Kasper	TAT if different from below: 10 day / 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04					
PO # 30167538.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_ 70	---	---		1						1					N	G	X	X	X	X	X	X					1 Trip Blank
MW-1735-110123	11/1/23	1000		6						6					N	6	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194758 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11721 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E263631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EET	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	11-2-23 1023		ETNC	11-3-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194758
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194758

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.7	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194758-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194758-1

		Sample Name:	TRIP BLANK_70				MW-173S_110123			
		Lab Sample ID:	2401947581				2401947582			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194758-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52090R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194758-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_70	240-194758-1	Water	11/01/2023		X	
MW-173S_110123	240-194758-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP Off-Site

Project Number: 30167538.402.04

PO # 30167538.402.04

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey

Telephone: 248-994-2240

Email: kristoffer.hinskey@arcadis.com

Sampler Name: Kent Kasper

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2240

Lab Contact: Mike DelMonico

Telephone: 330-497-9396

Analysis Turnaround Time

TAT if different from below

10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day

TestAmerica Laboratories, Inc.

COC No:

1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_70	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-1735-110123	11/1/23	1000		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194758 Chain of Custody

Possible Hazard Identification

✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11721 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203831

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Kent Kasper	Arcadis	11/1/23 1700	Received by: Novi Cold Storage	Arcadis	11/1/23 1700
Relinquished by:	Arcadis	11/2/23 1023	Received by: Jen Hall	EETA	11/2/23 1023
Relinquished by:	EETA	11-2-23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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Client Sample ID: TRIP BLANK_70
Lab Sample ID: 240-194758-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 19:47*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 19:47*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/09/23 19:47*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/23 19:47*	*1*

Client Sample ID: MW-173S_110123
Lab Sample ID: 240-194758-2
Date Collected: 11/01/23 10:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/09/23 16:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/10/23 01:38*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 01:38*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 01:38*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/23 01:38*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:54:16 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194725-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:54:16 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194725-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194725-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194725-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194725-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194725-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194725-1	TRIP BLANK_61	Water	11/01/23 00:00	11/03/23 08:00
240-194725-2	MW-93S_110123	Water	11/01/23 11:40	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194725-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_61 — Lab Sample ID: 240-194725-1

No Detections.

Client Sample ID: MW-93S_110123 — Lab Sample ID: 240-194725-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194725-1

Client Sample ID: TRIP BLANK_61
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194725-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 02:07*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/10/23 02:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/10/23 02:07*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/10/23 02:07*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194725-1

Client Sample ID: MW-93S_110123
Date Collected: 11/01/23 11:40
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194725-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/08/23 17:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 07:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 07:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 07:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 07:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 07:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 07:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 07:41*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 07:41*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 07:41*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 07:41*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194725-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194721-B-10 MS	Matrix Spike	95	89	89	108
240-194721-C-10 MSD	Matrix Spike Duplicate	96	95	92	106
240-194725-1	TRIP BLANK_61	98	86	91	105
240-194725-2	MW-93S_110123	102	87	90	112
LCS 240-594095/7	Lab Control Sample	95	94	91	103
MB 240-594095/13	Method Blank	102	87	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-B-3 MS	Matrix Spike	78
240-194630-B-3 MSD	Matrix Spike Duplicate	112
240-194725-2	MW-93S_110123	89
LCS 240-593888/4	Lab Control Sample	83
MB 240-593888/6	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594095/13
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 01:27*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 01:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 01:27*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/10/23 01:27*	*1*

Lab Sample ID: LCS 240-594095/7
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			50.0	49.3		ug/L		99	63 - 134		
cis-1,2-Dichloroethene			50.0	46.0		ug/L		92	77 - 123		
Tetrachloroethene			50.0	53.4		ug/L		107	76 - 123		
trans-1,2-Dichloroethene			50.0	45.7		ug/L		91	75 - 124		
Trichloroethene			50.0	49.3		ug/L		99	70 - 122		
Vinyl chloride			50.0	42.5		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-194721-B-10 MS
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	1.0	U	50.0	47.4		ug/L		95	66 - 128		
Trichloroethene	1.0	U	50.0	50.2		ug/L		100	61 - 124		
Vinyl chloride	1.0	U	50.0	38.6		ug/L		77	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194721-C-10 MSD
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	50.0	49.7		ug/L		99	66 - 128	5	14
Trichloroethene	1.0	U	50.0	54.0		ug/L		108	61 - 124	7	15
Vinyl chloride	1.0	U	50.0	40.7		ug/L		81	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-593888/6
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/08/23 12:17*	*1*

Lab Sample ID: LCS 240-593888/4
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-194630-B-3 MS
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	20	U F1 F2	100	126		ug/L		126	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-194630-B-3 MSD
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	20	U F1 F2	100	177	F1 F2	ug/L		177	51 - 153	33	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194725-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 593888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194725-2	MW-93S_110123	Total/NA	Water	8260D SIM	
MB 240-593888/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-593888/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-B-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194725-1	TRIP BLANK_61	Total/NA	Water	8260D	
240-194725-2	MW-93S_110123	Total/NA	Water	8260D	
MB 240-594095/13	Method Blank	Total/NA	Water	8260D	
LCS 240-594095/7	Lab Control Sample	Total/NA	Water	8260D	
240-194721-B-10 MS	Matrix Spike	Total/NA	Water	8260D	
240-194721-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194725-1

Client Sample ID: TRIP BLANK_61

Lab Sample ID: 240-194725-1

Date Collected: 11/01/23 00:00

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594095	TJL2	EET CLE	11/10/23 02:07

Client Sample ID: MW-93S_110123

Lab Sample ID: 240-194725-2

Date Collected: 11/01/23 11:40

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594095	TJL2	EET CLE	11/10/23 07:41
Total/NA	Analysis	8260D SIM		1	593888	MRL	EET CLE	11/08/23 17:52

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194725-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935_111023	11/1/23	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194725 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1775 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Adam Pitera	Arcadis	11/01/23 1736		#1 Arcadis	11/1/23 1736
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETMC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194725-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194725-1

		Sample Name:	TRIP BLANK_61				MW-93S_110123			
		Lab Sample ID:	2401947251				2401947252			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194725-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52283R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194725-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_61	240-194725-1	Water	11/01/2023		X	
MW-93S_110123	240-194725-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

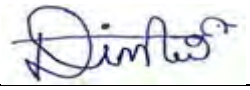
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935_110123	11/1/23	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194725 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11775 Bassett Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alexis Peters	Arcadis	11/01/23 1736	Samantha Snyder	Arcadis	11/1/23 1736
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Snyder	Arcadis	11/2/23 1023	Jeri Hale	EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hale	EETA	11/2/23 1023	Tammy Dyer	EETMC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_61
Lab Sample ID: 240-194725-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 02:07*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/10/23 02:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/10/23 02:07*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/10/23 02:07*	*1*

Client Sample ID: MW-93S_110123
Lab Sample ID: 240-194725-2
Date Collected: 11/01/23 11:40
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/08/23 17:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 07:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 07:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 07:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 07:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 07:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 07:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 07:41*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 07:41*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 07:41*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 07:41*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:56:33 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194753-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:56:33 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194753-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194753-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194753-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194753-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194753-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194753-1	TRIP BLANK_55	Water	11/01/23 00:00	11/03/23 08:00
240-194753-2	MW-176S_110123	Water	11/01/23 14:30	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194753-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_55 — Lab Sample ID: 240-194753-1

No Detections.

Client Sample ID: MW-176S_110123 — Lab Sample ID: 240-194753-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194753-1

Client Sample ID: TRIP BLANK_55
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194753-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 17:49*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/09/23 17:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 17:49*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 17:49*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194753-1

Client Sample ID: MW-176S_110123
Date Collected: 11/01/23 14:30
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194753-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/09/23 15:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 19:26*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/09/23 19:26*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 19:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 19:26*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194753-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194753-1	TRIP BLANK_55	100	92	94	100
240-194753-2	MW-176S_110123	101	93	97	100
240-194858-C-5 MS	Matrix Spike	98	98	98	101
240-194858-C-5 MSD	Matrix Spike Duplicate	93	94	97	99
LCS 240-594032/5	Lab Control Sample	97	95	95	100
MB 240-594032/9	Method Blank	100	91	94	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194753-2	MW-176S_110123	81
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594032/9
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 14:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 14:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/09/23 14:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 14:12*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 14:12*	*1*

Lab Sample ID: LCS 240-594032/5
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	18.1		ug/L		91	70 - 122
Vinyl chloride	20.0	21.9		ug/L		110	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	200	U	4000	3990		ug/L		100	56 - 135
cis-1,2-Dichloroethene	2700		4000	6590		ug/L		97	66 - 128
Tetrachloroethene	2000		4000	6000		ug/L		100	62 - 131
trans-1,2-Dichloroethene	200	U	4000	3770		ug/L		94	56 - 136
Trichloroethene	6200		4000	9820		ug/L		91	61 - 124
Vinyl chloride	200	U	4000	4530		ug/L		113	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MSD
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	200	U	4000	4200		ug/L		105	56 - 135	5	26
cis-1,2-Dichloroethene	2700		4000	6520		ug/L		96	66 - 128	1	14
Tetrachloroethene	2000		4000	6400		ug/L		110	62 - 131	6	20
trans-1,2-Dichloroethene	200	U	4000	4050		ug/L		101	56 - 136	7	15
Trichloroethene	6200		4000	9810		ug/L		91	61 - 124	0	15
Vinyl chloride	200	U	4000	4840		ug/L		121	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194753-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194753-2	MW-176S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194753-1	TRIP BLANK_55	Total/NA	Water	8260D	
240-194753-2	MW-176S_110123	Total/NA	Water	8260D	
MB 240-594032/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594032/5	Lab Control Sample	Total/NA	Water	8260D	
240-194858-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-194858-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194753-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_55
Lab Sample ID: 240-194753-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 17:49

Client Sample ID: MW-176S_110123
Lab Sample ID: 240-194753-2
Date Collected: 11/01/23 14:30
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 19:26
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 15:08

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194753-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 160

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Ariana Ptera	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_55	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-1765_110123	11/1/23	1430		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194753 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11845 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ariana Ptera	Arcadis	11/01/23 1736		Arcadis	11/1/23 1736
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETDC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194753
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194753

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194753-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194753-1

		Sample Name:	TRIP BLANK_55				MW-176S_110123			
		Lab Sample ID:	2401947531				2401947532			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194753-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52074R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194753-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_55	240-194753-1	Water	11/01/2023		X	
MW-176S_110123	240-194753-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 02, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 2, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alana Ptera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_55	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1765_110123	11/1/23	1430		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194753 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11845 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Ptera	Arcadis	11/01/23 1736		Arcadis	11/1/23 1736
	Arcadis	11/2/23 1023		EETH	11/2/23 1023
	EETH	11/2/23 1023		EETDC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_55
Lab Sample ID: 240-194753-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 17:49*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/09/23 17:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 17:49*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 17:49*	*1*

Client Sample ID: MW-176S_110123
Lab Sample ID: 240-194753-2
Date Collected: 11/01/23 14:30
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/09/23 15:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 19:26*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/09/23 19:26*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 19:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 19:26*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:13:01 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195971-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195971-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195971-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/25/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-596013 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195971-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195971-1	TRIP BLANK_108	Water	11/21/23 00:00	11/25/23 10:00
240-195971-2	MW-178S_112123	Water	11/21/23 11:25	11/25/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_108 — Lab Sample ID: 240-195971-1

No Detections.

Client Sample ID: MW-178S_112123 — Lab Sample ID: 240-195971-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195971-1

Client Sample ID: TRIP BLANK_108
Date Collected: 11/21/23 00:00
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195971-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 14:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 14:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 14:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 14:44*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/23 14:44*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 14:44*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 14:44*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195971-1

Client Sample ID: MW-178S_112123
Date Collected: 11/21/23 11:25
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195971-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/29/23 20:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:00*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/29/23 16:00*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/29/23 16:00*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/23 16:00*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195971-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195971-1	TRIP BLANK_108	100	98	103	100
240-195971-2	MW-178S_112123	100	102	107	101
240-195972-D-4 MS	Matrix Spike	94	101	105	96
240-195972-E-4 MSD	Matrix Spike Duplicate	93	103	105	96
LCS 240-596013/5	Lab Control Sample	89	98	106	98
MB 240-596013/9	Method Blank	95	98	101	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195971-2	MW-178S_112123	109
240-195972-I-4 MS	Matrix Spike	105
240-195972-M-4 MSD	Matrix Spike Duplicate	104
LCS 240-596116/4	Lab Control Sample	104
MB 240-596116/6	Method Blank	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-596013/9
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 11:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 11:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 11:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 11:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/29/23 11:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/23 11:23*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/23 11:23*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/23 11:23*	*1*

Lab Sample ID: LCS 240-596013/5
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	22.0		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			20.0	19.0		ug/L		95	77 - 123		
Tetrachloroethene			20.0	20.8		ug/L		104	76 - 123		
trans-1,2-Dichloroethene			20.0	20.6		ug/L		103	75 - 124		
Trichloroethene			20.0	18.3		ug/L		92	70 - 122		
Vinyl chloride			20.0	23.8		ug/L		119	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195972-D-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128		
Tetrachloroethene	1.0	U	20.0	18.8		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.8		ug/L		99	56 - 136		
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	22.5		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195972-D-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195972-E-4 MSD
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		97	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	21.9		ug/L		110	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596116/6
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 19:46*	*1*

Lab Sample ID: LCS 240-596116/4
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.93		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195972-I-4 MS
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-195972-M-4 MSD
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.79		ug/L		98	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 596013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195971-1	TRIP BLANK_108	Total/NA	Water	8260D	
240-195971-2	MW-178S_112123	Total/NA	Water	8260D	
MB 240-596013/9	Method Blank	Total/NA	Water	8260D	
LCS 240-596013/5	Lab Control Sample	Total/NA	Water	8260D	
240-195972-D-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195972-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195971-2	MW-178S_112123	Total/NA	Water	8260D SIM	
MB 240-596116/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596116/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195972-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195972-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_108
Lab Sample ID: 240-195971-1

Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 14:44

Client Sample ID: MW-178S_112123
Lab Sample ID: 240-195971-2

Date Collected: 11/21/23 11:25
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 16:00
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 20:20

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195971-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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TestAmerica Lab

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	COC No:
Company Name: Arcadis						
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico			
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396			1 of 1
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day				Walk-in client
Project Number: 30167538.402.04	Method of Shipment/Carrier:					Lab sampling
PO # 30167538.402.04	Shipping/Tracking No:					Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite - C / Grab - G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specif Special Instr
TRIP BLANK_108	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-1785_11223	11/2/23	1125		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-195971 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11850 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/2/23 1730	Novi Cold Storage	ARCADIS	11/2/23 1730
	ARCADIS	11/22/23 1406		EETA	11/22/23 1406
	EETA	11/22/23 1406	Received in Laboratory by:	EETNL	11-25-23 1000

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Ford LTP Cooler unpacked by: DMB

Cooler Received on 11-25-23 Opened on 11-27-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 6 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195971-1
Sample date: 2023-11-21
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195971-1

		Sample Name:	TRIP BLANK_108				MW-178S_112123			
		Lab Sample ID:	2401959711				2401959712			
		Sample Date:	11/21/2023				11/21/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195971-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52178R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195971-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_108	240-195971-1	Water	11/21/2023		X	
MW-178S_112123	240-195971-2	Water	11/21/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_108 MW-178S_112123	Continuing Calibration Verification %D	Vinyl chloride	+29.9%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Analyses		For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day				Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:					Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:					
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specif / Special Instr
TRIP BLANK_108	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-1785_112123	11/21/23	1125		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-195971 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): | Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11850 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/23 1730	Novi Cold Storage	ARCADIS	11/21/23 1730
	ARCADIS	11/22/23 1406		EETA	11/22/23 1406
	EETA	11/22/23 1406	Received in Laboratory by:	EETNL	11-25-23 1000

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11/01/2023

Client Sample ID: TRIP BLANK_108
Lab Sample ID: 240-195971-1
Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 14:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 14:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 14:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:44	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 14:44*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/23 14:44*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 14:44*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 14:44*	*1*

Client Sample ID: MW-178S_112123
Lab Sample ID: 240-195971-2
Date Collected: 11/21/23 11:25
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/29/23 20:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:00	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:00*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/29/23 16:00*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/29/23 16:00*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/23 16:00*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:39:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195292-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:39:20 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195292-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195292-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 4:38 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
Method 8260D_SIM: The following sample was analyzed outside of analytical holding time due to instrument malfunction: MW-177S_110923 (240-195292-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195292-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195292-1	TRIP BLANK_37	Water	11/09/23 00:00	11/11/23 16:38
240-195292-2	MW-177S_110923	Water	11/09/23 12:35	11/11/23 16:38

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_37 — Lab Sample ID: 240-195292-1

No Detections.

Client Sample ID: MW-177S_110923 — Lab Sample ID: 240-195292-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195292-1

Client Sample ID: TRIP BLANK_37
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 16:38

Lab Sample ID: 240-195292-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/19/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 19:28*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 19:28*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 19:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195292-1

Client Sample ID: MW-177S_110923
Date Collected: 11/09/23 12:35
Date Received: 11/11/23 16:38

Lab Sample ID: 240-195292-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			11/24/23 21:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 21:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 19:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 19:53*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 19:53*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 19:53*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195292-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195292-1	TRIP BLANK_37	101	96	99	94
240-195292-2	MW-177S_110923	103	97	99	95
LCS 240-595149/4	Lab Control Sample	103	98	97	101
MB 240-595149/7	Method Blank	103	95	99	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195292-2	MW-177S_110923	97
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.7		ug/L		103	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	24.1		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			25.0	25.1		ug/L		100	75 - 124		
Trichloroethene			25.0	25.4		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135		
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128		
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136		
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124		
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195292-1	TRIP BLANK_37	Total/NA	Water	8260D	
240-195292-2	MW-177S_110923	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195292-2	MW-177S_110923	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_37
Lab Sample ID: 240-195292-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 16:38

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 19:28

Client Sample ID: MW-177S_110923
Lab Sample ID: 240-195292-2
Date Collected: 11/09/23 12:35
Matrix: Water
Date Received: 11/11/23 16:38

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 19:53
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 21:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195292-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_37	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-177S_110923	11/9/23	1235		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195292 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11866 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/9/23 1345	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 11/9/23 1345		
Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/10/23 ~~1533~~	Received by: [illegible]	Company: [illegible]	Date/Time: 11/10/23 1735		
Relinquished by: [illegible]	Company: FEDEX	Date/Time: 11/10/23 1330	Received in Laboratory by: [illegible]	Company: CETW	Date/Time: 11-11-23 0800		

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195292-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HTQ - GCMS VOC SIM sample -002 analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195292-1

Sample Name:	MW-177S_110923		
Lab Sample ID:	2401952922		
Sample Date:	11/9/2023		

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260DSIM					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195292-1

		Sample Name:	TRIP BLANK_37				MW-177S_110923			
		Lab Sample ID:	2401952921				2401952922			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	UJ

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195292-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52146R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195292-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_37	240-195292-1	Water	11/09/2023		X	
MW-177S_110923	240-195292-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

The analyses that exceeded the holding are presented in the following table.

Sample Location	Holding Time	Criteria
MW-177S_110923 (SIM analysis)	15 Days	14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8260-SIM were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

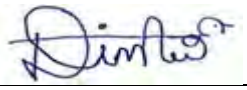
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_37	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1775_110923	11/9/23	1235		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195292 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11866 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/9/23 1345	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 11/9/23 1345		
Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/10/23 ~~1533~~	Received by: 2 Oct C	Company: FDX	Date/Time: 11/10/23 1755		
Relinquished by:	Company: FDX	Date/Time: 11/10/23 1330	Received in Laboratory by:	Company: EETMc	Date/Time: 11-11-23 0800		

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Client Sample ID: TRIP BLANK_37
Lab Sample ID: 240-195292-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/19/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 19:28*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 19:28*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 19:28*	*1*

Client Sample ID: MW-177S_110923
Lab Sample ID: 240-195292-2
Date Collected: 11/09/23 12:35
Matrix: Water
Date Received: 11/11/23 16:38

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	~~U H~~ UJ	2.0	0.86	ug/L			11/24/23 21:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 21:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 19:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 19:53*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 19:53*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 19:53*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:38:29 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195750-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:38:29 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Certification Summary 18
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195750-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195750-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/18/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.7°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195750-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195750-1	TRIP BLANK_89	Water	11/16/23 00:00	11/18/23 08:00
240-195750-2	MW-167S_111623	Water	11/16/23 13:00	11/18/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_89 — Lab Sample ID: 240-195750-1

No Detections.

Client Sample ID: MW-167S_111623 — Lab Sample ID: 240-195750-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195750-1

Client Sample ID: TRIP BLANK_89
Date Collected: 11/16/23 00:00
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195750-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 19:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 19:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 19:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/26/23 19:07*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 19:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 19:07*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/26/23 19:07*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195750-1

Client Sample ID: MW-167S_111623
Date Collected: 11/16/23 13:00
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195750-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/28/23 21:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 22:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 22:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 22:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/26/23 22:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 22:17*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 22:53*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/27/23 22:17*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/26/23 22:53*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 22:17*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/26/23 22:53*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/27/23 22:17*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195750-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195660-B-33 MS	Matrix Spike	106	97	109	105
240-195660-B-33 MSD	Matrix Spike Duplicate	107	99	107	105
240-195749-C-2 MS	Matrix Spike	102	98	109	99
240-195749-C-2 MSD	Matrix Spike Duplicate	101	97	108	99
240-195750-1	TRIP BLANK_89	112	82	104	103
240-195750-2	MW-167S_111623	115	82	103	104
240-195750-2	MW-167S_111623	110	81	103	101
LCS 240-595705/5	Lab Control Sample	106	97	106	105
LCS 240-595841/5	Lab Control Sample	103	97	108	99
MB 240-595705/8	Method Blank	111	86	104	102
MB 240-595841/8	Method Blank	107	84	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195750-2	MW-167S_111623	101
240-195835-H-3 MS	Matrix Spike	100
240-195835-N-3 MSD	Matrix Spike Duplicate	106
LCS 240-595988/4	Lab Control Sample	104
MB 240-595988/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595705/8
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 17:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 17:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 17:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 17:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 17:26*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 17:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 17:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 17:26*	*1*

Lab Sample ID: LCS 240-595705/5
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.1		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	23.7		ug/L		95	77 - 123		
Tetrachloroethene			25.0	26.8		ug/L		107	76 - 123		
trans-1,2-Dichloroethene			25.0	24.2		ug/L		97	75 - 124		
Trichloroethene			25.0	24.9		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	506		ug/L		101	56 - 135		
cis-1,2-Dichloroethene	20	U	500	470		ug/L		94	66 - 128		
Tetrachloroethene	20	U	500	498		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	20	U	500	467		ug/L		93	56 - 136		
Trichloroethene	32		500	501		ug/L		94	61 - 124		
Vinyl chloride	20	U	250	236		ug/L		94	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MSD
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	511		ug/L		102	56 - 135	1	26
cis-1,2-Dichloroethene	20	U	500	471		ug/L		94	66 - 128	0	14
Tetrachloroethene	20	U	500	507		ug/L		101	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	476		ug/L		95	56 - 136	2	15
Trichloroethene	32		500	508		ug/L		95	61 - 124	1	15
Vinyl chloride	20	U	250	225		ug/L		90	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/27/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 18:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/27/23 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/27/23 18:31*	*1*

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.5		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128		
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136		
Trichloroethene	20	U	500	435		ug/L		87	61 - 124		
Vinyl chloride	690		250	900		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595988/6
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 19:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 19:09*	*1*

Lab Sample ID: LCS 240-595988/4
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.51		ug/L		95	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195835-H-3 MS
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Lab Sample ID: 240-195835-N-3 MSD
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195750-1	TRIP BLANK_89	Total/NA	Water	8260D	
240-195750-2	MW-167S_111623	Total/NA	Water	8260D	
MB 240-595705/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595705/5	Lab Control Sample	Total/NA	Water	8260D	
240-195660-B-33 MS	Matrix Spike	Total/NA	Water	8260D	
240-195660-B-33 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195750-2	MW-167S_111623	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195749-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195750-2	MW-167S_111623	Total/NA	Water	8260D SIM	
MB 240-595988/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595988/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195835-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195835-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_89
Lab Sample ID: 240-195750-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 19:07

Client Sample ID: MW-167S_111623
Lab Sample ID: 240-195750-2
Date Collected: 11/16/23 13:00
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 22:53
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/27/23 22:17
Total/NA	Analysis	8260D SIM		1	595988	CS	EET CLE	11/28/23 21:56

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195750-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

3614.7

TestAmerica

THE EA TH N ENVIRONMENTAL TESTING

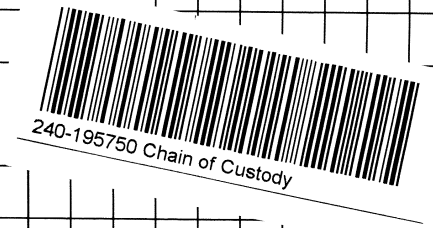
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client: Lab sampling: Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_89	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1675_111623	11/16/23	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification
[✓] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client [✓] Disposal By Lab [ ] Archive For [ ] Months

MICHIGAN 190

Special Instructions/QC Requirements & Comments:
Sample Address: ~~12001 Beaton~~ 12001 Stark
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	Novi Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/23 1150		EETA	11/17/23 11:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/17/23 11:50	Alissa Atkinson	EETMc	11.18.23 0800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195750

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkerson

Cooler Received on 11-18-23 Opened on 11-18-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 4.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195750-1
Sample date: 2023-11-16
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195750-1

		Sample Name:	TRIP BLANK_89				MW-167S_111623			
		Lab Sample ID:	2401957501				2401957502			
		Sample Date:	11/16/2023				11/16/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195750-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52170R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195750-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_89	240-195750-1	Water	11/16/2023		X	
MW-167S_111623	240-195750-2	Water	11/16/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

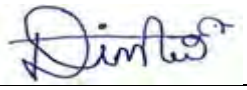
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

3.6|4.7

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client: Lab sampling: Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_89	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1675_111623	11/16/23	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195750 Chain of Custody

Possible Hazard Identification
[✓] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client [✓] Disposal By Lab [ ] Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~12001 Beaton~~ 12001 Stark
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

MICHIGAN
190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	Novi Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/23 1150		EEA	11/17/23 11:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/17/23 11:50	Alissa Atherton	EEA/c	11-18-23 0800

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12/01/2023

Client Sample ID: TRIP BLANK_89
Lab Sample ID: 240-195750-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 19:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 19:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 19:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/26/23 19:07*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 19:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 19:07*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/26/23 19:07*	*1*

Client Sample ID: MW-167S_111623
Lab Sample ID: 240-195750-2
Date Collected: 11/16/23 13:00
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/28/23 21:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 22:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 22:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 22:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/26/23 22:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 22:17*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 22:53*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/27/23 22:17*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/26/23 22:53*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 22:17*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/26/23 22:53*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/27/23 22:17*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:35:36 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195191-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195191-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195191-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195191-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195191-1	TRIP BLANK_52	Water	11/06/23 00:00	11/10/23 08:00
240-195191-2	MW-119S_110623	Water	11/06/23 13:50	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_52 — Lab Sample ID: 240-195191-1

No Detections.

Client Sample ID: MW-119S_110623 — Lab Sample ID: 240-195191-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_52
Lab Sample ID: 240-195191-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 17:47*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/17/23 17:47*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/17/23 17:47*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/17/23 17:47*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195191-1

Client Sample ID: MW-119S_110623
Date Collected: 11/06/23 13:50
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195191-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/20/23 23:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 18:13*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/17/23 18:13*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/17/23 18:13*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/17/23 18:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195191-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195191-1	TRIP BLANK_52	85	83	103	90
240-195191-2	MW-119S_110623	85	84	105	89
240-195483-B-5 MS	Matrix Spike	85	94	111	92
240-195483-B-5 MSD	Matrix Spike Duplicate	82	86	104	90
LCS 240-594979/6	Lab Control Sample	81	89	108	89
MB 240-594979/10	Method Blank	84	87	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195156-E-37 MS	Matrix Spike	97
240-195156-E-37 MSD	Matrix Spike Duplicate	98
240-195191-2	MW-119S_110623	96
LCS 240-595335/13	Lab Control Sample	102
MB 240-595335/14	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594979/10
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 12:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 12:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 12:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 12:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 12:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 12:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/17/23 12:40*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/17/23 12:40*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/17/23 12:40*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/17/23 12:40*	*1*

Lab Sample ID: LCS 240-594979/6
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.4		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			20.0	18.5		ug/L		93	77 - 123		
Tetrachloroethene			20.0	20.2		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			20.0	18.9		ug/L		95	75 - 124		
Trichloroethene			20.0	17.8		ug/L		89	70 - 122		
Vinyl chloride			20.0	17.8		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-195483-B-5 MS
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	270		160	436		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	24		160	181		ug/L		98	66 - 128		
Tetrachloroethene	8.0	U	160	162		ug/L		101	62 - 131		
trans-1,2-Dichloroethene	8.0	U	160	156		ug/L		97	56 - 136		
Trichloroethene	8.0	U	160	145		ug/L		91	61 - 124		
Vinyl chloride	8.0	U	160	141		ug/L		88	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195483-B-5 MS
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195483-B-5 MSD
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	270		160	426		ug/L		96	56 - 135	2	26
cis-1,2-Dichloroethene	24		160	182		ug/L		99	66 - 128	1	14
Tetrachloroethene	8.0	U	160	157		ug/L		98	62 - 131	3	20
trans-1,2-Dichloroethene	8.0	U	160	158		ug/L		99	56 - 136	1	15
Trichloroethene	8.0	U	160	147		ug/L		92	61 - 124	1	15
Vinyl chloride	8.0	U	160	150		ug/L		94	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595335/14
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/20/23 23:08*	*1*

Lab Sample ID: LCS 240-595335/13
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.84		ug/L		98	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: 240-195156-E-37 MS
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	44		10.0	56.0	4	ug/L		122	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195156-E-37 MSD
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	44		10.0	56.3	4	ug/L		124	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195191-1	TRIP BLANK_52	Total/NA	Water	8260D	
240-195191-2	MW-119S_110623	Total/NA	Water	8260D	
MB 240-594979/10	Method Blank	Total/NA	Water	8260D	
LCS 240-594979/6	Lab Control Sample	Total/NA	Water	8260D	
240-195483-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195483-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195191-2	MW-119S_110623	Total/NA	Water	8260D SIM	
MB 240-595335/14	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595335/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195156-E-37 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195156-E-37 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_52
Lab Sample ID: 240-195191-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594979	HMB	EET CLE	11/17/23 17:47

Client Sample ID: MW-119S_110623
Lab Sample ID: 240-195191-2
Date Collected: 11/06/23 13:50
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594979	HMB	EET CLE	11/17/23 18:13
Total/NA	Analysis	8260D SIM		1	595335	CS	EET CLE	11/20/23 23:32

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195191-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_52	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-119S_110623	11/06/23	1350		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195191 Chain of Custody

MICHIGAN
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Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12034 Boston Post St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Jammie Key	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
	EETA	11/9/23 1015	Received in Laboratory by: Alissa Atkinson	EETNC	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195191
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195191

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(3) (EC) Client Box Other	IR GUN #: ~~22~~	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) (EC) Client Box Other	IR GUN #: ~~22~~	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195191-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195191-1

		Sample Name:	TRIP BLANK_52				MW-119S_110623			
		Lab Sample ID:	2401951911				2401951912			
		Sample Date:	11/6/2023				11/6/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195191-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52135R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195191-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_52	240-195191-1	Water	11/06/2023		X	
MW-119S_110623	240-195191-2	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_52	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-119S_110623	11/06/23	1350		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195191 Chain of Custody

MICHIGAN
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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Now cold storage	Arcadis	11/07/23 1530
Tommie Key	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
	EETA	11/9/23 1015	Received in Laboratory by: Alissa Abrams	EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_52
Lab Sample ID: 240-195191-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 17:47*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/17/23 17:47*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/17/23 17:47*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/17/23 17:47*	*1*

Client Sample ID: MW-119S_110623
Lab Sample ID: 240-195191-2
Date Collected: 11/06/23 13:50
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/20/23 23:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 18:13*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/17/23 18:13*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/17/23 18:13*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/17/23 18:13*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 6:59:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195199-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/24/2023 6:59:04 AM

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195199-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195199-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195199-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195199-1	TRIP BLANK_46	Water	11/07/23 00:00	11/10/23 08:00
240-195199-2	MW-91S_110723	Water	11/07/23 14:10	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_46 — Lab Sample ID: 240-195199-1

No Detections.

Client Sample ID: MW-91S_110723 — Lab Sample ID: 240-195199-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195199-1

Client Sample ID: TRIP BLANK_46
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195199-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 16:14*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 16:14*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 16:14*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 16:14*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195199-1

Client Sample ID: MW-91S_110723
Date Collected: 11/07/23 14:10
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195199-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 10:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/21/23 10:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 05:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 05:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 05:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 05:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 05:52*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 05:52*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/23 05:52*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/23 05:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195199-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195199-1	TRIP BLANK_46	95	95	102	95
240-195199-2	MW-91S_110723	96	96	100	97
240-195201-F-2 MS	Matrix Spike	93	102	102	95
240-195201-I-2 MSD	Matrix Spike Duplicate	93	101	105	95
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195199-2	MW-91S_110723	102
240-195201-H-2 MS	Matrix Spike	104
240-195201-N-2 MSD	Matrix Spike Duplicate	103
LCS 240-595348/4	Lab Control Sample	101
MB 240-595348/6	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			20.0	18.1		ug/L		90	77 - 123		
Tetrachloroethene			20.0	17.1		ug/L		86	76 - 123		
trans-1,2-Dichloroethene			20.0	18.8		ug/L		94	75 - 124		
Trichloroethene			20.0	18.6		ug/L		93	70 - 122		
Vinyl chloride			20.0	23.1		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128		
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136		
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124		
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195201-I-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595348/6
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 08:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/21/23 08:16*	*1*

Lab Sample ID: LCS 240-595348/4
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195201-H-2 MS
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.72		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195201-N-2 MSD
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195199-2	MW-91S_110723	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195201-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195199-1	TRIP BLANK_46	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195199-2	MW-91S_110723	Total/NA	Water	8260D SIM	
MB 240-595348/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595348/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195201-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195201-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_46
Lab Sample ID: 240-195199-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 16:14

Client Sample ID: MW-91S_110723
Lab Sample ID: 240-195199-2
Date Collected: 11/07/23 14:10
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 05:52
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 10:14

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195199-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 46	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-915_110723	11/07/23	1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195199 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Brewster St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Sommer Hay	Arcadis	11/9/23 0850		EETA	11/9/23 1070
	EETA	11/9/23 10:15	Received in Laboratory by:	EE INC	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** 195199
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195199

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: ~~22~~	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: ~~22~~	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195199-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195199-1

		Sample Name:	TRIP BLANK_46				MW-91S_110723			
		Lab Sample ID:	2401951991				2401951992			
		Sample Date:	11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195199-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52136R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195199-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_46	240-195199-1	Water	11/07/2023		X	
MW-91S_110723	240-195199-2	Water	11/07/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_46	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-915_110723	11/07/23	1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195199 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Brewster St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Jommel Ty	Arcadis	11/9/23 0850		EETA	11/9/23 1070
	EETA	11/9/23 10:15	Received in Laboratory by:	EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_46
Lab Sample ID: 240-195199-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 16:14*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 16:14*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 16:14*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 16:14*	*1*

Client Sample ID: MW-91S_110723
Lab Sample ID: 240-195199-2
Date Collected: 11/07/23 14:10
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 10:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/21/23 10:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 05:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 05:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 05:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 05:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 05:52*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 05:52*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/23 05:52*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/23 05:52*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 9:36:03 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195395-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 9:36:03 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195395-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195395-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195395-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195395-1	TRIP BLANK_132	Water	11/10/23 00:00	11/14/23 10:00
240-195395-2	MW-92S_111023	Water	11/10/23 14:30	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Client Sample ID: TRIP BLANK_132 — Lab Sample ID: 240-195395-1

No Detections.

Client Sample ID: MW-92S_111023 — Lab Sample ID: 240-195395-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Client Sample ID: TRIP BLANK_132

Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195395-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/18/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*		*11/18/23 17:16*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 17:16*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/18/23 17:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Client Sample ID: MW-92S_111023
Date Collected: 11/10/23 14:30
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195395-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/24/23 17:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 22:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 22:53*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 22:53*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/18/23 22:53*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 22:53*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195156-C-52 MS	Matrix Spike	110	109	108	106
240-195156-C-52 MSD	Matrix Spike Duplicate	109	112	108	106
240-195395-1	TRIP BLANK_132	118	114	115	112
240-195395-2	MW-92S_111023	115	110	110	110
LCS 240-595129/5	Lab Control Sample	116	122	117	114
MB 240-595129/8	Method Blank	123	118	117	115

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195395-2	MW-92S_111023	96
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595129/8
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*62 - 137*		*11/18/23 14:52*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*11/18/23 14:52*	*1*
Toluene-d8 (Surr)	*117*		*78 - 122*		*11/18/23 14:52*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/18/23 14:52*	*1*

Lab Sample ID: LCS 240-595129/5
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*114*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	100	U	2500	2250		ug/L		90	56 - 135
cis-1,2-Dichloroethene	2400		2500	4550		ug/L		86	66 - 128
Tetrachloroethene	100	U	2500	2090		ug/L		83	62 - 131
trans-1,2-Dichloroethene	100	U	2500	2240		ug/L		90	56 - 136
Trichloroethene	440		2500	2480		ug/L		82	61 - 124
Vinyl chloride	50	J	1250	1060		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MSD
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2500	2170		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	2400		2500	4500		ug/L		84	66 - 128	1	14
Tetrachloroethene	100	U	2500	2010		ug/L		80	62 - 131	4	20
trans-1,2-Dichloroethene	100	U	2500	2160		ug/L		87	56 - 136	4	15
Trichloroethene	440		2500	2390		ug/L		78	61 - 124	4	15
Vinyl chloride	50	J	1250	1050		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

GC/MS VOA

Analysis Batch: 595129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195395-1	TRIP BLANK_132	Total/NA	Water	8260D	
240-195395-2	MW-92S_111023	Total/NA	Water	8260D	
MB 240-595129/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595129/5	Lab Control Sample	Total/NA	Water	8260D	
240-195156-C-52 MS	Matrix Spike	Total/NA	Water	8260D	
240-195156-C-52 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195395-2	MW-92S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Client Sample ID: TRIP BLANK_132

Lab Sample ID: 240-195395-1

Date Collected: 11/10/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 17:16

Client Sample ID: MW-92S_111023

Lab Sample ID: 240-195395-2

Date Collected: 11/10/23 14:30

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 22:53
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 17:54

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195395-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_132	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-92S_111023	11/10/23	1430		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195395 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12036 Brewster St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Alaina Pitera	Arcadis	11/10/23 1530	Received by: NOV: Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0835	Received by:	EEA	11/13/23
Relinquished by:	EEA	11/13/23	Received in Laboratory by:	EEA	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # :_____

Client Arcadis Site Name_____

Cooler Received on 11-14-23 Opened on 11-14-23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

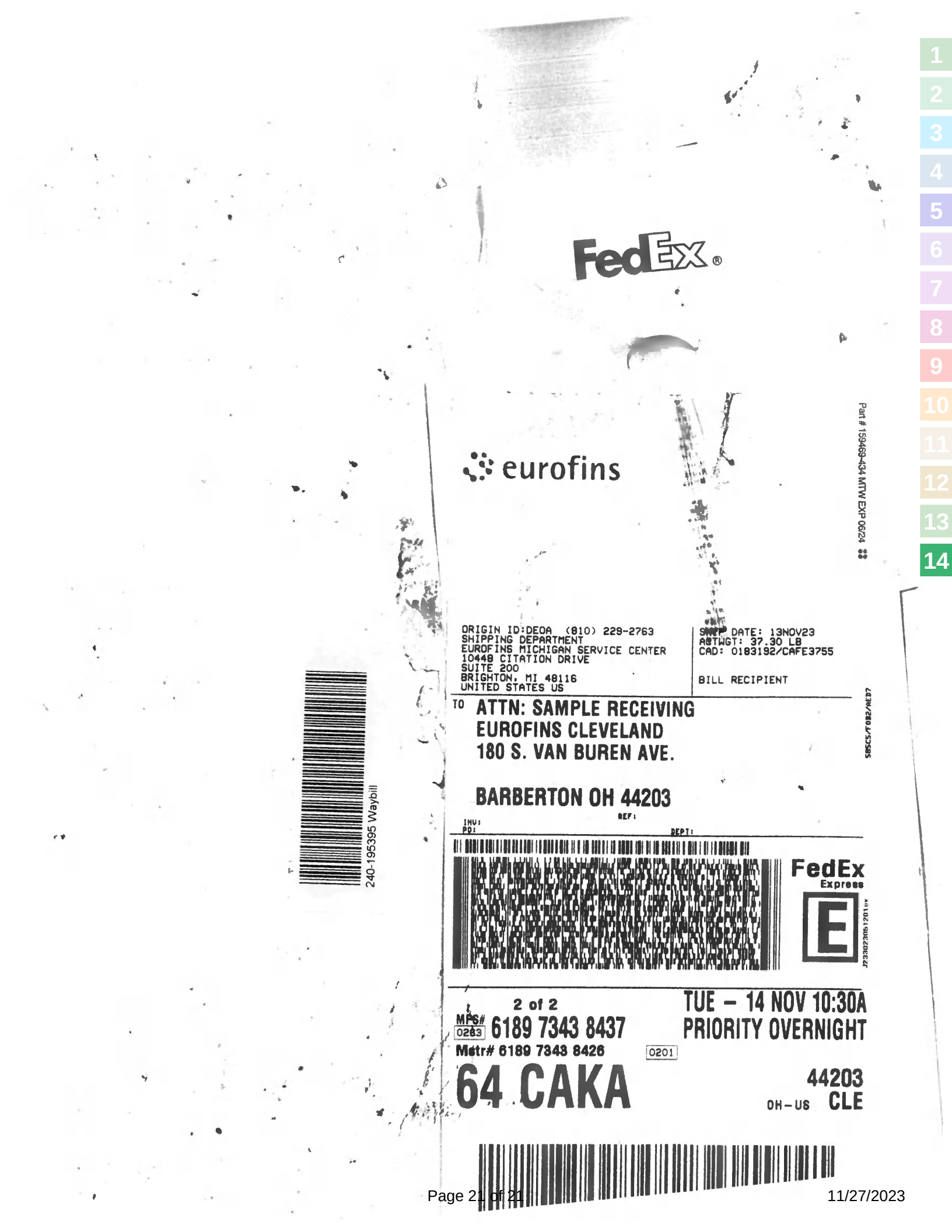
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	


FedEx
eurofins
Part # 159469-434 MTW EXP 06/24
ORIGIN ID:DEOA (810) 229-2763
SHIPPING DEPARTMENT
EUROFINS MICHIGAN SERVICE CENTER
10449 CITATION DRIVE
SUITE 200
BRIGHTON, MI 48116
UNITED STATES US
SHIP DATE: 13NOV23
ACTWGT: 37.30 LB
CAD: 0183192/CAFE3755
BILL RECIPIENT
TO ATTN: SAMPLE RECEIVING
EUROFINS CLEVELAND
180 S. VAN BUREN AVE.
BARBERTON OH 44203
INV:
PO:
REF:
DEPT:
FedEx
Express
2 of 2
MPS# 0283 6189 7343 8437
Mstr# 6189 7343 8426
0201
TUE - 14 NOV 10:30A
PRIORITY OVERNIGHT
64 CAKA
44203
OH-US CLE
240-195395 Waybill

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195395-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195395-1

		Sample Name:	TRIP BLANK_132				MW-92S_111023			
		Lab Sample ID:	2401953951				2401953952			
		Sample Date:	11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195395-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52152R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195395-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_132	240-195395-1	Water	11/10/2023		X	
MW-92S_111023	240-195395-2	Water	11/10/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

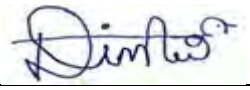
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name: Alana Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_132	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-925_111023	11/10/23	1430		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195395 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12036 Brewster St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Alana Pitera	Arcadis	11/10/23 1530	Received by: Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0835	Received by:	EEA	11/13/23
Relinquished by:	EEA	11/13/23	Received in Laboratory by:	EETMC	11-14-23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_132
Lab Sample ID: 240-195395-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/18/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*		*11/18/23 17:16*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 17:16*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/18/23 17:16*	*1*

Client Sample ID: MW-92S_111023
Lab Sample ID: 240-195395-2
Date Collected: 11/10/23 14:30
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/24/23 17:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 22:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 22:53*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 22:53*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/18/23 22:53*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 22:53*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:22:56 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194821-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/15/2023 4:22:56 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194821-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194821-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194821-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194821-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194821-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194821-1	TRIP BLANK_65	Water	11/02/23 00:00	11/04/23 08:00
240-194821-2	MW-155S_110223	Water	11/02/23 11:10	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194821-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_65 — Lab Sample ID: 240-194821-1

No Detections.

Client Sample ID: MW-155S_110223 — Lab Sample ID: 240-194821-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194821-1

Client Sample ID: TRIP BLANK_65
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194821-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 16:18*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/11/23 16:18*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 16:18*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 16:18*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194821-1

Client Sample ID: MW-155S_110223
Date Collected: 11/02/23 11:10
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194821-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/13/23 23:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 20:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/11/23 20:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 20:50*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/23 20:50*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/23 20:50*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194821-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194821-1	TRIP BLANK_65	108	74	89	93
240-194821-2	MW-155S_110223	112	77	92	98
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194821-2	MW-155S_110223	84
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	30.3		ug/L		121	63 - 134		
cis-1,2-Dichloroethene			25.0	25.2		ug/L		101	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.8		ug/L		107	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136		
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194821-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194821-1	TRIP BLANK_65	Total/NA	Water	8260D	
240-194821-2	MW-155S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194821-2	MW-155S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194821-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_65
Lab Sample ID: 240-194821-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 16:18

Client Sample ID: MW-155S_110223
Lab Sample ID: 240-194821-2
Date Collected: 11/02/23 11:10
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 20:50
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/13/23 23:29

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194821-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE EASY ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 65	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-155s_110223	11-2-23	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194821 Chain of Custody

MICHIGAN
180

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12066 BOSTON POST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company	Date/Time	Received by:	Company:	Date/Time:
JOE FOSTIK	Arcadis	11-2-23 / 1500	Nolan Schendel	Arcadis	11-02-23 / 1500
Nolan Schendel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
	Arcadis	11/3/23 1245		EEA	11/3/23 12:40

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11/15/2023

Relinquished by 11/3/23 1245 ET 11-4-23 800

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194821

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194821

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
8 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
8 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194821-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194821-1

		Sample Name:	TRIP BLANK_65				MW-155S_110223			
		Lab Sample ID:	2401948211				2401948212			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194821-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52094R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194821-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_65	240-194821-1	Water	11/02/2023		X	
MW-155S_110223	240-194821-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE EAS F NFNVIRONMENTA TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 65	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-155s_110223	11-2-23	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194821 Chain of Custody

Page 366 of 368

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12066 BOSTON POST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company	Date/Time	Received by:	Company:	Date/Time:
JOE FOSTIK	Arcadis	11-2-23 / 1500	Nolan Schendel	Arcadis	11-02-23 / 1500
Nolan Schendel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
[signature]	Arcades	11/3/23 1245	Received in Laboratory by: [signature]	TEA	11/3/23 12:40

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11/15/2023

Relinquished by [signature] 11/3/23 1245 [signature] ET 11-4-23 800

Client Sample ID: TRIP BLANK_65
Lab Sample ID: 240-194821-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 16:18*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/11/23 16:18*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 16:18*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 16:18*	*1*

Client Sample ID: MW-155S_110223
Lab Sample ID: 240-194821-2
Date Collected: 11/02/23 11:10
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/13/23 23:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 20:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/11/23 20:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 20:50*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/23 20:50*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/23 20:50*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:46:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195919-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195919-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195919-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195919-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The MSD for batch 240-595975 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195919-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195919-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195919-1	TRIP BLANK_110	Water	11/20/23 00:00	11/22/23 08:00
240-195919-2	MW-143S_112023	Water	11/20/23 12:58	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195919-1

Client Sample ID: TRIP BLANK_110 — Lab Sample ID: 240-195919-1

No Detections.

Client Sample ID: MW-143S_112023 — Lab Sample ID: 240-195919-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195919-1

Client Sample ID: TRIP BLANK_110
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195919-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 19:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 19:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 19:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 19:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 19:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/28/23 19:36*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/28/23 19:36*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 19:36*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 19:36*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195919-1

Client Sample ID: MW-143S_112023
Date Collected: 11/20/23 12:58
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195919-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			11/30/23 08:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 08:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 00:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 00:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 00:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 00:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/29/23 00:12*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/29/23 00:12*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 00:12*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/29/23 00:12*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195919-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195840-C-2 MS	Matrix Spike	103	114	109	108
240-195840-C-2 MSD	Matrix Spike Duplicate	106	109	109	104
240-195919-1	TRIP BLANK_110	113	86	105	101
240-195919-2	MW-143S_112023	113	79	103	103
LCS 240-595975/4	Lab Control Sample	107	98	109	103
MB 240-595975/6	Method Blank	112	84	105	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195919-2	MW-143S_112023	99
240-195929-H-2 MS	Matrix Spike	96
240-195929-O-2 MSD	Matrix Spike Duplicate	96
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595975/6
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 18:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/28/23 18:46*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/28/23 18:46*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 18:46*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 18:46*	*1*

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.3		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			25.0	23.2		ug/L		93	77 - 123		
Tetrachloroethene			25.0	26.3		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	23.5		ug/L		94	75 - 124		
Trichloroethene			25.0	24.8		ug/L		99	70 - 122		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	510		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	170		500	662		ug/L		99	66 - 128		
Tetrachloroethene	20	U	500	454		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	61		500	561		ug/L		100	56 - 136		
Trichloroethene	510		500	885		ug/L		75	61 - 124		
Vinyl chloride	20	U	250	207		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MSD
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	508		ug/L		102	56 - 135	0	26
cis-1,2-Dichloroethene	170		500	632		ug/L		93	66 - 128	5	14
Tetrachloroethene	20	U	500	484		ug/L		97	62 - 131	6	20
trans-1,2-Dichloroethene	61		500	550		ug/L		98	56 - 136	2	15
Trichloroethene	510		500	925		ug/L		83	61 - 124	4	15
Vinyl chloride	20	U	250	233		ug/L		93	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195929-H-2 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-195929-O-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195919-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195919-1	TRIP BLANK_110	Total/NA	Water	8260D	
240-195919-2	MW-143S_112023	Total/NA	Water	8260D	
MB 240-595975/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595975/4	Lab Control Sample	Total/NA	Water	8260D	
240-195840-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195840-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195919-2	MW-143S_112023	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195929-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195929-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195919-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_110
Lab Sample ID: 240-195919-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/28/23 19:36

Client Sample ID: MW-143S_112023
Lab Sample ID: 240-195919-2
Date Collected: 11/20/23 12:58
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 00:12
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 08:57

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195919-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

3.8/4.9

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis					
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs	
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only	
Project Name: Ford LTP Off-Site	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client	
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Lab sampling	
PO # 30146655.402.04	Shipping/Tracking No:			Job/SDG No:	

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_110	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1435_112023	11/20/23	1258		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195919 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For / Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12069 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/21/23 0810	Novi warehouse	Arcadis	11/21/23 0810
Relinquished by: Tommie Ray	Company: Arcadis	Date/Time: 11/21/23 0935	Received by:	Company: EEN	Date/Time: 11/21/23
Relinquished by:	Company: EEN	Date/Time: 11/21/23	Received in Laboratory by: Alissa Atkinson	Company: EETMC	Date/Time: 11.22.23 0800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-22-23 Opened on 11-22-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y) (Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195919-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195919-1

		Sample Name:	TRIP BLANK_110				MW-143S_112023			
		Lab Sample ID:	2401959191				2401959192			
		Sample Date:	11/20/2023				11/20/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					1.2	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195919-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52172R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195919-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_110	240-195919-1	Water	11/20/2023		X	
MW-143S_112023	240-195919-2	Water	11/20/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

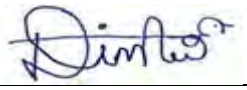
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

3.8149

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time			
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks, 2 weeks, 1 week, 2 days, 1 day		For lab use only	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Walk-in client	
Project Number: 30146655.402.04	Shipping/Tracking No:			Lab sampling	
PO # 30146655.402.04				Job/SDG No:	

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_110	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1435_112023	11/20/23	1258		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195919 Chain of Custody

Page 349 of 350

Possible Hazard Identification: ✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12069 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/21/23 0810	Novi warehouse	Arcadis	11/21/23 0810
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Sky	Arcadis	11/21/23 0935	Tolly Mc	EENA	11/21/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Tolly Mc	EENA	11/21/23	Alyssa Atkinson	EETMc	11.22.23 0800

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12/01/2023

Client Sample ID: TRIP BLANK_110
Lab Sample ID: 240-195919-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 19:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 19:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 19:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 19:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 19:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/28/23 19:36*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/28/23 19:36*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 19:36*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 19:36*	*1*

Client Sample ID: MW-143S_112023
Lab Sample ID: 240-195919-2
Date Collected: 11/20/23 12:58
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.2**	**J**	2.0	0.86	ug/L			11/30/23 08:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 08:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 00:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 00:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 00:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 00:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/29/23 00:12*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/29/23 00:12*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 00:12*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/29/23 00:12*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:51:40 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194818-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:51:40 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194818-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194818-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194818-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-115S_110223 (240-194818-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194818-1	TRIP BLANK_63	Water	11/02/23 00:00	11/04/23 08:00
240-194818-2	MW-115S_110223	Water	11/02/23 12:05	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Client Sample ID: TRIP BLANK_63 — Lab Sample ID: 240-194818-1

No Detections.

Client Sample ID: MW-115S_110223 — Lab Sample ID: 240-194818-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.0		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Client Sample ID: TRIP BLANK_63
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194818-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/10/23 11:45*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 11:45*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/10/23 11:45*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/10/23 11:45*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Client Sample ID: MW-115S_110223
Date Collected: 11/02/23 12:05
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194818-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*162*	*S1+*	*66 - 120*		*11/10/23 18:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 15:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 15:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 15:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:55	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			11/10/23 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 15:55*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 15:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 15:55*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 15:55*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194818-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194730-B-3 MS	Matrix Spike	101	85	91	92
240-194730-B-3 MSD	Matrix Spike Duplicate	103	84	89	98
240-194818-1	TRIP BLANK_63	105	78	89	91
240-194818-2	MW-115S_110223	108	78	93	94
LCS 240-594169/5	Lab Control Sample	100	82	89	93
MB 240-594169/8	Method Blank	118	88	101	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194818-2	MW-115S_110223	162 S1+
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594169/8
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/10/23 11:20*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/10/23 11:20*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 11:20*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/10/23 11:20*	*1*

Lab Sample ID: LCS 240-594169/5
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.5		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		101	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	25.9		ug/L		104	75 - 124		
Trichloroethene			25.0	25.1		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.2		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	5.0	U	125	134		ug/L		107	56 - 135		
cis-1,2-Dichloroethene	130		125	228		ug/L		80	66 - 128		
Tetrachloroethene	5.0	U	125	114		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	5.0	U	125	119		ug/L		95	56 - 136		
Trichloroethene	56		125	162		ug/L		84	61 - 124		
Vinyl chloride	5.0	U	62.5	57.9		ug/L		93	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MSD
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	5.0	U	125	141		ug/L		113	56 - 135	5	26
cis-1,2-Dichloroethene	130		125	240		ug/L		90	66 - 128	5	14
Tetrachloroethene	5.0	U	125	111		ug/L		89	62 - 131	3	20
trans-1,2-Dichloroethene	5.0	U	125	125		ug/L		100	56 - 136	5	15
Trichloroethene	56		125	177		ug/L		96	61 - 124	9	15
Vinyl chloride	5.0	U	62.5	60.8		ug/L		97	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194818-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194818-1	TRIP BLANK_63	Total/NA	Water	8260D	
240-194818-2	MW-115S_110223	Total/NA	Water	8260D	
MB 240-594169/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594169/5	Lab Control Sample	Total/NA	Water	8260D	
240-194730-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194730-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194818-2	MW-115S_110223	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194818-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_63
Lab Sample ID: 240-194818-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 11:45

Client Sample ID: MW-115S_110223
Lab Sample ID: 240-194818-2
Date Collected: 11/02/23 12:05
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 15:55
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 18:51

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194818-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Joe Foytik	TAT if different from below: 10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 63	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-115_110223	11-2-23	1205		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194818 Chain of Custody

Possible Hazard Identification
(✓) Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | (✓) Disposal By Lab | Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12070 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
JOE FOSTIK	Arcadis	11-2-23 / 1500	Nolyn Schenck	Arcadis	11-02-23/1500
Nolyn Schenck	Arcadis	11-02-23/1525	Novi cold storage	Arcadis	11-02-23/1525
Tommy Ley	Arcadis	11/3/23 1245	Received in Laboratory by:	Company: EETA	Date/Time: 11/3/23 1245

Relinquished by — 11/3/23 1245 — ET — 11-4-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194818

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 194818

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
1 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
2 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194818-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM sample -002 SURROGATE recovery was outlying biased high for 1 surrogate. Associated client sample results were non-detect so qualification was not required based on this high bias QC outlier.

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194818-1

		Sample Name:	TRIP BLANK_63				MW-115S_110223			
		Lab Sample ID:	2401948181				2401948182			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.0	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194818-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52114R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194818-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_63	240-194818-1	Water	11/02/2023		X	
MW-115S_110223	240-194818-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Joe Foytik	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 63	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-115_110223	11-2-23	1205		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194818 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12070 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Joe Foytik	Arcadis	11-2-23 / 1500	Nolan Schenkel	Arcadis	11-02-23 / 1500
Relinquished by: Nolan Schenkel	Company: Arcadis	Date/Time: 11-02-23 / 1525	Received by: NOVI cold storage	Company: Arcadis	Date/Time: 11-02-23 / 1525
Relinquished by:	Company: Arcadis	Date/Time: 11/3/23 1245	Received in Laboratory by:	Company: EETA	Date/Time: 11/3/23 1250

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Relinquished by – 11/3/23 1245 ET 11-4-23 800

Client Sample ID: TRIP BLANK_63
Lab Sample ID: 240-194818-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/10/23 11:45*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 11:45*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/10/23 11:45*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/10/23 11:45*	*1*

Client Sample ID: MW-115S_110223
Lab Sample ID: 240-194818-2
Date Collected: 11/02/23 12:05
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*162*	*S1+*	*66 - 120*		*11/10/23 18:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 15:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 15:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 15:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:55	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			11/10/23 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 15:55*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 15:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 15:55*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 15:55*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:25:50 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194825-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/15/2023 4:25:50 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194825-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194825-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194825-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194825-1	TRIP BLANK_57	Water	11/02/23 00:00	11/04/23 08:00
240-194825-2	MW-123S_110223	Water	11/02/23 16:25	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_57 — Lab Sample ID: 240-194825-1

No Detections.

Client Sample ID: MW-123S_110223 — Lab Sample ID: 240-194825-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194825-1

Client Sample ID: TRIP BLANK_57
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194825-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/11/23 17:57*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/11/23 17:57*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/11/23 17:57*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/11/23 17:57*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194825-1

Client Sample ID: MW-123S_110223
Date Collected: 11/02/23 16:25
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194825-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/23 01:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 22:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/11/23 22:31*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 22:31*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 22:31*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 22:31*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194825-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194825-1	TRIP BLANK_57	115	80	93	100
240-194825-2	MW-123S_110223	113	77	90	97
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194825-2	MW-123S_110223	83
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	30.3		ug/L		121	63 - 134
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194825-1	TRIP BLANK_57	Total/NA	Water	8260D	
240-194825-2	MW-123S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194825-2	MW-123S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_57
Lab Sample ID: 240-194825-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 17:57

Client Sample ID: MW-123S_110223
Lab Sample ID: 240-194825-2
Date Collected: 11/02/23 16:25
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 22:31
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 01:04

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194825-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_57	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1235_110223	11/2/23	1625		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194825 Chain of Custody

MIC... 140

Possible Hazard Identification
Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12075 Brewster
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Kent Kasper	Arcadis	11/2/23 1800	Novi Cold Storage	Arcadis	11/2/23 1800
Relinquished by: Sammer Sky	Company: Arcadis	Date/Time: 11/3/23 1245	Received by:	Company: EEA	Date/Time: 11/3/23 1240
Relinquished by	Company: EEA	Date/Time: 11/3/23 1245	Received in Laboratory by:	Company: ET	Date/Time: 11-4-23 800

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11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194825

Client Arcadis Site Name

Cooler Received on 11-4-23 Opened on 11-4-23

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? ~~Yes~~ No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? ~~Yes~~ No
   -Were tamper/custody seals intact and uncompromised? ~~Yes~~ No ~~NA~~
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194825

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194825-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194825-1

		Sample Name:	TRIP BLANK_57				MW-123S_110223			
		Lab Sample ID:	2401948251				2401948252			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194825-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52098R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194825-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_57	240-194825-1	Water	11/02/2023		X	
MW-123S_110223	240-194825-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_57	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1235_110223	11/2/23	1625		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194825 Chain of Custody

MICH 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
| Return to Client | ✓ Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12075 Brewster
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Kent Kasper	Arcadis	11/2/23 1800	Novi Cold Storage	Arcadis	11/2/23 1800
Relinquished by: Sammer Guy	Company: Arcadis	Date/Time: 11/3/23 1245	Received by:	Company: EEA	Date/Time: 11/3/23 1240
Relinquished by	Company: EEA	Date/Time: 11/3/23 1245	Received in Laboratory by:	Company: ET	Date/Time: 11-4-23 800

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11/15/2023

Client Sample ID: TRIP BLANK_57
Lab Sample ID: 240-194825-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/11/23 17:57*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/11/23 17:57*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/11/23 17:57*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/11/23 17:57*	*1*

Client Sample ID: MW-123S_110223
Lab Sample ID: 240-194825-2
Date Collected: 11/02/23 16:25
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/23 01:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 22:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/11/23 22:31*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 22:31*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 22:31*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 22:31*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:30:32 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195001-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/20/2023 12:30:32 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195001-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195001-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195001-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-148S_110623 (240-195001-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195001-1	TRIP BLANK_49	Water	11/06/23 00:00	11/08/23 08:00
240-195001-2	MW-148S_110623	Water	11/06/23 12:20	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Client Sample ID: TRIP BLANK_49 — Lab Sample ID: 240-195001-1

No Detections.

Client Sample ID: MW-148S_110623 — Lab Sample ID: 240-195001-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Client Sample ID: TRIP BLANK_49
Date Collected: 11/06/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195001-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 18:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 18:50*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 18:50*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:50*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Client Sample ID: MW-148S_110623
Date Collected: 11/06/23 12:20
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195001-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/16/23 03:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:09	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			11/13/23 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:09*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/13/23 19:09*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 19:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 19:09*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195001-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-195001-1	TRIP BLANK_49	106	77	101	99
240-195001-2	MW-148S_110623	103	81	100	97
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195001-2	MW-148S_110623	114
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	23.0		ug/L		92	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122
Vinyl chloride	12.5	10.7		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195001-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195001-1	TRIP BLANK_49	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195001-2	MW-148S_110623	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195001-2	MW-148S_110623	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195001-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_49
Lab Sample ID: 240-195001-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 18:50

Client Sample ID: MW-148S_110623
Lab Sample ID: 240-195001-2
Date Collected: 11/06/23 12:20
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 19:09
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 03:52

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195001-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Kent Kuspa	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_49	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1485-110623	11/6/23	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195001 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12088 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kuspa	Arcadis	11/6/23 1610	Novi Cold Storage	Arcadis	11/6/23 1610
Jammer Ely	Arcadis	11/7/23 1350			11/7/23 1350
		11/7/23 1400	Received in Laboratory by: Rachelle Harris	TestAmerica	11823 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195001
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195001-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195001-1

Sample Name: MW-148S_110623
Lab Sample ID: 2401950012
Sample Date: 11/6/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	2.2	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195001-1

		Sample Name:	TRIP BLANK_49				MW-148S_110623			
		Lab Sample ID:	2401950011				2401950012			
		Sample Date:	11/6/2023				11/6/2023			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	2.2	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195001-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52125R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195001-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_49	240-195001-1	Water	11/06/2023		X	
MW-148S_110623	240-195001-2	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-148S_110623 (240-195001-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

20131

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kuspa	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_49	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1485-110623	11/6/23	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195001 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12088 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kuspa	Arcadis	11/6/23 1610	Novi Cold Storage	Arcadis	11/6/23 1610
Jammer Ley	Arcadis	11/7/23 1350		TATA	11/7/23 1350
	TATA	11/7/23 1400	Received in Laboratory by: Rachelle Harold	TestAmerica	11823 800

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11/21/2023

Client Sample ID: TRIP BLANK_49
Lab Sample ID: 240-195001-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 18:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 18:50*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 18:50*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:50*	*1*

Client Sample ID: MW-148S_110623
Lab Sample ID: 240-195001-2
Date Collected: 11/06/23 12:20
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/16/23 03:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:09	1
Vinyl chloride	**2.2**	J	1.0	0.45	ug/L			11/13/23 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:09*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/13/23 19:09*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 19:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 19:09*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:24:35 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194823-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194823-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194823-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194823-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194823-1	TRIP BLANK_30	Water	11/02/23 00:00	11/04/23 08:00
240-194823-2	MW-117S_110223	Water	11/02/23 10:17	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_30 — Lab Sample ID: 240-194823-1

No Detections.

Client Sample ID: MW-117S_110223 — Lab Sample ID: 240-194823-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194823-1

Client Sample ID: TRIP BLANK_30
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194823-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*126*		*62 - 137*		*11/11/23 17:08*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/11/23 17:08*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/11/23 17:08*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/11/23 17:08*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194823-1

Client Sample ID: MW-117S_110223
Date Collected: 11/02/23 10:17
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194823-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/14/23 00:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 21:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 21:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 21:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 21:41*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/11/23 21:41*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*11/11/23 21:41*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 21:41*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194823-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194823-1	TRIP BLANK_30	126	85	99	108
240-194823-2	MW-117S_110223	108	72	87	95
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194823-2	MW-117S_110223	90
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	30.3		ug/L		121	63 - 134		
cis-1,2-Dichloroethene			25.0	25.2		ug/L		101	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.8		ug/L		107	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136		
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194823-1	TRIP BLANK_30	Total/NA	Water	8260D	
240-194823-2	MW-117S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194823-2	MW-117S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_30
Lab Sample ID: 240-194823-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 17:08

Client Sample ID: MW-117S_110223
Lab Sample ID: 240-194823-2
Date Collected: 11/02/23 10:17
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 21:41
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 00:16

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194823-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_30	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1175_110223	11/02/23	1017		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194823 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12089 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Nolan Schendel	Arcadis	11-02-23/ 1335	Novi Cold Storage	Arcadis	11-02-23/ 1335
Relinquished by:	Company: Arcadis	Date/Time: 11/3/23 1245	Received by:	Company: EEIA	Date/Time: 11/3/23 1240
Relinquished by:	Company: EEIA	Date/Time: 11/3/23 1245	Received in Laboratory by:	Company: ET	Date/Time: 11-4-23 800

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11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194823

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 194823

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194823-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194823-1

		Sample Name:	TRIP BLANK_30				MW-117S_110223			
		Lab Sample ID:	2401948231				2401948232			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194823-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52096R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194823-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_30	240-194823-1	Water	11/02/2023		X	
MW-117S_110223	240-194823-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_30	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1175_110223	11/02/23	1017		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

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240-194823 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12089 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company	Date/Time	Received by	Company:	Date/Time:
Nolan Schendel	Arcadis	11-02-23/ 1335	Novi Cold Storage	Arcadis	11-02-23/ 1335
Relinquished by:	Company: Arcadis	Date/Time: 11/3/23 1245	Received by:	Company: EETA	Date/Time: 11/3/23 1240
Relinquished by:	Company: EETA	Date/Time: 11/3/23 1245	Received in Laboratory by:	Company: ET	Date/Time: 11-4-23 800

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11/15/2023
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Client Sample ID: TRIP BLANK_30
Lab Sample ID: 240-194823-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*126*		*62 - 137*		*11/11/23 17:08*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/11/23 17:08*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/11/23 17:08*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/11/23 17:08*	*1*

Client Sample ID: MW-117S_110223
Lab Sample ID: 240-194823-2
Date Collected: 11/02/23 10:17
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/14/23 00:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 21:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 21:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 21:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 21:41*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/11/23 21:41*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*11/11/23 21:41*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 21:41*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/21/2023 8:22:31 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195003-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/21/2023 8:22:31 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195003-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195003-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195003-1	TRIP BLANK_38	Water	11/06/23 00:00	11/08/23 08:00
240-195003-2	MW-151S_110623	Water	11/06/23 11:00	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Client Sample ID: TRIP BLANK_38 — Lab Sample ID: 240-195003-1

No Detections.

Client Sample ID: MW-151S_110623 — Lab Sample ID: 240-195003-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Client Sample ID: TRIP BLANK_38

Date Collected: 11/06/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195003-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:58*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 14:58*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:58*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/13/23 14:58*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Client Sample ID: MW-151S_110623
Date Collected: 11/06/23 11:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195003-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 04:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/16/23 04:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:59	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/13/23 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:59*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/13/23 19:59*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 19:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 19:59*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195003-1	TRIP BLANK_38	102	80	100	95
240-195003-2	MW-151S_110623	103	81	101	96
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195003-2	MW-151S_110623	89
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122
Vinyl chloride	12.5	11.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.87		ug/L		89	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

GC/MS VOA

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195003-1	TRIP BLANK_38	Total/NA	Water	8260D	
240-195003-2	MW-151S_110623	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195003-2	MW-151S_110623	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Client Sample ID: TRIP BLANK_38

Lab Sample ID: 240-195003-1

Date Collected: 11/06/23 00:00

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 14:58

Client Sample ID: MW-151S_110623

Lab Sample ID: 240-195003-2

Date Collected: 11/06/23 11:00

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 19:59
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 04:40

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195003-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190 20131

Chain of Custody Record

MICHIGAN 190

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Kent Kuzpa	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_38	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1515_110623	11/6/23	1100		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195003 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12091 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kuzpa	Arcadis	11/6/23 1610	Novi Cold Storage	Arcadis	11/6/23 1610
Jammer Shy	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Hierlo	TAL	11823 8:00

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11/21/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195003
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195003-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195003-1

		Sample Name:	TRIP BLANK_38				MW-151S_110623			
		Lab Sample ID:	2401950031				2401950032			
		Sample Date:	11/6/2023				11/6/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195003-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52128R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195003-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_38	240-195003-1	Water	11/06/2023		X	
MW-151S_110623	240-195003-2	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190 2.0131

Chain of Custody Record

MICHIGAN 190 TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Kent Klapp	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_38	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1515_110623	11/6/23	1100		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195003 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12091 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Klapp	Arcadis	11/6/23 1610	Novi Cold Storage	Arcadis	11/6/23 1610
Jammer Shy	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Hicks	TAL	11823 800

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11/21/2023

Client Sample ID: TRIP BLANK_38
Lab Sample ID: 240-195003-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:58*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 14:58*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:58*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/13/23 14:58*	*1*

Client Sample ID: MW-151S_110623
Lab Sample ID: 240-195003-2
Date Collected: 11/06/23 11:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 04:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/16/23 04:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:59	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/13/23 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:59*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/13/23 19:59*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 19:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 19:59*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:32:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194819-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:32:55 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194819-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194819-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194819-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194819-1	TRIP BLANK_64	Water	11/02/23 00:00	11/04/23 08:00
240-194819-2	MW-156S_110223	Water	11/02/23 13:10	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_64 **Lab Sample ID: 240-194819-1**

No Detections.

Client Sample ID: MW-156S_110223 **Lab Sample ID: 240-194819-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194819-1

Client Sample ID: TRIP BLANK_64
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194819-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/10/23 13:43*	*1*
4-Bromofluorobenzene (Surr)	*70*		*56 - 136*		*11/10/23 13:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 13:43*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 13:43*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194819-1

Client Sample ID: MW-156S_110223
Date Collected: 11/02/23 13:10
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194819-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/10/23 19:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 14:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 14:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 14:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/10/23 14:06*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/10/23 14:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 14:06*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/10/23 14:06*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194819-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194798-B-8 MSD	Matrix Spike Duplicate	98	88	104	106
240-194798-F-8 MS	Matrix Spike	97	79	98	104
240-194819-1	TRIP BLANK_64	101	70	101	112
240-194819-2	MW-156S_110223	104	72	100	115
LCS 240-594185/5	Lab Control Sample	96	81	104	106
MB 240-594185/9	Method Blank	99	70	98	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194819-2	MW-156S_110223	100
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594185/9
Matrix: Water
Analysis Batch: 594185

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 12:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/10/23 12:33*	*1*
4-Bromofluorobenzene (Surr)	*70*		*56 - 136*		*11/10/23 12:33*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/10/23 12:33*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/10/23 12:33*	*1*

Lab Sample ID: LCS 240-594185/5
Matrix: Water
Analysis Batch: 594185

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	21.3		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			20.0	22.3		ug/L		111	77 - 123		
Tetrachloroethene			20.0	21.9		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			20.0	21.4		ug/L		107	75 - 124		
Trichloroethene			20.0	20.7		ug/L		104	70 - 122		
Vinyl chloride			20.0	17.6		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-194798-B-8 MSD
Matrix: Water
Analysis Batch: 594185

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.1		ug/L		100	56 - 135	5	26
cis-1,2-Dichloroethene	0.62	J	20.0	21.1		ug/L		102	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.3		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	0	15
Trichloroethene	1.0	U	20.0	18.3		ug/L		91	61 - 124	3	15
Vinyl chloride	2.4		20.0	17.4		ug/L		75	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194798-B-8 MSD
Matrix: Water
Analysis Batch: 594185

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-194798-F-8 MS
Matrix: Water
Analysis Batch: 594185

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	19.1		ug/L		96	56 - 135
cis-1,2-Dichloroethene	0.62	J	20.0	20.8		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		97	56 - 136
Trichloroethene	1.0	U	20.0	18.8		ug/L		94	61 - 124
Vinyl chloride	2.4		20.0	16.8		ug/L		72	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194819-2	MW-156S_110223	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194819-1	TRIP BLANK_64	Total/NA	Water	8260D	
240-194819-2	MW-156S_110223	Total/NA	Water	8260D	
MB 240-594185/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594185/5	Lab Control Sample	Total/NA	Water	8260D	
240-194798-B-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194798-F-8 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_64
Lab Sample ID: 240-194819-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594185	AJS	EET CLE	11/10/23 13:43

Client Sample ID: MW-156S_110223
Lab Sample ID: 240-194819-2
Date Collected: 11/02/23 13:10
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594185	AJS	EET CLE	11/10/23 14:06
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 19:15

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194819-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day ✓ (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_64	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-156S_110223	11-2-23	1310		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194819 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12100 BOSTON POST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
JOE FOSTIK	Arcadis	11-2-23 / 1500	Nolan Schandel	Arcadis	11-02-23 / 1500
Nolan Schandel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
Jonmeet Dey	Arcadis	11/3/23 1245	Received in Laboratory by:	Company: EETA	Date/Time: 11/3/23 12:40

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Relinquished by → ~~Joe Fostik~~ 11/3/23 12:45 ET 11-4-23 800

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194819

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 194819

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
2 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
2 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194819-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194819-1

		Sample Name:	TRIP BLANK_64				MW-156S_110223			
		Lab Sample ID:	2401948191				2401948192			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194819-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52118R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194819-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_64	240-194819-1	Water	11/02/2023		X	
MW-156S_110223	240-194819-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_64	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-156S_110223	11-2-23	1310		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194819 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12100 BOSTON POST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
JOE FOSTIK	Arcadis	11.2.23 / 1500	Nolan Schandel	Arcadis	11-02-23/1500
Nolan Schandel	Arcadis	11-02-23 / 1525	Novi cold storage	Arcadis	11-02-23/1525
Jemmer Ley	Arcadis	11/3/23 1245	Received in Laboratory by:	Company:	Date/Time: 11/3/23 12:40

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11/13/2023

Relinquished by → [illegible] 11/3/23 12:45 ET 11-4-23 800

Client Sample ID: TRIP BLANK_64
Lab Sample ID: 240-194819-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/10/23 13:43*	*1*
4-Bromofluorobenzene (Surr)	*70*		*56 - 136*		*11/10/23 13:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 13:43*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 13:43*	*1*

Client Sample ID: MW-156S_110223
Lab Sample ID: 240-194819-2
Date Collected: 11/02/23 13:10
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/10/23 19:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 14:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 14:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 14:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 14:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/10/23 14:06*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/10/23 14:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 14:06*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/10/23 14:06*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:30:45 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195002-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/20/2023 12:30:45 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195002-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195002-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195002-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-171S_110623 (240-195002-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195002-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195002-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195002-1	TRIP BLANK_43	Water	11/06/23 00:00	11/08/23 08:00
240-195002-2	MW-171S_110623	Water	11/06/23 13:30	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195002-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_43 **Lab Sample ID: 240-195002-1**

No Detections.

Client Sample ID: MW-171S_110623 **Lab Sample ID: 240-195002-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195002-1

Client Sample ID: TRIP BLANK_43
Date Collected: 11/06/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195002-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 19:15*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 19:15*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 19:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 19:15*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195002-1

Client Sample ID: MW-171S_110623
Date Collected: 11/06/23 13:30
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195002-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 04:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 04:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 19:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 19:34*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 19:34*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 19:34*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195002-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-195002-1	TRIP BLANK_43	106	76	100	99
240-195002-2	MW-171S_110623	103	79	99	96
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195002-2	MW-171S_110623	94
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	23.0		ug/L		92	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122
Vinyl chloride	12.5	10.7		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195002-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195002-1	TRIP BLANK_43	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195002-2	MW-171S_110623	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195002-2	MW-171S_110623	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195002-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_43
Lab Sample ID: 240-195002-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 19:15

Client Sample ID: MW-171S_110623
Lab Sample ID: 240-195002-2
Date Collected: 11/06/23 13:30
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 19:34
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 04:16

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195002-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks; 2 weeks (✓); 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 43	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1715-110623	11/6/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195002 Chain of Custody

Possible Hazard Identification: Non-Hazard (✓) Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client Disposal By Lab (✓) Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12101 Brewsta

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Kent Kasper	Arcadis	11/6/23 1610	Nov. Cold Storage	Arcadis	11/6/23 1610
Relinquished by: Jammer Hay	Company: Arcadis	Date/Time: 11/7/23 1350	Received by:	Company: FEDEX	Date/Time: 11/7/23 1350
Relinquished by:	Company: FEDEX	Date/Time: 11/7/23 1400	Received in Laboratory by: Rachelle Hansen	Company: TAL	Date/Time: 11/8/23 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195802
Barberton Facility

Client Arcadis Site Name
Cooler Received on 11-8 23 Opened on 11-8 23
Cooler unpacked by: Rachelle Hadet
FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195002-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195002-1

Sample Name: MW-171S_110623
Lab Sample ID: 2401950022
Sample Date: 11/6/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195002-1

		Sample Name:	TRIP BLANK_43				MW-171S_110623			
		Lab Sample ID:	2401950021				2401950022			
		Sample Date:	11/6/2023				11/6/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195002-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52126R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195002-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_43	240-195002-1	Water	11/06/2023		X	
MW-171S_110623	240-195002-2	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-171S_110623 (240-195002-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

2013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 43	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-17LS-110623	11/6/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195002 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12101 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/6/23 1610	Nov. Cold Storage	Arcadis	11/6/23 1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jammer Hay	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEDEX	11/7/23 1400	Rachelle Hansen	TALL	11/8/23 800

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11/21/2023

Client Sample ID: TRIP BLANK_43
Lab Sample ID: 240-195002-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 19:15*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 19:15*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 19:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 19:15*	*1*

Client Sample ID: MW-171S_110623
Lab Sample ID: 240-195002-2
Date Collected: 11/06/23 13:30
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 04:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 04:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 19:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 19:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 19:34*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 19:34*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 19:34*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:26:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194826-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/15/2023 4:26:20 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194826-1

Job ID: 240-194826-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194826-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-118S_110223 (240-194826-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194826-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194826-1	TRIP BLANK_12	Water	11/02/23 00:00	11/04/23 08:00
240-194826-2	MW-118S_110223	Water	11/02/23 09:58	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_12 — Lab Sample ID: 240-194826-1

No Detections.

Client Sample ID: MW-118S_110223 — Lab Sample ID: 240-194826-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194826-1

Client Sample ID: TRIP BLANK_12
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194826-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/11/23 18:22*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 18:22*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/11/23 18:22*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 18:22*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194826-1

Client Sample ID: MW-118S_110223
Date Collected: 11/02/23 09:58
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194826-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 01:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 22:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/11/23 22:55*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 22:55*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 22:55*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 22:55*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194826-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194826-1	TRIP BLANK_12	107	75	88	92
240-194826-2	MW-118S_110223	107	75	90	92
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194826-2	MW-118S_110223	94
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	30.3		ug/L		121	63 - 134		
cis-1,2-Dichloroethene			25.0	25.2		ug/L		101	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.8		ug/L		107	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136		
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194826-1	TRIP BLANK_12	Total/NA	Water	8260D	
240-194826-2	MW-118S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194826-2	MW-118S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_12
Lab Sample ID: 240-194826-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 18:22

Client Sample ID: MW-118S_110223
Lab Sample ID: 240-194826-2
Date Collected: 11/02/23 09:58
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 22:55
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 01:28

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194826-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico			
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396			1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day (3 weeks / 2 weeks / 1 week / 2 days / 1 day)				Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:					Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:					Job/SDG No:
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 12	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1185_110223	11-2-23	0958		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194826 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12124 BOSTON POST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:
JOE FOSTIK	Arcadis	11.2.23 / 1500	Nolan Schendel	Arcadis	11-2-23 / 1500
Nolan Schendel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
	Arcades	11/3/23 1245	Received in Laboratory by:	Company: EETA	Date/Time: 11/3/23 1540

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Relinquished by 11/3/23 12:45 ET 11-4-23 800

11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 174826

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	~~Yes~~	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	~~No~~
-Were tamper/custody seals intact and uncompromised?	Yes	No ~~NA~~
3. Shippers' packing slip attached to the cooler(s)?	Yes	~~No~~
4. Did custody papers accompany the sample(s)?	~~Yes~~	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194826

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194826-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194826-1

Sample Name: MW-118S_110223
Lab Sample ID: 2401948262
Sample Date: 11/2/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194826-1

		Sample Name:	TRIP BLANK_12				MW-118S_110223			
		Lab Sample ID:	2401948261				2401948262			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194826-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52099R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194826-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_12	240-194826-1	Water	11/02/2023		X	
MW-118S_110223	240-194826-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-118S_110223 (240-194826-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 12	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1185_110223	11-2-23	0958		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194826 Chain of Custody

Page 366 of 368

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12124 BOSTON POST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:
JOE FOSTIK	Arcadis	11.2.23 / 1500	Nolan Schendel	Arcadis	11-2-23 / 1500
Nolan Schendel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
	Arcades	11/3/23 1245	Received in Laboratory by:	Company: EEA	Date/Time: 11/3/23 1340

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11/15/2023

Relinquished by [illegible] 11/3/23 12:45 [illegible] ET 11-4-23 800

Client Sample ID: TRIP BLANK_12
Lab Sample ID: 240-194826-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/11/23 18:22*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 18:22*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/11/23 18:22*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 18:22*	*1*

Client Sample ID: MW-118S_110223
Lab Sample ID: 240-194826-2
Date Collected: 11/02/23 09:58
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 01:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/11/23 22:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/11/23 22:55*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 22:55*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 22:55*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 22:55*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 1:33:21 PM Revision 1

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195844-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Revision 1

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195844-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Job ID: 240-195844-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195844-1

Report revised on 12/1/2023 to report to the correct site.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/21/2023 10:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2°C and 3.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195844-1	TRIP BLANK_120	Water	11/17/23 00:00	11/21/23 10:35
240-195844-2	MW-95S_111723	Water	11/17/23 12:25	11/21/23 10:35

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Client Sample ID: TRIP BLANK_120 — Lab Sample ID: 240-195844-1

No Detections.

Client Sample ID: MW-95S_111723 — Lab Sample ID: 240-195844-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.56	J	1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	0.76	J	1.0	0.44	ug/L	1		8260D	Total/NA
Vinyl chloride	0.62	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Client Sample ID: TRIP BLANK_120

Date Collected: 11/17/23 00:00
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195844-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 20:12*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/27/23 20:12*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/27/23 20:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/27/23 20:12*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Client Sample ID: MW-95S_111723

Date Collected: 11/17/23 12:25
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195844-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 03:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 01:13	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.46	ug/L			11/28/23 01:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 01:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 01:13	1
Trichloroethene	**0.76**	**J**	1.0	0.44	ug/L			11/28/23 01:13	1
Vinyl chloride	**0.62**	**J**	1.0	0.45	ug/L			11/28/23 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/28/23 01:13*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/28/23 01:13*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 01:13*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/23 01:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195749-C-2 MS	Matrix Spike	102	98	109	99
240-195749-C-2 MSD	Matrix Spike Duplicate	101	97	108	99
240-195844-1	TRIP BLANK_120	110	85	106	99
240-195844-2	MW-95S_111723	111	79	103	100
LCS 240-595841/5	Lab Control Sample	103	97	108	99
MB 240-595841/8	Method Blank	107	84	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195844-2	MW-95S_111723	100
500-242755-B-10 MS	Matrix Spike	100
500-242755-C-10 MSD	Matrix Spike Duplicate	101
LCS 240-596115/4	Lab Control Sample	103
MB 240-596115/6	Method Blank	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/27/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 18:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/27/23 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/27/23 18:31*	*1*

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.5		ug/L		84	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136
Trichloroethene	20	U	500	435		ug/L		87	61 - 124
Vinyl chloride	690		250	900		ug/L		83	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596115/6
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/23 19:45*	*1*

Lab Sample ID: LCS 240-596115/4
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.7		ug/L		107	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

Lab Sample ID: 500-242755-B-10 MS
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Lab Sample ID: 500-242755-C-10 MSD
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

GC/MS VOA

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195844-1	TRIP BLANK_120	Total/NA	Water	8260D	
240-195844-2	MW-95S_111723	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195749-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195844-2	MW-95S_111723	Total/NA	Water	8260D SIM	
MB 240-596115/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596115/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242755-B-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242755-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Client Sample ID: TRIP BLANK_120

Lab Sample ID: 240-195844-1

Date Collected: 11/17/23 00:00

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/27/23 20:12

Client Sample ID: MW-95S_111723

Lab Sample ID: 240-195844-2

Date Collected: 11/17/23 12:25

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/28/23 01:13
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 03:21

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195844-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN 190 TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis					
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396		1 of 1 COCs
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time			For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day			Walk-in client; Lab sampling
Project Number: 30146655.402.04	Method of Shipment/Carrier:				Job/SDG No:
PO # 30146655.402.04	Shipping/Tracking No:				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_120	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-955_111723	11/17/23	1225		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195844 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12131 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Nolan Schendel	Arcadis	11/17/23 1647	Received by: NOVI Cold Storage	Arcadis	11/17/23 1647
Relinquished by:	Arcadis	11/20/23 1030	Received by:	EETA	11/20/23 1030
Relinquished by:	EETA	11/20/23 1030	Received in Laboratory by:	EETPC	11-21-23 1035

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12/11/2023 (Rev. 1)

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195844

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-21-23 Opened on 11-21-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 21 (CF +2.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	Yes No
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.7	3.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.2	2.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195844-1
Sample date: 2023-11-17
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195844-1

		Sample Name:	TRIP BLANK_120				MW-95S_111723			
		Lab Sample ID:	2401958441				2401958442			
		Sample Date:	11/17/2023				11/17/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.56	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	0.76	1.0	ug/l	J
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.62	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195844-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52175R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195844-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_120	240-195844-1	Water	11/17/2023		X	
MW-95S_111723	240-195844-2	Water	11/17/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190 TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396		1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time			For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day			Walk-in client / Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:				Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:				
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_120	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-955_111723	11/17/23	1225		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195844 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For / Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12131 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 1647	Novi Cold Storage	Arcadis	11/17/23 1647
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/20/23 1030		EETA	11/20/23 1030
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/20/23 1030		EETPC	11-21-23 1035

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12/01/2023

Client Sample ID: TRIP BLANK_120
Lab Sample ID: 240-195844-1
Date Collected: 11/17/23 00:00
Matrix: Water
Date Received: 11/21/23 10:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 20:12*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/27/23 20:12*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/27/23 20:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/27/23 20:12*	*1*

Client Sample ID: MW-95S_111723
Lab Sample ID: 240-195844-2
Date Collected: 11/17/23 12:25
Matrix: Water
Date Received: 11/21/23 10:35

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 03:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 03:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 01:13	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.46	ug/L			11/28/23 01:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 01:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 01:13	1
Trichloroethene	**0.76**	**J**	1.0	0.44	ug/L			11/28/23 01:13	1
Vinyl chloride	**0.62**	**J**	1.0	0.45	ug/L			11/28/23 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/28/23 01:13*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/28/23 01:13*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 01:13*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/23 01:13*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:25:11 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194824-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/15/2023 4:25:11 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194824-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194824-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194824-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194824-1	TRIP BLANK_28	Water	11/02/23 00:00	11/04/23 08:00
240-194824-2	MW-160S_110223	Water	11/02/23 11:47	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_28 — Lab Sample ID: 240-194824-1

No Detections.

Client Sample ID: MW-160S_110223 — Lab Sample ID: 240-194824-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194824-1

Client Sample ID: TRIP BLANK_28
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194824-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 17:32*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 17:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 17:32*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 17:32*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194824-1

Client Sample ID: MW-160S_110223
Date Collected: 11/02/23 11:47
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194824-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 00:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/14/23 00:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 22:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/11/23 22:06*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/11/23 22:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 22:06*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/11/23 22:06*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194824-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194824-1	TRIP BLANK_28	106	77	91	93
240-194824-2	MW-160S_110223	121	84	100	106
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194824-2	MW-160S_110223	89
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	30.3		ug/L		121	63 - 134
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194824-1	TRIP BLANK_28	Total/NA	Water	8260D	
240-194824-2	MW-160S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194824-2	MW-160S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_28
Lab Sample ID: 240-194824-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 17:32

Client Sample ID: MW-160S_110223
Lab Sample ID: 240-194824-2
Date Collected: 11/02/23 11:47
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 22:06
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 00:40

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194824-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client / Lab sampling / Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1605_110223	11/02/23	1147		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194824 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12141 Boston Post St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Nolan Schendel	Arcadis	11-02-23 / 1335	Novi Cold Storage	Arcadis	11-02-23 / 1335
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/3/23 1245	[signature]	EETA	11/3/23 1240
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	11/3/23 1245	[signature]	ET	11-4-23 800

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11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194824

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 194824

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
1 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
2 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194824-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194824-1

		Sample Name:	TRIP BLANK_28				MW-160S_110223			
		Lab Sample ID:	2401948241				2401948242			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194824-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52097R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194824-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_28	240-194824-1	Water	11/02/2023		X	
MW-160S_110223	240-194824-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1605_110223	11/02/23	1147		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194824 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12141 Boston Post St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Nolan Schendel	Arcadis	11-02-23 / 1335	Novi Cold Storage	Arcadis	11-02-23 / 1335
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/3/23 1245	[signature]	EETA	11/3/23 1240
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	11/3/23 12:45	[signature]	ET	11-4-23 800

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Client Sample ID: TRIP BLANK_28
Lab Sample ID: 240-194824-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 17:32*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 17:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 17:32*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 17:32*	*1*

Client Sample ID: MW-160S_110223
Lab Sample ID: 240-194824-2
Date Collected: 11/02/23 11:47
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 00:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/14/23 00:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 22:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 22:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 22:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 22:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 22:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/11/23 22:06*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/11/23 22:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 22:06*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/11/23 22:06*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/28/2023 4:58:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195663-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/28/2023 4:58:55 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195663-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195663-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195663-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 595564 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195663-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195663-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195663-1	TRIP BLANK_133	Water	11/13/23 00:00	11/17/23 09:40
240-195663-2	MW-166S_111323	Water	11/13/23 13:30	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195663-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_133 **Lab Sample ID: 240-195663-1**

No Detections.

Client Sample ID: MW-166S_111323 **Lab Sample ID: 240-195663-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195663-1

Client Sample ID: TRIP BLANK_133
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195663-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/22/23 20:15*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/22/23 20:15*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/22/23 20:15*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/22/23 20:15*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195663-1

Client Sample ID: MW-166S_111323
Date Collected: 11/13/23 13:30
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195663-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 04:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 04:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 05:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 05:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 05:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/22/23 05:51*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 05:51*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 05:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/22/23 05:51*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195663-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195494-F-27 MSD	Matrix Spike Duplicate	92	92	103	90
240-195494-I-27 MS	Matrix Spike	85	93	102	84
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195663-1	TRIP BLANK_133	92	92	107	81
240-195663-2	MW-166S_111323	109	98	101	102
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595564/4	Lab Control Sample	90	98	110	91
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595564/7	Method Blank	95	100	107	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195663-2	MW-166S_111323	97
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595564/7
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/22/23 12:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:54*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/22/23 12:54*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/23 12:54*	*1*

Lab Sample ID: LCS 240-595564/4
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.5		ug/L		118	63 - 134
cis-1,2-Dichloroethene	25.0	28.4		ug/L		114	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	29.9		ug/L		119	75 - 124
Trichloroethene	25.0	23.9		ug/L		95	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595564/4
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	13.0		ug/L		104	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-195494-F-27 MSD
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 135	12	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.4		ug/L		105	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	27.6		ug/L		110	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	25.0	24.1		ug/L		97	61 - 124	4	15
Vinyl chloride	1.0	U	12.5	12.0		ug/L		96	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-195494-I-27 MS
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.7		ug/L		95	66 - 128		
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		113	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	56 - 136		
Trichloroethene	1.0	U	25.0	23.2		ug/L		93	61 - 124		
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195663-2	MW-166S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195663-1	TRIP BLANK_133	Total/NA	Water	8260D	
MB 240-595564/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595564/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-F-27 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-195494-I-27 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195663-2	MW-166S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195663-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_133
Lab Sample ID: 240-195663-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595564	LEE	EET CLE	11/22/23 20:15

Client Sample ID: MW-166S_111323
Lab Sample ID: 240-195663-2
Date Collected: 11/13/23 13:30
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 05:51
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 04:42

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195663-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only		
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Speci / Special Inst
TRIP BLANK_133	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-166S_111323	11/13/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-195663 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): | Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12147 Stark Rd.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/15/23 1330	Novi cold storage	Arcadis	11/15/23 1330
	Arcadis	11/16/23 0845		EETA	10/16/23 10115
	EETA	11/16/23 10120	Received in Laboratory by:	EC	11-17-23 940

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11/28/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195663
Barberton Facility

Client Arcadis Site Name Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

MJS 11-18-23

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195663

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(2) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195663-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-28
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195663-1

		Sample Name:	TRIP BLANK_133				MW-166S_111323			
		Lab Sample ID:	2401956631				2401956632			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195663-1

CADENA Verification Report: 2023-11-28

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52166R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195663-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_133	240-195663-1	Water	11/13/2023		X	
MW-166S_111323	240-195663-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_133	Continuous Calibration Verification %D	Vinyl chloride	+27.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

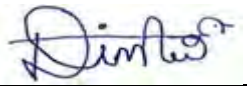
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30167538.402.04
PO # 30167538.402.04

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Sampler Name: Alaina Pitera
Method of Shipment/Carrier:
Shipping/Tracking No:

Site Contact: Christina Weaver
Telephone: 248-994-2240

Lab Contact: Mike DelMonico
Telephone: 330-497-9396

Analysis Turnaround Time
TAT if different from below
10 day
☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

TestAmerica Lab
COC No:
1 of 1
For lab use only
Walk-in client
Lab sampling
Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM						Sample Specific Special Instr
TRIP BLANK_133	---	---		1						1					N	G	X	X	X	X	X	X							1 Trip Blank
MW-166S_111323	11/13/23	1330		6						6					N	G	X	X	X	X	X	X	X						3 VOAs for 8 3 VOAs for 8

240-195663 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12147 Stark Rd.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

MICHIGAN
190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/15/23 1330	Novi cold storage	Arcadis	11/15/23 1330
	Arcadis	11/16/23 0845		EETA	10/16/23 10115
	EETA	11/16/23 10120	Received in Laboratory by:	EC	11-17-23 940

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11/28/2023

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30167538.402.04
PO # 30167538.402.04

Regulatory program: | DW | NPDES | RCRA | Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com

Sampler Name: Alaina Pitera
Method of Shipment/Carrier:
Shipping/Tracking No:

Site Contact: Christina Weaver
Telephone: 248-994-2240

Lab Contact: Mike DelMonico
Telephone: 330-497-9396

TestAmerica Lab
COC No:
1 of 1
For lab use only
Walk-in client
Lab sampling
Job/SDG No:

Analysis Turnaround Time
TAT if different from below
10 day
3 weeks
2 weeks
1 week
2 days
1 day

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specif Special Instr
TRIP BLANK_133	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-166S_111323	11/13/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-195663 Chain of Custody

Possible Hazard Identification
| Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
| Return to Client | Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12147 Stark Rd.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/15/23 1330	Novi cold storage	Arcadis	11/15/23 1330
	Arcadis	11/16/23 0845		EETA	10/16/23 10115
	EETA	11/16/23 10120	Received in Laboratory by:	EC	11-17-23 940

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11/28/2023

Client Sample ID: TRIP BLANK_133
Lab Sample ID: 240-195663-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/22/23 20:15*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/22/23 20:15*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/22/23 20:15*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/22/23 20:15*	*1*

Client Sample ID: MW-166S_111323
Lab Sample ID: 240-195663-2
Date Collected: 11/13/23 13:30
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 04:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 04:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 05:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 05:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 05:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:51	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/22/23 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/22/23 05:51*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 05:51*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 05:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/22/23 05:51*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:49:25 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194771-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:49:25 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194771-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Job ID: 240-194771-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194771-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-187_110123 (240-194771-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194771-1	TRIP BLANK_8	Water	11/01/23 00:00	11/03/23 08:00
240-194771-2	MW-187S_110123	Water	11/01/23 10:28	11/03/23 08:00
240-194771-3	MW-187_110123	Water	11/01/23 11:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194771-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_8 — Lab Sample ID: 240-194771-1

No Detections.

Client Sample ID: MW-187S_110123 — Lab Sample ID: 240-194771-2

No Detections.

Client Sample ID: MW-187_110123 — Lab Sample ID: 240-194771-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Client Sample ID: TRIP BLANK_8
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194771-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:13*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 18:13*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 18:13*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/23 18:13*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Client Sample ID: MW-187S_110123
Date Collected: 11/01/23 10:28
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194771-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/09/23 20:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/23 19:50*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/09/23 19:50*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 19:50*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/09/23 19:50*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Client Sample ID: MW-187_110123
Date Collected: 11/01/23 11:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194771-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*144*	*S1+*	*66 - 120*		*11/10/23 14:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/09/23 20:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 20:14*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 20:14*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/09/23 20:14*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194771-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194771-1	TRIP BLANK_8	104	95	97	101
240-194771-2	MW-187S_110123	99	93	97	102
240-194771-3	MW-187_110123	103	94	97	103
240-194858-C-5 MS	Matrix Spike	98	98	98	101
240-194858-C-5 MSD	Matrix Spike Duplicate	93	94	97	99
LCS 240-594032/5	Lab Control Sample	97	95	95	100
MB 240-594032/9	Method Blank	100	91	94	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194771-2	MW-187S_110123	109
240-194771-3	MW-187_110123	144 S1+
LCS 240-594018/4	Lab Control Sample	82
LCS 240-594170/4	Lab Control Sample	101
MB 240-594018/6	Method Blank	93
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594032/9
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 14:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 14:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/09/23 14:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 14:12*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 14:12*	*1*

Lab Sample ID: LCS 240-594032/5
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	18.1		ug/L		91	70 - 122
Vinyl chloride	20.0	21.9		ug/L		110	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	200	U	4000	3990		ug/L		100	56 - 135
cis-1,2-Dichloroethene	2700		4000	6590		ug/L		97	66 - 128
Tetrachloroethene	2000		4000	6000		ug/L		100	62 - 131
trans-1,2-Dichloroethene	200	U	4000	3770		ug/L		94	56 - 136
Trichloroethene	6200		4000	9820		ug/L		91	61 - 124
Vinyl chloride	200	U	4000	4530		ug/L		113	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MSD
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	200	U	4000	4200		ug/L		105	56 - 135	5	26
cis-1,2-Dichloroethene	2700		4000	6520		ug/L		96	66 - 128	1	14
Tetrachloroethene	2000		4000	6400		ug/L		110	62 - 131	6	20
trans-1,2-Dichloroethene	200	U	4000	4050		ug/L		101	56 - 136	7	15
Trichloroethene	6200		4000	9810		ug/L		91	61 - 124	0	15
Vinyl chloride	200	U	4000	4840		ug/L		121	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.8		ug/L		108	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		66 - 120

Lab Sample ID: 240-194630-D-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594018

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	75		66 - 120

Lab Sample ID: MB 240-594170/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594170

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		11/10/23 10:32	1

Lab Sample ID: LCS 240-594170/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594170

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

Lab Sample ID: 240-194709-B-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594170

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-194709-B-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594170

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	153	S1+	66 - 120

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194771-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194771-2	MW-187S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194771-1	TRIP BLANK_8	Total/NA	Water	8260D	
240-194771-2	MW-187S_110123	Total/NA	Water	8260D	
240-194771-3	MW-187_110123	Total/NA	Water	8260D	
MB 240-594032/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594032/5	Lab Control Sample	Total/NA	Water	8260D	
240-194858-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-194858-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194771-3	MW-187_110123	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194771-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_8
Lab Sample ID: 240-194771-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 18:13

Client Sample ID: MW-187S_110123
Lab Sample ID: 240-194771-2
Date Collected: 11/01/23 10:28
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 19:50
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 20:17

Client Sample ID: MW-187_110123
Lab Sample ID: 240-194771-3
Date Collected: 11/01/23 11:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 20:14
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 14:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194771-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_8	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-187S_110123	11/1/23	1028		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-187_110123	11/1/23	1120		6						6					N	G	X	X	X	X	X	X	X	1

240-194771 Chain of Custody

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12335 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/1/23 1515	Received by: Novi Cold Storage	Arcadis	11/1/23 1515
Relinquished by:	Arcadis	11/2/23 1023	Received by:	EETA	11/2/23 1023
Relinquished by:	EETA	11/2/23 1023	Received in Laboratory by:	EETMC	11-3-23 806

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194771
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194771

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194771-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-17
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM sample -003 SURROGATE recovery was outlying biased high for 1 surrogate. Associated client sample results were non-detect so qualification was not required based on this high bias QC outlier.

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194771-1

		Sample Name:	TRIP BLANK_8				MW-187S_110123				MW-187_110123			
		Lab Sample ID:	2401947711				2401947712				2401947713			
		Sample Date:	11/1/2023				11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194771-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52115R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194771-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_8	240-194771-1	Water	11/01/2023		X	
MW-187S_110123	240-194771-2	Water	11/01/2023		X	X
MW-187_110123	240-194771-3	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_8	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-187S_110123	11/1/23	1028		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-187_110123	11/1/23	1120		6						6					N	G	X	X	X	X	X	X	X	1

240-194771 Chain of Custody

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12335 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
	Arcadis	11/2/23 1023	Jei Hal	EETA	11/2/23 1623
Jei Hal	EETA	11/2/23 1023	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_8
Lab Sample ID: 240-194771-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:13*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 18:13*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 18:13*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/23 18:13*	*1*

Client Sample ID: MW-187S_110123
Lab Sample ID: 240-194771-2
Date Collected: 11/01/23 10:28
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/09/23 20:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/23 19:50*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/09/23 19:50*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 19:50*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/09/23 19:50*	*1*

Client Sample ID: MW-187_110123
Lab Sample ID: 240-194771-3
Date Collected: 11/01/23 11:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*144*	*S1+*	*66 - 120*		*11/10/23 14:06*	*1*

Client Sample ID: MW-187_110123
Lab Sample ID: 240-194771-3

Date Collected: 11/01/23 11:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/09/23 20:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 20:14*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 20:14*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/09/23 20:14*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:43:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194754-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/13/2023 4:43:04 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194754-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194754-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194754-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194754-1	TRIP BLANK_15	Water	11/01/23 00:00	11/03/23 08:00
240-194754-2	MW-214S_110123	Water	11/01/23 14:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_15 — Lab Sample ID: 240-194754-1

No Detections.

Client Sample ID: MW-214S_110123 — Lab Sample ID: 240-194754-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194754-1

Client Sample ID: TRIP BLANK_15
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194754-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:31*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:31*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194754-1

Client Sample ID: MW-214S_110123
Date Collected: 11/01/23 14:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194754-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/09/23 15:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 00:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 00:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 00:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 00:23*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194754-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194754-1	TRIP BLANK_15	102	78	100	96
240-194754-2	MW-214S_110123	102	79	100	94
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194754-2	MW-214S_110123	94
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194754-2	MW-214S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194754-1	TRIP BLANK_15	Total/NA	Water	8260D	
240-194754-2	MW-214S_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_15
Lab Sample ID: 240-194754-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 18:31

Client Sample ID: MW-214S_110123
Lab Sample ID: 240-194754-2
Date Collected: 11/01/23 14:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 00:23
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 15:31

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194754-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_15	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-214S_110123	11/1/23	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194754 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12400 Belden Ct

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	BETNC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194454
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194754

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.4	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194754-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194754-1

		Sample Name:	TRIP BLANK_15				MW-214S_110123			
		Lab Sample ID:	2401947541				2401947542			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194754-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52075R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194754-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_15	240-194754-1	Water	11/01/2023		X	
MW-214S_110123	240-194754-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 02, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 2, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_15	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-214S_110123	11/1/23	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194754 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12400 Belden Ct

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/1/23 1515	Received by: Novi Cold Storage	Arcadis	11/1/23 1515
Relinquished by:	Arcadis	11/2/23 1023	Received by:	EETA	11/2/23 1023
Relinquished by:	EETA	11/2/23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_15
Lab Sample ID: 240-194754-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:31*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:31*	*1*

Client Sample ID: MW-214S_110123
Lab Sample ID: 240-194754-2
Date Collected: 11/01/23 14:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/09/23 15:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 00:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/10/23 00:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 00:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 00:23*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:46:02 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194763-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:46:02 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Client: ARCADIS US Inc
Job ID: 240-194763-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194763-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194763-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-188S_110123 (240-194763-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194763-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194763-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194763-1	TRIP BLANK_14	Water	11/01/23 00:00	11/03/23 08:00
240-194763-2	MW-188S_110123	Water	11/01/23 09:08	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194763-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_14 **Lab Sample ID: 240-194763-1**

No Detections.

Client Sample ID: MW-188S_110123 **Lab Sample ID: 240-194763-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194763-1

Client Sample ID: TRIP BLANK_14
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194763-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/09/23 20:37*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 20:37*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/09/23 20:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/23 20:37*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194763-1

Client Sample ID: MW-188S_110123
Date Collected: 11/01/23 09:08
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194763-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 17:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 02:28*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 02:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 02:28*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/10/23 02:28*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194763-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194763-1	TRIP BLANK_14	105	77	101	99
240-194763-2	MW-188S_110123	107	78	101	99
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194763-2	MW-188S_110123	100
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194763-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194763-2	MW-188S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194763-1	TRIP BLANK_14	Total/NA	Water	8260D	
240-194763-2	MW-188S_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194763-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_14
Lab Sample ID: 240-194763-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 20:37

Client Sample ID: MW-188S_110123
Lab Sample ID: 240-194763-2
Date Collected: 11/01/23 09:08
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 02:28
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 17:54

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194763-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_14	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1885_110123	11/1/23	0908		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194763 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12425 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
[signature]	Arcadis	11/2/23 1023	[signature]	EETA	11/2/23 1023
[signature]	EETA	11/2/23 1023	Received in Laboratory by: [signature]	EETNC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194463
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194763

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194763-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194763-1

Sample Name: MW-188S_110123
Lab Sample ID: 2401947632
Sample Date: 11/1/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194763-1

		Sample Name:	TRIP BLANK_14				MW-188S_110123			
		Lab Sample ID:	2401947631				2401947632			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194763-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52107R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194763-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_14	240-194763-1	Water	11/01/2023		X	
MW-188S_110123	240-194763-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-188S_110123 (240-194763-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_14	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1885_110123	11/1/23	0908		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194763 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12425 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_14
Lab Sample ID: 240-194763-1

Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/09/23 20:37*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 20:37*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/09/23 20:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/23 20:37*	*1*

Client Sample ID: MW-188S_110123
Lab Sample ID: 240-194763-2

Date Collected: 11/01/23 09:08
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 17:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/10/23 02:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 02:28*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 02:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 02:28*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/10/23 02:28*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 5:08:09 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195190-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/20/2023 5:08:09 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195190-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195190-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195190-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195190-1	TRIP BLANK_48	Water	11/08/23 00:00	11/10/23 08:00
240-195190-2	MW-202_110823	Water	11/08/23 14:45	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_48 — Lab Sample ID: 240-195190-1

No Detections.

Client Sample ID: MW-202_110823 — Lab Sample ID: 240-195190-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195190-1

Client Sample ID: TRIP BLANK_48
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195190-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 16:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 16:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 16:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 16:56*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/17/23 16:56*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/17/23 16:56*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/17/23 16:56*	*1*

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Client Sample ID: MW-202_110823
Lab Sample ID: 240-195190-2
Date Collected: 11/08/23 14:45
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/17/23 17:22*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/17/23 17:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 17:22*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/17/23 17:22*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195190-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195190-1	TRIP BLANK_48	85	87	104	88
240-195190-2	MW-202_110823	83	74	100	87
240-195483-B-5 MS	Matrix Spike	85	94	111	92
240-195483-B-5 MSD	Matrix Spike Duplicate	82	86	104	90
LCS 240-594979/6	Lab Control Sample	81	89	108	89
MB 240-594979/10	Method Blank	84	87	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594979/10
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 12:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 12:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 12:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 12:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/17/23 12:40*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/17/23 12:40*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/17/23 12:40*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/17/23 12:40*	*1*

Lab Sample ID: LCS 240-594979/6
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
trans-1,2-Dichloroethene	20.0	18.9		ug/L		95	75 - 124
Trichloroethene	20.0	17.8		ug/L		89	70 - 122
Vinyl chloride	20.0	17.8		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-195483-B-5 MS
Matrix: Water
Analysis Batch: 594979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	24		160	181		ug/L		98	66 - 128
trans-1,2-Dichloroethene	8.0	U	160	156		ug/L		97	56 - 136
Trichloroethene	8.0	U	160	145		ug/L		91	61 - 124
Vinyl chloride	8.0	U	160	141		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195483-B-5 MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 594979

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	24		160	182		ug/L		99	66 - 128	1	14
trans-1,2-Dichloroethene	8.0	U	160	158		ug/L		99	56 - 136	1	15
Trichloroethene	8.0	U	160	147		ug/L		92	61 - 124	1	15
Vinyl chloride	8.0	U	160	150		ug/L		94	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195190-1	TRIP BLANK_48	Total/NA	Water	8260D	
240-195190-2	MW-202_110823	Total/NA	Water	8260D	
MB 240-594979/10	Method Blank	Total/NA	Water	8260D	
LCS 240-594979/6	Lab Control Sample	Total/NA	Water	8260D	
240-195483-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195483-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_48
Lab Sample ID: 240-195190-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594979	HMB	EET CLE	11/17/23 16:56

Client Sample ID: MW-202_110823
Lab Sample ID: 240-195190-2
Date Collected: 11/08/23 14:45
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594979	HMB	EET CLE	11/17/23 17:22

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195190-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 48	11/08/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-202-110823	11/08/23	1445		3						3					N	G	~~X~~ G	X	X		X	X		~~2 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ → 3 VOAs Rousn enterpr. sc

240-195190 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12447 Levan

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	ARCADIS	11/08/23 15:35	Novi cold Storage	ARCADIS	11/08/23 15:35
Relinquished by: Kammer Ley	Arcadis	11/9/23 0850		EETA	11/9/23 1010
Relinquished by:	EETA	11/9/23 1011 5	Received in Laboratory by:	EETK	11.10.23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195190
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkison

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195190

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 20, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195190-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-20
Initial Data Verification completed by CADENA: 2023-11-20
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195190-1

		Sample Name:	TRIP BLANK_48				MW-202_110823			
		Lab Sample ID:	2401951901				2401951902			
		Sample Date:	11/8/2023				11/8/2023			
	Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC										
	OSW-8260D									
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 5:08:12 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195194-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/20/2023 5:08:12 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195194-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195194-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195194-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-203_110723 (240-195194-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195194-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195194-1	TRIP BLANK_33	Water	11/07/23 00:00	11/10/23 08:00
240-195194-2	MW-206_110723	Water	11/07/23 11:05	11/10/23 08:00
240-195194-3	MW-206S_110723	Water	11/07/23 12:07	11/10/23 08:00
240-195194-4	MW-203S_110723	Water	11/07/23 13:50	11/10/23 08:00
240-195194-5	MW-203_110723	Water	11/07/23 14:40	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195194-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_33 — Lab Sample ID: 240-195194-1

No Detections.

Client Sample ID: MW-206_110723 — Lab Sample ID: 240-195194-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	25	J	33	15	ug/L	33.3333		8260D	Total/NA
trans-1,2-Dichloroethene	70		33	17	ug/L	33.3333		8260D	Total/NA
Trichloroethene	860		33	15	ug/L	33.3333		8260D	Total/NA

Client Sample ID: MW-206S_110723 — Lab Sample ID: 240-195194-3

No Detections.

Client Sample ID: MW-203S_110723 — Lab Sample ID: 240-195194-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.8		1.0	0.51	ug/L	1		8260D	Total/NA
Trichloroethene	51		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-203_110723 — Lab Sample ID: 240-195194-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	90		20	9.2	ug/L	20		8260D	Total/NA
trans-1,2-Dichloroethene	230		20	10	ug/L	20		8260D	Total/NA
Trichloroethene	1600		40	18	ug/L	40		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: TRIP BLANK_33
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195194-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 22:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 22:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 22:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/17/23 22:52*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/17/23 22:52*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/17/23 22:52*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/17/23 22:52*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: MW-206_110723
Date Collected: 11/07/23 11:05
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195194-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**25**	**J**	33	15	ug/L			11/17/23 23:40	33.3333
trans-1,2-Dichloroethene	**70**		33	17	ug/L			11/17/23 23:40	33.3333
Trichloroethene	**860**		33	15	ug/L			11/17/23 23:40	33.3333
Vinyl chloride	33	U	33	15	ug/L			11/17/23 23:40	33.3333

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/23 23:40*	*33.3333*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/17/23 23:40*	*33.3333*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/17/23 23:40*	*33.3333*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/23 23:40*	*33.3333*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: MW-206S_110723
Date Collected: 11/07/23 12:07
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195194-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 00:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 00:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 00:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/18/23 00:04*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 00:04*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 00:04*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 00:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: MW-203S_110723
Date Collected: 11/07/23 13:50
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195194-4
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L			11/18/23 00:28	1
trans-1,2-Dichloroethene	2.8		1.0	0.51	ug/L			11/18/23 00:28	1
Trichloroethene	51		1.0	0.44	ug/L			11/18/23 00:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 00:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/18/23 00:28*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*11/18/23 00:28*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 00:28*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 00:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: MW-203_110723
Date Collected: 11/07/23 14:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195194-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**90**		20	9.2	ug/L			11/18/23 00:53	20
trans-1,2-Dichloroethene	**230**		20	10	ug/L			11/18/23 00:53	20
Trichloroethene	**1600**		40	18	ug/L			11/18/23 17:41	40
Vinyl chloride	20	U	20	9.0	ug/L			11/18/23 00:53	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/18/23 00:53*	*20*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 17:41*	*40*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/18/23 00:53*	*20*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*		*11/18/23 17:41*	*40*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/18/23 00:53*	*20*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 17:41*	*40*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/18/23 00:53*	*20*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 17:41*	*40*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195156-C-52 MS	Matrix Spike	110	109	108	106
240-195156-C-52 MSD	Matrix Spike Duplicate	109	112	108	106
240-195194-1	TRIP BLANK_33	115	109	109	109
240-195194-2	MW-206_110723	114	109	110	108
240-195194-3	MW-206S_110723	112	110	111	110
240-195194-4	MW-203S_110723	113	111	111	110
240-195194-5	MW-203_110723	110	107	107	105
240-195194-5	MW-203_110723	117	112	112	111
240-195197-E-4 MS	Matrix Spike	111	114	113	109
240-195197-H-4 MSD	Matrix Spike Duplicate	112	115	114	109
LCS 240-595093/5	Lab Control Sample	100	106	105	99
LCS 240-595129/5	Lab Control Sample	116	122	117	114
MB 240-595093/8	Method Blank	106	108	107	102
MB 240-595129/8	Method Blank	123	118	117	115

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595093/8
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 18:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 18:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/23 18:27*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/17/23 18:27*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/17/23 18:27*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/23 18:27*	*1*

Lab Sample ID: LCS 240-595093/5
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	25.0	22.9		ug/L		92	77 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	12.5	10.7		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195197-E-4 MS
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128
trans-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	20.9		ug/L		83	61 - 124
Vinyl chloride	1.0	U	12.5	10.6		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*113*		*78 - 122*
Dibromofluoromethane (Surr)	*109*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195197-H-4 MSD
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	66 - 128	1	14
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*114*		*78 - 122*
Dibromofluoromethane (Surr)	*109*		*73 - 120*

Lab Sample ID: MB 240-595129/8
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*62 - 137*		*11/18/23 14:52*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*11/18/23 14:52*	*1*
Toluene-d8 (Surr)	*117*		*78 - 122*		*11/18/23 14:52*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/18/23 14:52*	*1*

Lab Sample ID: LCS 240-595129/5
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*114*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	2400		2500	4550		ug/L		86	66 - 128
trans-1,2-Dichloroethene	100	U	2500	2240		ug/L		90	56 - 136
Trichloroethene	440		2500	2480		ug/L		82	61 - 124
Vinyl chloride	50	J	1250	1060		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MSD
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	2400		2500	4500		ug/L		84	66 - 128	1	14
trans-1,2-Dichloroethene	100	U	2500	2160		ug/L		87	56 - 136	4	15
Trichloroethene	440		2500	2390		ug/L		78	61 - 124	4	15
Vinyl chloride	50	J	1250	1050		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195194-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195194-1	TRIP BLANK_33	Total/NA	Water	8260D	
240-195194-2	MW-206_110723	Total/NA	Water	8260D	
240-195194-3	MW-206S_110723	Total/NA	Water	8260D	
240-195194-4	MW-203S_110723	Total/NA	Water	8260D	
240-195194-5	MW-203_110723	Total/NA	Water	8260D	
MB 240-595093/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595093/5	Lab Control Sample	Total/NA	Water	8260D	
240-195197-E-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195197-H-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195194-5	MW-203_110723	Total/NA	Water	8260D	
MB 240-595129/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595129/5	Lab Control Sample	Total/NA	Water	8260D	
240-195156-C-52 MS	Matrix Spike	Total/NA	Water	8260D	
240-195156-C-52 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195194-1

Client Sample ID: TRIP BLANK_33
Lab Sample ID: 240-195194-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595093	CDG	EET CLE	11/17/23 22:52

Client Sample ID: MW-206_110723
Lab Sample ID: 240-195194-2
Date Collected: 11/07/23 11:05
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		33.3333	595093	CDG	EET CLE	11/17/23 23:40

Client Sample ID: MW-206S_110723
Lab Sample ID: 240-195194-3
Date Collected: 11/07/23 12:07
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595093	CDG	EET CLE	11/18/23 00:04

Client Sample ID: MW-203S_110723
Lab Sample ID: 240-195194-4
Date Collected: 11/07/23 13:50
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595093	CDG	EET CLE	11/18/23 00:28

Client Sample ID: MW-203_110723
Lab Sample ID: 240-195194-5
Date Collected: 11/07/23 14:40
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		20	595093	CDG	EET CLE	11/18/23 00:53
Total/NA	Analysis	8260D		40	595129	CDG	EET CLE	11/18/23 17:41

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195194-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

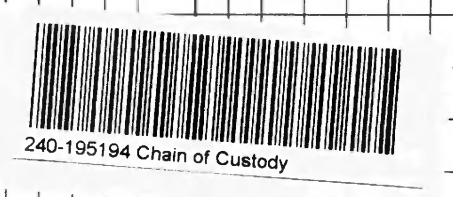
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP ~~On-Site~~ offsite SG	Shipping/Tracking No:			
Project Number: 30167538 ~~401.03~~ SG 402.04				
PO # 30167538 ~~401.03~~ SG 402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 33		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-206_110723	11/07/2023	1105		6						6					N	G		X	X		X	X		~~3 VOAs for 8260B~~ SG ~~3 VOAs for 8260B SIM~~
MW-206s_110723	11/07/2023	1207		3/6 GL						3/6 GL					N	G		X	X		X	X		3 mVOAs, HCL VOAs Rough Estimate Cont. vials
MW-203s_110723	11/07/2023	1350		3						3					N	G		X	X		X	X		
MW-203_110723	11/07/2023	1440		3						3					N	G		X	X		X	X		



MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample address: 12447 Levan
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
[signature]	ARCADIS	11/07/23 15:35	Novi Cold Storage	ARCADIS	11/07/23 15:35
[signature]	Arcadis	11/9/23 0850	[signature]	EETA	11/9/23 10:00
[signature]	EETA	11/9/23 1015	Received in Laboratory by: [signature]	Company: EETNE	Date/Time: 11.10.23 0800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195164
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195194

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(IC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(IC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 20, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195194-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-20
Initial Data Verification completed by CADENA: 2023-11-20
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> SRN - Sample Receipt Non-conformance(headspace) - Sample -005 results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195194-1

Sample Name: MW-203_110723
Lab Sample ID: 2401951945
Sample Date: 11/7/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
cis-1,2-Dichloroethene	156-59-2	90	20	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	230	20	ug/l	UJ
Trichloroethene	79-01-6	1600	40	ug/l	UJ
Vinyl chloride	75-01-4	ND	20	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195194-1

		Sample Name:	TRIP BLANK_33				MW-206_110723				MW-206S_110723				MW-203S_110723				MW-203_110723			
		Lab Sample ID:	2401951941				2401951942				2401951943				2401951944				2401951945			
		Sample Date:	11/7/2023				11/7/2023				11/7/2023				11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	25	33	ug/l	J	ND	1.0	ug/l	---	1.0	1.0	ug/l	---	90	20	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	70	33	ug/l	---	ND	1.0	ug/l	---	2.8	1.0	ug/l	---	230	20	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	860	33	ug/l	---	ND	1.0	ug/l	---	51	1.0	ug/l	---	1600	40	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	33	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	20	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/21/2023 5:30:06 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195294-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/21/2023 5:30:06 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195294-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195294-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195294-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195294-1	TRIP BLANK_36	Water	11/09/23 00:00	11/11/23 08:00
240-195294-2	MW-202S_110923	Water	11/09/23 10:05	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_36 — Lab Sample ID: 240-195294-1

No Detections.

Client Sample ID: MW-202S_110923 — Lab Sample ID: 240-195294-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195294-1

Client Sample ID: TRIP BLANK_36
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195294-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 21:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 21:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 21:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 21:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 21:07*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/19/23 21:07*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 21:07*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195294-1

Client Sample ID: MW-202S_110923
Date Collected: 11/09/23 10:05
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195294-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 21:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 21:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/19/23 21:31*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 21:31*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 21:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 21:31*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195294-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195294-1	TRIP BLANK_36	103	96	100	94
240-195294-2	MW-202S_110923	106	97	98	96
LCS 240-595149/4	Lab Control Sample	103	98	97	101
MB 240-595149/7	Method Blank	103	95	99	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.7		ug/L		103	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	24.1		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			25.0	25.1		ug/L		100	75 - 124		
Trichloroethene			25.0	25.4		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135		
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128		
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136		
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124		
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 595149

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195294-1	TRIP BLANK_36	Total/NA	Water	8260D	
240-195294-2	MW-202S_110923	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_36
Lab Sample ID: 240-195294-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 21:07

Client Sample ID: MW-202S_110923
Lab Sample ID: 240-195294-2
Date Collected: 11/09/23 10:05
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 21:31

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195294-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Lab sampling
Project Name: Ford LTP ~~On-Site~~ offsite	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.~~401.03~~ 402.04	Shipping/Tracking No:			
PO # 30167538.~~401.03~~ 402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 36	11/09/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2022s_110923	11/09/23	1005		3						3					N	G	~~X~~ GC	X	X	~~X~~ GC	X	X		~~3 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ → 3 VOAs Rough Enterprises

240-195294 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample address: 12447 Levan
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/09/23 15:00	Novi Cold Storage	ARCADIS	11/09/23 15:00
[signature]	Arcadis	11/10/23 1335	[signature]	EETA	11/10/23 1355
[signature]	EETA	11/10/23 1340	Alissa Atkinson	EETNC	11.11.23 0800

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11/21/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195294-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195294-1

		Sample Name:	TRIP BLANK_36				MW-202S_110923			
		Lab Sample ID:	2401952941				2401952942			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---				
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---				
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195190-1

CADENA Verification Report: 2023-11-20

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52119R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195190-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis
					VOC
TRIP BLANK_48	240-195190-1	Water	11/08/2023		X
MW-202_110823	240-195190-2	Water	11/08/2023		X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 48	11/08/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-202-110823	11/08/23	1445		3						3					N	G	~~X~~	X	X		X	X		~~3 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ 3 VOAs Roush enterprises

240-195190 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12447 Levan
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	ARCADIS	11/08/23 15:35	Novi Cold Storage	ARCADIS	11/08/23 15:35
Relinquished by:	Arcadis	11/9/23 0850		EEEA	11/9/23 1010
Relinquished by:	EEEA	11/9/23 1011 5		EETC	11.10.23 0800

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11/20/2023

Client Sample ID: TRIP BLANK_48
Lab Sample ID: 240-195190-1

Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 16:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 16:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 16:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/17/23 16:56*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/17/23 16:56*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/17/23 16:56*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/17/23 16:56*	*1*

Client Sample ID: MW-202_110823
Lab Sample ID: 240-195190-2

Date Collected: 11/08/23 14:45
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/17/23 17:22*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/17/23 17:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 17:22*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/17/23 17:22*	*1*

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195194-1

CADENA Verification Report: 2023-11-20

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52121R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195194-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis
					VOC
TRIP BLANK_33	240-195194-1	Water	11/07/2023		X
MW-206_110723	240-195194-2	Water	11/07/2023		X
MW-206S_110723	240-195194-3	Water	11/07/2023		X
MW-203S_110723	240-195194-4	Water	11/07/2023		X
MW-203_110723	240-195194-5	Water	11/07/2023		X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-203_110723 (240-195194-5). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials < 6 mm	Non-detect	No Action
	Detect	No Action
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 07, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 7, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

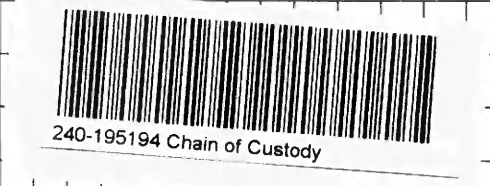
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP ~~On-Site~~ offsite SG	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538 ~~401.03~~ 402.04 SG				
PO # 30167538 ~~401.03~~ 402.04 SG				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite / Grab	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 33		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-206_110723	11/07/2023	1105		6						6					N	G		X	X		X	X		~~3 VOAs for 8260B~~ SG ~~3 VOAs for 8260B SIM~~
MW-206s_110723	11/07/2023	1207		3/6 GL						3/6 GL					N	G		X	X		X	X		3 mJ VOAs, HCL VOAs Rush Estimate Conf VOAs
MW-203s_110723	11/07/2023	1350		3						3					N	G		X	X		X	X		
MW-203_110723	11/07/2023	1440		3						3					N	G		X	X		X	X		



MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample address: 12447 Levan
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
[signature]	ARCADIS	11/07/23 15:35	Novi Cold Storage	ARCADIS	11/07/23 15:35
[signature]	Arcadis	11/9/23 0850	[signature]	EECA	11/9/23 10:00
[signature]	EETA	11/9/23 1015	Received in Laboratory by: [signature]	EETNE	11-10-23 0800

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11/20/2023

Client Sample ID: TRIP BLANK_33
Lab Sample ID: 240-195194-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 22:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 22:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 22:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/17/23 22:52*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/17/23 22:52*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/17/23 22:52*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/17/23 22:52*	*1*

Client Sample ID: MW-206_110723
Lab Sample ID: 240-195194-2
Date Collected: 11/07/23 11:05
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**25**	**J**	33	15	ug/L			11/17/23 23:40	33.3333
trans-1,2-Dichloroethene	**70**		33	17	ug/L			11/17/23 23:40	33.3333
Trichloroethene	**860**		33	15	ug/L			11/17/23 23:40	33.3333
Vinyl chloride	33	U	33	15	ug/L			11/17/23 23:40	33.3333

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/23 23:40*	*33.3333*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/17/23 23:40*	*33.3333*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/17/23 23:40*	*33.3333*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/23 23:40*	*33.3333*

Client Sample ID: MW-206S_110723
Lab Sample ID: 240-195194-3
Date Collected: 11/07/23 12:07
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 00:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 00:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 00:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/18/23 00:04*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 00:04*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 00:04*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 00:04*	*1*

Client Sample ID: MW-203S_110723
Lab Sample ID: 240-195194-4
Date Collected: 11/07/23 13:50
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**1.0**		1.0	0.46	ug/L			11/18/23 00:28	1

Client Sample ID: MW-203S_110723
Lab Sample ID: 240-195194-4
Date Collected: 11/07/23 13:50
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	**2.8**		1.0	0.51	ug/L			11/18/23 00:28	1
Trichloroethene	**51**		1.0	0.44	ug/L			11/18/23 00:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 00:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/18/23 00:28*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*11/18/23 00:28*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 00:28*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 00:28*	*1*

Client Sample ID: MW-203_110723
Lab Sample ID: 240-195194-5
Date Collected: 11/07/23 14:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**90**	J	20	9.2	ug/L			11/18/23 00:53	20
trans-1,2-Dichloroethene	**230**	J	20	10	ug/L			11/18/23 00:53	20
Trichloroethene	**1600**	J	40	18	ug/L			11/18/23 17:41	40
Vinyl chloride	20	~~U~~ UJ	20	9.0	ug/L			11/18/23 00:53	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/18/23 00:53*	*20*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 17:41*	*40*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/18/23 00:53*	*20*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*		*11/18/23 17:41*	*40*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/18/23 00:53*	*20*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 17:41*	*40*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/18/23 00:53*	*20*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 17:41*	*40*

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195294-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52131R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195294-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_36	240-195294-1	Water	11/09/2023		X	
MW-202S_110923	240-195294-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP ~~On-Site~~ offsite	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.~~401.05~~ 402.04	Shipping/Tracking No:			
PO # 30167538.~~401.05~~ 402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 36	11/09/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-202s_110923	11/09/23	1005		3						3					N	G	~~X~~ GC	X	X	~~X~~ GC	X	X		~~3 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ → 3 VOAs Rough Enterprises

240-195294 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample address: 12447 Levan
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/09/23 15:00	Novi Cold Storage	ARCADIS	11/09/23 15:00
[signature]	Arcadis	11/10/23 1335	[signature]	EETA	11/10/23 1335
[signature]	EETA	11/10/23 1340	Received in Laboratory by: [signature]	EETNC	11.11.23 0800

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Client Sample ID: TRIP BLANK_36
Lab Sample ID: 240-195294-1

Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 21:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 21:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 21:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 21:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 21:07*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/19/23 21:07*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 21:07*	*1*

Client Sample ID: MW-202S_110923
Lab Sample ID: 240-195294-2

Date Collected: 11/09/23 10:05
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 21:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 21:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 21:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/19/23 21:31*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 21:31*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 21:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 21:31*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 7:41:40 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195695-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 7:41:40 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195695-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195695-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195695-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.3°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 595765 recovered above the upper control limit for 1,1-Dichloroethene and Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-189S_111523 (240-195695-2) and MW-189_111523 (240-195695-3).

Method 8260D: No MS/MSD in batch 595765 due to an auto sampler fault: MW-189S_111523 (240-195695-2) and MW-189_111523 (240-195695-3).

Method 8260D_SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-189S_111523 (240-195695-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195695-1	TRIP BLANK_19	Water	11/15/23 00:00	11/17/23 08:00
240-195695-2	MW-189S_111523	Water	11/15/23 14:58	11/17/23 08:00
240-195695-3	MW-189_111523	Water	11/15/23 16:08	11/17/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Client Sample ID: TRIP BLANK_19 — Lab Sample ID: 240-195695-1

No Detections.

Client Sample ID: MW-189S_111523 — Lab Sample ID: 240-195695-2

No Detections.

Client Sample ID: MW-189_111523 — Lab Sample ID: 240-195695-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Client Sample ID: TRIP BLANK_19

Date Collected: 11/15/23 00:00
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/27/23 14:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 14:43*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 14:43*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/27/23 14:43*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Client Sample ID: MW-189S_111523
Date Collected: 11/15/23 14:58
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/29/23 06:01	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/29/23 06:01*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/27/23 14:02*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/27/23 14:02*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/27/23 14:02*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/27/23 14:02*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Client Sample ID: MW-189_111523

Date Collected: 11/15/23 16:08
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/29/23 06:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/27/23 14:25*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 14:25*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/27/23 14:25*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/27/23 14:25*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195695-1	TRIP BLANK_19	118	99	103	105
240-195695-2	MW-189S_111523	91	87	102	88
240-195695-3	MW-189_111523	96	99	112	92
LCS 240-595763/4	Lab Control Sample	115	102	102	106
LCS 240-595765/4	Lab Control Sample	83	94	103	86
MB 240-595763/7	Method Blank	117	99	104	104
MB 240-595765/7	Method Blank	94	94	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195695-2	MW-189S_111523	93
240-195695-3	MW-189_111523	95
LCS 240-595985/4	Lab Control Sample	93
MB 240-595985/6	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595763/7
Matrix: Water
Analysis Batch: 595763

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/27/23 12:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 12:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 12:16*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 12:16*	*1*

Lab Sample ID: LCS 240-595763/4
Matrix: Water
Analysis Batch: 595763

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	9.14		ug/L		73	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/27/23 12:52*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/27/23 12:52*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 12:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/27/23 12:52*	*1*

Lab Sample ID: LCS 240-595765/4
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	28.8		ug/L		115	77 - 123
Tetrachloroethene	25.0	29.6		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	30.0		ug/L		120	75 - 124
Trichloroethene	25.0	27.3		ug/L		109	70 - 122
Vinyl chloride	12.5	14.6		ug/L		117	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595985/6
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/29/23 05:13*	*1*

Lab Sample ID: LCS 240-595985/4
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*

Lab Sample ID: 240-195693-D-6 MS
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195693-I-6 MSD
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

GC/MS VOA

Analysis Batch: 595763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195695-1	TRIP BLANK_19	Total/NA	Water	8260D	
MB 240-595763/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595763/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195695-2	MW-189S_111523	Total/NA	Water	8260D	
240-195695-3	MW-189_111523	Total/NA	Water	8260D	
MB 240-595765/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595765/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195695-2	MW-189S_111523	Total/NA	Water	8260D SIM	
240-195695-3	MW-189_111523	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Client Sample ID: TRIP BLANK_19
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 14:43

Client Sample ID: MW-189S_111523
Date Collected: 11/15/23 14:58
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 14:02
Total/NA	Analysis	8260D SIM		2	595985	CS	EET CLE	11/29/23 06:01

Client Sample ID: MW-189_111523
Date Collected: 11/15/23 16:08
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 14:25
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 06:25

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195695-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

4.2/5.3

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other |

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_19		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1895_111523	11/15/23	1458		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-189_111523	11/15/23	1608		6						6					N	G	X	X	X	X	X	X	X	

240-195695 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12641 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-16-23/0745	Novi cold storage	Arcadis	11-16-23/0745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 1220		EENA	11/16/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EENA	11/16/23		EC	11-17-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195695

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) MJC 11-18-23
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y) (Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 19595

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195695-1
Sample date: 2023-11-15
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195695-1

		Sample Name:	TRIP BLANK_19				MW-189S_111523				MW-189_111523			
		Lab Sample ID:	2401956951				2401956952				2401956953			
		Sample Date:	11/15/2023				11/15/2023				11/15/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	4.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195695-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52167R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195695-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_19	240-195695-1	Water	11/15/2023		X	
MW-189S_111523	240-195695-2	Water	11/15/2023		X	X
MW-189_111523	240-195695-3	Water	11/15/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
MW-189S_111523 MW-189_111523	Continuous Calibration Verification %D	1,1-Dichloroethene	+30.5%
		Vinyl chloride	+21%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

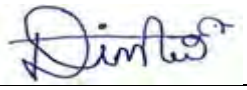
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
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Chain of Custody Record

4.2/5.3

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_19		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1895_111523	11/15/23	1458		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-189_111523	11/15/23	1608		6						6					N	G	X	X	X	X	X	X	X	

240-195695 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12641 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-16-23/0749	Novi cold Storage	Arcadis	11-16-23/0745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/16/23 1220	[signature]	EEA	11/16/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEA	11/16/23	[signature]	EC	11-17-23 800

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12/01/2023

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Chain of Custody Record

4.2/5.3

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other |

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_19		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1895_111523	11/15/23	1458		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-189_111523	11/15/23	1608		6						6					N	G	X	X	X	X	X	X	X	

240-195695 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12641 Stark
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Nolan Schendel	Arcadis	11-16-23/0745	Received by: Novi cold storage	Arcadis	11-16-23/0745
Relinquished by: Jammer Sky	Arcadis	11/16/23 1220	Received by:	EENA	11/16/23
Relinquished by:	Company: EENA	Date/Time: 11/16/23	Received in Laboratory by:	Company: EC	Date/Time: 11-17-23 800

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12/01/2023

Client Sample ID: TRIP BLANK_19
Lab Sample ID: 240-195695-1
Date Collected: 11/15/23 00:00
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/27/23 14:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 14:43*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 14:43*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/27/23 14:43*	*1*

Client Sample ID: MW-189S_111523
Lab Sample ID: 240-195695-2
Date Collected: 11/15/23 14:58
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/29/23 06:01	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/29/23 06:01*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	~~U~~ UJ	1.0	0.49	ug/L			11/27/23 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:02	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/27/23 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/27/23 14:02*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/27/23 14:02*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/27/23 14:02*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/27/23 14:02*	*1*

Client Sample ID: MW-189_111523
Lab Sample ID: 240-195695-3
Date Collected: 11/15/23 16:08
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/29/23 06:25*	*1*

Client Sample ID: MW-189_111523
Date Collected: 11/15/23 16:08
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195695-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	~~U~~ UJ	1.0	0.49	ug/L			11/27/23 14:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:25	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/27/23 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/27/23 14:25*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 14:25*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/27/23 14:25*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/27/23 14:25*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:32:54 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195670-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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Authorization

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11/27/2023 4:32:54 AM

Authorized for release by
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195670-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195670-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195670-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D_SIM: The MS/MSD for analytical batch 240-595686 was not analyzed due to instrument malfunction.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195670-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195670-1	TRIP BLANK_88	Water	11/14/23 00:00	11/17/23 09:40
240-195670-2	MW-190_111423	Water	11/14/23 15:09	11/17/23 09:40
240-195670-3	MW-190S_111423	Water	11/14/23 16:12	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195670-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_88 — Lab Sample ID: 240-195670-1

No Detections.

Client Sample ID: MW-190_111423 — Lab Sample ID: 240-195670-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.85	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-190S_111423 — Lab Sample ID: 240-195670-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.74	J	1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

Client Sample ID: TRIP BLANK_88
Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195670-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 19:03*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 19:03*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 19:03*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 19:03*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

Client Sample ID: MW-190_111423
Date Collected: 11/14/23 15:09
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195670-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 21:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 21:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:28	1
cis-1,2-Dichloroethene	**0.85**	**J**	1.0	0.46	ug/L			11/22/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 19:28*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 19:28*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 19:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

Client Sample ID: MW-190S_111423
Date Collected: 11/14/23 16:12
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195670-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 21:36*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:52	1
cis-1,2-Dichloroethene	**0.74**	**J**	1.0	0.46	ug/L			11/22/23 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 19:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/22/23 19:52*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 19:52*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 19:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195670-1	TRIP BLANK_88	111	97	101	99
240-195670-2	MW-190_111423	110	97	99	97
240-195670-3	MW-190S_111423	112	95	100	99
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195670-2	MW-190_111423	99
240-195670-3	MW-190S_111423	100
LCS 240-595686/4	Lab Control Sample	102
MB 240-595686/5	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	23.4		ug/L		94	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		100	77 - 123		
Tetrachloroethene			25.0	21.9		ug/L		88	76 - 123		
trans-1,2-Dichloroethene			25.0	25.4		ug/L		102	75 - 124		
Trichloroethene			25.0	24.6		ug/L		98	70 - 122		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595686/5
Matrix: Water
Analysis Batch: 595686

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 15:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/24/23 15:15*	*1*

Lab Sample ID: LCS 240-595686/4
Matrix: Water
Analysis Batch: 595686

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.2		ug/L		102	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195670-1

GC/MS VOA

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195670-1	TRIP BLANK_88	Total/NA	Water	8260D	
240-195670-2	MW-190_111423	Total/NA	Water	8260D	
240-195670-3	MW-190S_111423	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195670-2	MW-190_111423	Total/NA	Water	8260D SIM	
240-195670-3	MW-190S_111423	Total/NA	Water	8260D SIM	
MB 240-595686/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595686/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195670-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_88
Lab Sample ID: 240-195670-1
Date Collected: 11/14/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 19:03

Client Sample ID: MW-190_111423
Lab Sample ID: 240-195670-2
Date Collected: 11/14/23 15:09
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 19:28
Total/NA	Analysis	8260D SIM		1	595686	CS	EET CLE	11/24/23 21:12

Client Sample ID: MW-190S_111423
Lab Sample ID: 240-195670-3
Date Collected: 11/14/23 16:12
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 19:52
Total/NA	Analysis	8260D SIM		1	595686	CS	EET CLE	11/24/23 21:36

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195670-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only	
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Walk-in client	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling	
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:	
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_88		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-190_111923	11/14/23	1509		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-190S_111423	11/14/23	1612		6						6					N	G	X	X	X	X	X	X	X	

240-195670 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12725 Fairlane St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

MICHIGAN
LO

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-15-23/0700	Novi Cold Storage	Arcadis	11-15-23/0700
[signature]	Arcadis	11/16/23 0845	[signature]	EEA	11/16/23 1011
[signature]	EEA	11/16/23 1020	Received in Laboratory by: [signature]	Company: EC	Date/Time: 11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195670
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23 Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) MJS 11-18-23
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195670

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195670-1
Sample date: 2023-11-14
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch QC issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195670-1

		Sample Name:	TRIP BLANK_88				MW-190_111423				MW-190S_111423			
		Lab Sample ID:	2401956701				2401956702				2401956703			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.85	1.0	ug/l	J	0.74	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195670-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52162R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195670-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_88	240-195670-1	Water	11/14/2023		X	
MW-190_111423	240-195670-2	Water	11/14/2023		X	X
MW-190S_111423	240-195670-3	Water	11/14/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

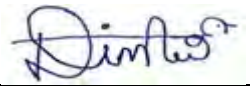
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: (DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client / Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_88		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-190_111923	11/14/23	1509		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-1905_111423	11/14/23	1612		6						6					N	G	X	X	X	X	X	X	X	

240-195670 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): (Return to Client, ✓ Disposal By Lab, Archive For, Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12725 Fairlane St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

MICHIGAN

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-15-23/0700	Novi Cold Storage	Arcadis	11-15-23/0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0945		EETA	11/16/23 1011
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/23 1020		EC	11-17-23 9:40

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11/27/2023

Client Sample ID: TRIP BLANK_88
Lab Sample ID: 240-195670-1
Date Collected: 11/14/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 19:03*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 19:03*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 19:03*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 19:03*	*1*

Client Sample ID: MW-190_111423
Lab Sample ID: 240-195670-2
Date Collected: 11/14/23 15:09
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 21:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 21:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:28	1
cis-1,2-Dichloroethene	**0.85**	**J**	1.0	0.46	ug/L			11/22/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 19:28*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 19:28*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 19:28*	*1*

Client Sample ID: MW-190S_111423
Lab Sample ID: 240-195670-3
Date Collected: 11/14/23 16:12
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 21:36*	*1*

Client Sample ID: MW-190S_111423
Lab Sample ID: 240-195670-3

Date Collected: 11/14/23 16:12
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:52	1
cis-1,2-Dichloroethene	**0.74**	**J**	1.0	0.46	ug/L			11/22/23 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 19:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/22/23 19:52*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 19:52*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 19:52*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 6:57:59 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195188-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/24/2023 6:57:59 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195188-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Job ID: 240-195188-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195188-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
Method 8260D: The MS/MSD for batch 595117 was not reported because the parent sample needed a different dilution. TRIP BLANK_32 (240-195188-1) and MW-128S_110723 (240-195188-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195188-1	TRIP BLANK_32	Water	11/07/23 00:00	11/10/23 08:00
240-195188-2	MW-128S_110723	Water	11/07/23 12:27	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195188-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_32 **Lab Sample ID: 240-195188-1**

No Detections.

Client Sample ID: MW-128S_110723 **Lab Sample ID: 240-195188-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Client Sample ID: TRIP BLANK_32
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195188-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/23 14:19*	*1*
4-Bromofluorobenzene (Surr)	*66*		*56 - 136*		*11/18/23 14:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/18/23 14:19*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/18/23 14:19*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Client Sample ID: MW-128S_110723
Date Collected: 11/07/23 12:27
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195188-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 09:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/21/23 09:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/23 16:17*	*1*
4-Bromofluorobenzene (Surr)	*71*		*56 - 136*		*11/18/23 16:17*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/18/23 16:17*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 16:17*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195188-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195188-1	TRIP BLANK_32	100	66	95	101
240-195188-2	MW-128S_110723	102	71	104	109
LCS 240-595117/5	Lab Control Sample	93	83	103	99
MB 240-595117/9	Method Blank	107	76	108	114

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195188-2	MW-128S_110723	100
240-195201-H-2 MS	Matrix Spike	104
240-195201-N-2 MSD	Matrix Spike Duplicate	103
LCS 240-595348/4	Lab Control Sample	101
MB 240-595348/6	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595117/9
Matrix: Water
Analysis Batch: 595117

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 11:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 11:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 11:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 11:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 11:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 11:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/18/23 11:59*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/23 11:59*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/18/23 11:59*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 11:59*	*1*

Lab Sample ID: LCS 240-595117/5
Matrix: Water
Analysis Batch: 595117

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.5		ug/L		97	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		93	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595348/6
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 08:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/21/23 08:16*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-595348/4
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195201-H-2 MS
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.72		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195201-N-2 MSD
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195188-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195188-1	TRIP BLANK_32	Total/NA	Water	8260D	
240-195188-2	MW-128S_110723	Total/NA	Water	8260D	
MB 240-595117/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595117/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195188-2	MW-128S_110723	Total/NA	Water	8260D SIM	
MB 240-595348/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595348/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195201-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195201-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195188-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_32
Lab Sample ID: 240-195188-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595117	AJS	EET CLE	11/18/23 14:19

Client Sample ID: MW-128S_110723
Lab Sample ID: 240-195188-2
Date Collected: 11/07/23 12:27
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595117	AJS	EET CLE	11/18/23 16:17
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 09:27

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195188-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_32	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-128S_110723	11/07/2023	1227		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195188 Chain of Custody

MICHIGAN
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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34360 Capitol

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	11/07/2023 1350	Novi Cold Storage	Arcadis	11/07/2023 1350
Sommer Day	Arcadis	11/9/23 0850		EETA	11/9/2023 1000
	EETA	11/9/23 1015	Received in Laboratory by:	EETNC	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195188
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes) No	
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y/N) (Y/N) (Y/N)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # 195188

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(IC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(IC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195188-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195188-1

		Sample Name:	TRIP BLANK_32				MW-128S_110723			
		Lab Sample ID:	2401951881				2401951882			
		Sample Date:	11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195188-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52133R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195188-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_32	240-195188-1	Water	11/07/2023		X	
MW-128S_110723	240-195188-2	Water	11/07/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1285_110723	11/07/2023	1227		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195188 Chain of Custody

MICHIGAN
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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34360 Capitol

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sierra Sider	Arcadis	11/07/2023 1350	Received by: Novi Cold Storage	Arcadis	11/07/2023 1350
Relinquished by: Sommer Sky	Arcadis	11/9/23 0850	Received by:	EETA	11/9/2023 1000
Relinquished by:	EETA	11/9/23 1015	Received in Laboratory by:	EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_32
Lab Sample ID: 240-195188-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/23 14:19*	*1*
4-Bromofluorobenzene (Surr)	*66*		*56 - 136*		*11/18/23 14:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/18/23 14:19*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/18/23 14:19*	*1*

Client Sample ID: MW-128S_110723
Lab Sample ID: 240-195188-2
Date Collected: 11/07/23 12:27
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 09:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/21/23 09:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/23 16:17*	*1*
4-Bromofluorobenzene (Surr)	*71*		*56 - 136*		*11/18/23 16:17*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/18/23 16:17*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 16:17*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:42:49 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195396-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 4:42:49 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195396-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195396-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195396-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195396-1	TRIP BLANK_131	Water	11/10/23 00:00	11/14/23 10:00
240-195396-2	MW-146S_111023	Water	11/10/23 10:40	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195396-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_131 — Lab Sample ID: 240-195396-1

No Detections.

Client Sample ID: MW-146S_111023 — Lab Sample ID: 240-195396-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

Client Sample ID: TRIP BLANK_131
Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195396-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 16:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 16:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 16:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 16:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 16:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/19/23 16:48*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/19/23 16:48*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 16:48*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 16:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

Client Sample ID: MW-146S_111023
Date Collected: 11/10/23 10:40
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195396-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 18:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:12*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/19/23 17:12*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/19/23 17:12*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:12*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195284-B-4 MS	Matrix Spike	98	90	104	95
240-195284-B-4 MSD	Matrix Spike Duplicate	100	90	106	96
240-195396-1	TRIP BLANK_131	101	84	104	93
240-195396-2	MW-146S_111023	105	87	106	95
LCS 240-595140/5	Lab Control Sample	102	89	107	98
MB 240-595140/9	Method Blank	107	88	107	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195396-2	MW-146S_111023	97
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595140/9
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 15:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 15:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 15:12*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 15:12*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 15:12*	*1*

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	17.8		ug/L		89	63 - 134		
cis-1,2-Dichloroethene			20.0	17.2		ug/L		86	77 - 123		
Tetrachloroethene			20.0	19.7		ug/L		99	76 - 123		
trans-1,2-Dichloroethene			20.0	17.0		ug/L		85	75 - 124		
Trichloroethene			20.0	16.8		ug/L		84	70 - 122		
Vinyl chloride			20.0	19.9		ug/L		100	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	400	335		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	510		400	853		ug/L		85	66 - 128		
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136		
Trichloroethene	20	U	400	324		ug/L		81	61 - 124		
Vinyl chloride	380		400	769		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MSD
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	355		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	510		400	878		ug/L		91	66 - 128	3	14
Tetrachloroethene	20	U	400	398		ug/L		99	62 - 131	7	20
trans-1,2-Dichloroethene	20	U	400	363		ug/L		91	56 - 136	8	15
Trichloroethene	20	U	400	349		ug/L		87	61 - 124	7	15
Vinyl chloride	380		400	760		ug/L		94	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195396-1

GC/MS VOA

Analysis Batch: 595140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195396-1	TRIP BLANK_131	Total/NA	Water	8260D	
240-195396-2	MW-146S_111023	Total/NA	Water	8260D	
MB 240-595140/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595140/5	Lab Control Sample	Total/NA	Water	8260D	
240-195284-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195284-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195396-2	MW-146S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195396-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_131
Lab Sample ID: 240-195396-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 16:48

Client Sample ID: MW-146S_111023
Lab Sample ID: 240-195396-2
Date Collected: 11/10/23 10:40
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 17:12
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 18:18

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195396-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alana Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_131	[redacted]	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1465_111023	11/10/23	1040		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195396 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34867 Capitol St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	Navi cold storage 11/10/23	1530	Arcadis	11/10/23 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/13/23 0835		EEA	11/13/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/13/23		EETNC	11.14.23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195396-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195396-1

		Sample Name:	TRIP BLANK_131				MW-146S_111023			
		Lab Sample ID:	2401953961				2401953962			
		Sample Date:	11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195396-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52153R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195396-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_131	240-195396-1	Water	11/10/2023		X	
MW-146S_111023	240-195396-2	Water	11/10/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

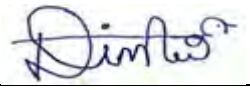
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN ~~190~~

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alana Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_131	~~[illegible]~~	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1465_11023	11/10/23	1040		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195396 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34867 Capitol St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	Novi cold storage 11/10/23 1530		Arcadis	11/10/23 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/13/23 0835		EEA	11/13/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/13/23	Alisa Atkins	EETNC	11.14.23 1000

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Client Sample ID: TRIP BLANK_131
Lab Sample ID: 240-195396-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 16:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 16:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 16:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 16:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 16:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/19/23 16:48*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/19/23 16:48*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 16:48*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 16:48*	*1*

Client Sample ID: MW-146S_111023
Lab Sample ID: 240-195396-2
Date Collected: 11/10/23 10:40
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 18:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:12*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/19/23 17:12*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/19/23 17:12*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:12*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 6:59:46 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195200-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/24/2023 6:59:46 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195200-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195200-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195200-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195200-1	TRIP BLANK_34	Water	11/08/23 00:00	11/10/23 08:00
240-195200-2	MW-150S_110823	Water	11/08/23 13:40	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195200-1

Client Sample ID: TRIP BLANK_34 — Lab Sample ID: 240-195200-1

No Detections.

Client Sample ID: MW-150S_110823 — Lab Sample ID: 240-195200-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.80	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195200-1

Client Sample ID: TRIP BLANK_34
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195200-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 16:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 16:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 16:39*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 16:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195200-1

Client Sample ID: MW-150S_110823
Date Collected: 11/08/23 13:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195200-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 02:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 06:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 06:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 06:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:17	1
Vinyl chloride	**0.80**	**J**	1.0	0.45	ug/L			11/16/23 06:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 06:17*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 06:17*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 06:17*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 06:17*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195200-1	TRIP BLANK_34	95	97	99	95
240-195200-2	MW-150S_110823	96	98	101	96
240-195201-F-2 MS	Matrix Spike	93	102	102	95
240-195201-I-2 MSD	Matrix Spike Duplicate	93	101	105	95
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195200-2	MW-150S_110823	100
240-195206-K-2 MS	Matrix Spike	98
240-195206-O-2 MSD	Matrix Spike Duplicate	101
LCS 240-595505/4	Lab Control Sample	97
MB 240-595505/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			20.0	18.1		ug/L		90	77 - 123		
Tetrachloroethene			20.0	17.1		ug/L		86	76 - 123		
trans-1,2-Dichloroethene			20.0	18.8		ug/L		94	75 - 124		
Trichloroethene			20.0	18.6		ug/L		93	70 - 122		
Vinyl chloride			20.0	23.1		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128		
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136		
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124		
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195201-I-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595505/6
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/21/23 21:18*	*1*

Lab Sample ID: LCS 240-595505/4
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195206-K-2 MS
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195206-O-2 MSD
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195200-2	MW-150S_110823	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195201-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195200-1	TRIP BLANK_34	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195200-2	MW-150S_110823	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-K-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195206-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_34
Lab Sample ID: 240-195200-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 16:39

Client Sample ID: MW-150S_110823
Lab Sample ID: 240-195200-2
Date Collected: 11/08/23 13:40
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 06:17
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 02:25

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195200-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

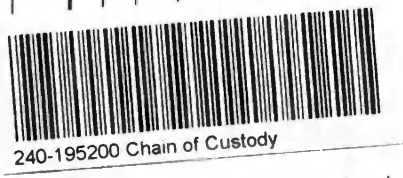
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28990 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_34	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-150s_110823	11-8-23	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



MICHIGAN 190

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments: 34380 BEACON

Sample Address:

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11-8-23 / 1445	Received by: Novi Cold Storage	Arcadis	11/8/23 / 1445
Relinquished by:	Arcades	11/9/23 0850	Received by:	EETA	11/9/23 10:00
Relinquished by:	EETA	11/9/23 10:15	Received in Laboratory by:	EE TAL	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 145200
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkison

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195200

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: ~~22~~	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: ~~22~~	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195200-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195200-1

		Sample Name:	TRIP BLANK_34				MW-150S_110823			
		Lab Sample ID:	2401952001				2401952002			
		Sample Date:	11/8/2023				11/8/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.80	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195200-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52137R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195200-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_34	240-195200-1	Water	11/08/2023		X	
MW-150S_110823	240-195200-2	Water	11/08/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

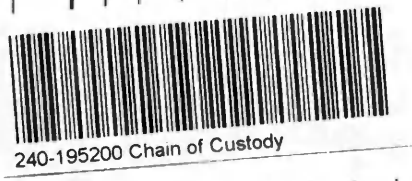
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs
Phone: 248-994-2240	Sampler Name: JOE FOSTER	TAT if different from below: 10 day; 3 weeks; 2 weeks (✓); 1 week; 2 days; 1 day		For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_34	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-150s_110823	11-8-23	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



MICHIGAN 190

Possible Hazard Identification: Non-Hazard (✓) Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client Disposal By Lab (✓) Archive For ___ Months

Special Instructions/QC Requirements & Comments: 34380 BEACON

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Joe Foster	Arcadis	11-8-23 / 1445	Novi Cold Storage	Arcadis	11/8/23 / 1445
Kammerley	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
	EETA	11/9/23 10:15	Received in Laboratory by: Alissa Atkinson	EE TN	11-10-23 0800

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Client Sample ID: TRIP BLANK_34
Lab Sample ID: 240-195200-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 16:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 16:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 16:39*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 16:39*	*1*

Client Sample ID: MW-150S_110823
Lab Sample ID: 240-195200-2
Date Collected: 11/08/23 13:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 02:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 06:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 06:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 06:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:17	1
Vinyl chloride	**0.80**	**J**	1.0	0.45	ug/L			11/16/23 06:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 06:17*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 06:17*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 06:17*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 06:17*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:19:27 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195927-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:19:27 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195927-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195927-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195927-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The MSD for batch 240-595975 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195927-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195927-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195927-1	TRIP BLANK_115	Water	11/20/23 00:00	11/22/23 08:00
240-195927-2	MW-90S_112023	Water	11/20/23 11:45	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195927-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_115 **Lab Sample ID: 240-195927-1**

No Detections.

Client Sample ID: MW-90S_112023 **Lab Sample ID: 240-195927-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195927-1

Client Sample ID: TRIP BLANK_115
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195927-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/28/23 20:26*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 20:26*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:26*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195927-1

Client Sample ID: MW-90S_112023
Date Collected: 11/20/23 11:45
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195927-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 13:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 01:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:52*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/29/23 01:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 01:52*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/29/23 01:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195927-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195840-C-2 MS	Matrix Spike	103	114	109	108
240-195840-C-2 MSD	Matrix Spike Duplicate	106	109	109	104
240-195927-1	TRIP BLANK_115	114	83	105	102
240-195927-2	MW-90S_112023	116	79	105	105
LCS 240-595975/4	Lab Control Sample	107	98	109	103
MB 240-595975/6	Method Blank	112	84	105	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195927-2	MW-90S_112023	98
240-195929-H-2 MS	Matrix Spike	96
240-195929-O-2 MSD	Matrix Spike Duplicate	96
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595975/6
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 18:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/28/23 18:46*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/28/23 18:46*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 18:46*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 18:46*	*1*

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.3		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			25.0	23.2		ug/L		93	77 - 123		
Tetrachloroethene			25.0	26.3		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	23.5		ug/L		94	75 - 124		
Trichloroethene			25.0	24.8		ug/L		99	70 - 122		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	510		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	170		500	662		ug/L		99	66 - 128		
Tetrachloroethene	20	U	500	454		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	61		500	561		ug/L		100	56 - 136		
Trichloroethene	510		500	885		ug/L		75	61 - 124		
Vinyl chloride	20	U	250	207		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MSD
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	508		ug/L		102	56 - 135	0	26
cis-1,2-Dichloroethene	170		500	632		ug/L		93	66 - 128	5	14
Tetrachloroethene	20	U	500	484		ug/L		97	62 - 131	6	20
trans-1,2-Dichloroethene	61		500	550		ug/L		98	56 - 136	2	15
Trichloroethene	510		500	925		ug/L		83	61 - 124	4	15
Vinyl chloride	20	U	250	233		ug/L		93	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195929-H-2 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-195929-O-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195927-1

GC/MS VOA

Analysis Batch: 595975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195927-1	TRIP BLANK_115	Total/NA	Water	8260D	
240-195927-2	MW-90S_112023	Total/NA	Water	8260D	
MB 240-595975/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595975/4	Lab Control Sample	Total/NA	Water	8260D	
240-195840-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195840-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195927-2	MW-90S_112023	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195929-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195929-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195927-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_115
Lab Sample ID: 240-195927-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/28/23 20:26

Client Sample ID: MW-90S_112023
Lab Sample ID: 240-195927-2
Date Collected: 11/20/23 11:45
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 01:52
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 13:21

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195927-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

3-8/4.9

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Nolan Schenzel	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_115	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-905_112023	11/20/23	1145		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195927 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ✓ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34380 Capitol
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schenzel	Arcadis	11/21/23 0810	Novi warehouse	Arcadis	11/21/23 0810
Relinquished by: Sommer Sky	Company: Arcadis	Date/Time: 11/21/23 0935	Received by:	Company: EENA	Date/Time: 11/21/23
Relinquished by:	Company: EENA	Date/Time: 11/21/23	Received in Laboratory by: Alissa	Company: CETNC	Date/Time: 11-22-23 0800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-22-23 Opened on 11-22-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195927-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195927-1

		Sample Name:	TRIP BLANK_115				MW-90S_112023			
		Lab Sample ID:	2401959271				2401959272			
		Sample Date:	11/20/2023				11/20/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195927-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52173R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195927-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_115	240-195927-1	Water	11/20/2023		X	
MW-90S_112023	240-195927-2	Water	11/20/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 160

Chain of Custody Record

3-8/4.9

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Nolan Scherdel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_115	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-90S_112023	11/20/23	1145		6						6					N	6	x	x	x	x	x	x	x	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195927 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client ✓ Disposal By Lab [ ] Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34380 Capitol
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Scherdel	Arcadis	11/21/23 0810	Novi warehouse	Arcadis	11/21/23 0810
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/21/23 0935	[signature]	EETA	11/21/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	11/21/23	[signature]	EETA	11-22-23 0800

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12/01/2023

Client Sample ID: TRIP BLANK_115
Lab Sample ID: 240-195927-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/28/23 20:26*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 20:26*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:26*	*1*

Client Sample ID: MW-90S_112023
Lab Sample ID: 240-195927-2
Date Collected: 11/20/23 11:45
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 13:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 01:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:52*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/29/23 01:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 01:52*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/29/23 01:52*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:41:39 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195391-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:41:39 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195391-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195391-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195391-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195391-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195391-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195391-1	TRIP BLANK_126	Water	11/10/23 00:00	11/14/23 10:00
240-195391-2	MW-147S_111023	Water	11/10/23 13:05	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195391-1

Client Sample ID: TRIP BLANK_126 — Lab Sample ID: 240-195391-1

No Detections.

Client Sample ID: MW-147S_111023 — Lab Sample ID: 240-195391-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195391-1

Client Sample ID: TRIP BLANK_126
Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195391-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*		*11/18/23 16:52*	*1*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*		*11/18/23 16:52*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 16:52*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 16:52*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195391-1

Client Sample ID: MW-147S_111023
Date Collected: 11/10/23 13:05
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195391-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 17:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 22:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:29	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/18/23 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 22:29*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/18/23 22:29*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/18/23 22:29*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/18/23 22:29*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195391-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195156-C-52 MS	Matrix Spike	110	109	108	106
240-195156-C-52 MSD	Matrix Spike Duplicate	109	112	108	106
240-195391-1	TRIP BLANK_126	120	115	115	114
240-195391-2	MW-147S_111023	115	107	107	108
LCS 240-595129/5	Lab Control Sample	116	122	117	114
MB 240-595129/8	Method Blank	123	118	117	115

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195391-2	MW-147S_111023	99
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595129/8
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*62 - 137*		*11/18/23 14:52*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*11/18/23 14:52*	*1*
Toluene-d8 (Surr)	*117*		*78 - 122*		*11/18/23 14:52*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/18/23 14:52*	*1*

Lab Sample ID: LCS 240-595129/5
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*114*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	100	U	2500	2250		ug/L		90	56 - 135
cis-1,2-Dichloroethene	2400		2500	4550		ug/L		86	66 - 128
Tetrachloroethene	100	U	2500	2090		ug/L		83	62 - 131
trans-1,2-Dichloroethene	100	U	2500	2240		ug/L		90	56 - 136
Trichloroethene	440		2500	2480		ug/L		82	61 - 124
Vinyl chloride	50	J	1250	1060		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MSD
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2500	2170		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	2400		2500	4500		ug/L		84	66 - 128	1	14
Tetrachloroethene	100	U	2500	2010		ug/L		80	62 - 131	4	20
trans-1,2-Dichloroethene	100	U	2500	2160		ug/L		87	56 - 136	4	15
Trichloroethene	440		2500	2390		ug/L		78	61 - 124	4	15
Vinyl chloride	50	J	1250	1050		ug/L		80	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195391-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195391-1	TRIP BLANK_126	Total/NA	Water	8260D	
240-195391-2	MW-147S_111023	Total/NA	Water	8260D	
MB 240-595129/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595129/5	Lab Control Sample	Total/NA	Water	8260D	
240-195156-C-52 MS	Matrix Spike	Total/NA	Water	8260D	
240-195156-C-52 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195391-2	MW-147S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195391-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_126
Lab Sample ID: 240-195391-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 16:52

Client Sample ID: MW-147S_111023
Lab Sample ID: 240-195391-2
Date Collected: 11/10/23 13:05
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 22:29
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 17:30

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195391-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_126		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-147S_111023	11/10/23	1305		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195391 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34401 Capitol St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Alaina Pitera	Arcadis	11/10/23 1530	Novi cold storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0085	Received by:	EEA	11/13/23
Relinquished by:	EEA	11/13/23	Received in Laboratory by:	EE TNC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF _____ °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195391-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195391-1

		Sample Name:	TRIP BLANK_126				MW-147S_111023			
		Lab Sample ID:	2401953911				2401953912			
		Sample Date:	11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.1	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195391-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52151R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195391-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_126	240-195391-1	Water	11/10/2023		X	
MW-147S_111023	240-195391-2	Water	11/10/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

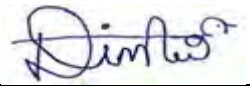
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_126		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-147S_111023	11/10/23	1305		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195391 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34401 Capitol St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Alaina Pitera	Company: Arcadis	Date/Time: 11/10/23 1530	Received by: Novi cold storage	Company: Arcadis	Date/Time: 11/10/23 1530
Relinquished by:	Company: Arcadis	Date/Time: 11/13/23 0835	Received by:	Company: EEA	Date/Time: 11/13/23
Relinquished by:	Company: EEA	Date/Time: 11/13/23	Received in Laboratory by:	Company: EE TNC	Date/Time: 11-14-23 1000

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Client Sample ID: TRIP BLANK_126
Lab Sample ID: 240-195391-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*		*11/18/23 16:52*	*1*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*		*11/18/23 16:52*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 16:52*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 16:52*	*1*

Client Sample ID: MW-147S_111023
Lab Sample ID: 240-195391-2
Date Collected: 11/10/23 13:05
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 17:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 22:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:29	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/18/23 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 22:29*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/18/23 22:29*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/18/23 22:29*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/18/23 22:29*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 9:36:42 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195389-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 9:36:42 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195389-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195389-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195389-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-127S_110923 (240-195389-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195389-1	TRIP BLANK_137	Water	11/09/23 00:00	11/14/23 10:00
240-195389-2	MW-127S_110923	Water	11/09/23 14:45	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Client Sample ID: TRIP BLANK_137 — Lab Sample ID: 240-195389-1

No Detections.

Client Sample ID: MW-127S_110923 — Lab Sample ID: 240-195389-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Client Sample ID: TRIP BLANK_137

Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195389-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 16:28*	*1*
4-Bromofluorobenzene (Surr)	*113*		*56 - 136*		*11/18/23 16:28*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 16:28*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 16:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Client Sample ID: MW-127S_110923

Lab Sample ID: 240-195389-2

Date Collected: 11/09/23 14:45

Matrix: Water

Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 21:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 22:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:05	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			11/18/23 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/18/23 22:05*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/18/23 22:05*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 22:05*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/18/23 22:05*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195156-C-52 MS	Matrix Spike	110	109	108	106
240-195156-C-52 MSD	Matrix Spike Duplicate	109	112	108	106
240-195389-1	TRIP BLANK_137	117	113	115	114
240-195389-2	MW-127S_110923	111	108	111	108
LCS 240-595129/5	Lab Control Sample	116	122	117	114
MB 240-595129/8	Method Blank	123	118	117	115

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195389-2	MW-127S_110923	98
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595129/8
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*62 - 137*		*11/18/23 14:52*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*11/18/23 14:52*	*1*
Toluene-d8 (Surr)	*117*		*78 - 122*		*11/18/23 14:52*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/18/23 14:52*	*1*

Lab Sample ID: LCS 240-595129/5
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*114*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	100	U	2500	2250		ug/L		90	56 - 135
cis-1,2-Dichloroethene	2400		2500	4550		ug/L		86	66 - 128
Tetrachloroethene	100	U	2500	2090		ug/L		83	62 - 131
trans-1,2-Dichloroethene	100	U	2500	2240		ug/L		90	56 - 136
Trichloroethene	440		2500	2480		ug/L		82	61 - 124
Vinyl chloride	50	J	1250	1060		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MSD
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2500	2170		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	2400		2500	4500		ug/L		84	66 - 128	1	14
Tetrachloroethene	100	U	2500	2010		ug/L		80	62 - 131	4	20
trans-1,2-Dichloroethene	100	U	2500	2160		ug/L		87	56 - 136	4	15
Trichloroethene	440		2500	2390		ug/L		78	61 - 124	4	15
Vinyl chloride	50	J	1250	1050		ug/L		80	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.96		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

GC/MS VOA

Analysis Batch: 595129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195389-1	TRIP BLANK_137	Total/NA	Water	8260D	
240-195389-2	MW-127S_110923	Total/NA	Water	8260D	
MB 240-595129/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595129/5	Lab Control Sample	Total/NA	Water	8260D	
240-195156-C-52 MS	Matrix Spike	Total/NA	Water	8260D	
240-195156-C-52 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195389-2	MW-127S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Client Sample ID: TRIP BLANK_137

Lab Sample ID: 240-195389-1

Date Collected: 11/09/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 16:28

Client Sample ID: MW-127S_110923

Lab Sample ID: 240-195389-2

Date Collected: 11/09/23 14:45

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 22:05
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 21:27

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195389-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Alana Pitura	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_137	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127S_110923	11/09/23	1445		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195389 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34424 Beacon St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Alana Pitura	Arcadis	11/10/23 1530	NOV. Cold Storage	Arcadis	11/10/23 1530
	Arcadis	11/13/23 0825		FEDEX	11/13/23
	FEDEX	11/13/23	Received in Laboratory by:	FEDEX	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195389-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J if detected or UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195389-1

Sample Name: MW-127S_110923
Lab Sample ID: 2401953892
Sample Date: 11/9/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	1.4	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195389-1

		Sample Name:	TRIP BLANK_137				MW-127S_110923			
		Lab Sample ID:	2401953891				2401953892			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.4	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195389-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52150R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195389-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_137	240-195389-1	Water	11/09/2023		X	
MW-127S_110923	240-195389-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X	X		
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note: The laboratory received VOC vials with significant headspace for sample MW-127S_110923.

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-127S_110923. In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

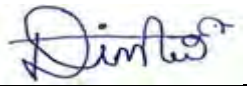
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Ariana Pitura	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_137	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127S-110923	11/09/23	1445		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195389 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Beacon St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Ariana Pitura	Arcadis	11/10/23 1530	Received by: NOV. Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0825	Received by:	FEMA	11/13/23
Relinquished by:	FEMA	11/13/23	Received in Laboratory by:	FEMA	11-14-23 1000

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

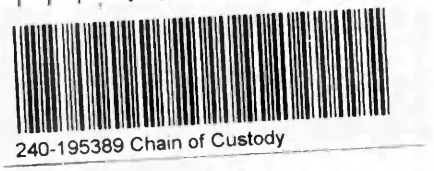
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alana Pitura	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_137	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127S_110923	11/09/23	1445		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Beacon St

Submit all results through Cadena at jtomalis@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Pitura	Arcadis	11/10/23 1530	NOV. Cold Storage	ARCADIS	11/10/23 1530
	Arcadis	11/13/23 0825		EESA	11/13/23
	EESA	11/13/23	Received in Laboratory by:	EETMc	11-14-23 1000

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Client Sample ID: TRIP BLANK_137
Lab Sample ID: 240-195389-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 16:28*	*1*
4-Bromofluorobenzene (Surr)	*113*		*56 - 136*		*11/18/23 16:28*	*1*
Toluene-d8 (Surr)	*115*		*78 - 122*		*11/18/23 16:28*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 16:28*	*1*

Client Sample ID: MW-127S_110923
Lab Sample ID: 240-195389-2
Date Collected: 11/09/23 14:45
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 21:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/18/23 22:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 22:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 22:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 22:05	1
Vinyl chloride	**1.4**	J	1.0	0.45	ug/L			11/18/23 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/18/23 22:05*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/18/23 22:05*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/18/23 22:05*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/18/23 22:05*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:24:01 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194822-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

Generated
11/15/2023 4:24:01 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194822-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194822-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194822-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194822-1	TRIP BLANK_21	Water	11/02/23 00:00	11/04/23 08:00
240-194822-2	MW-103S_110223	Water	11/02/23 13:46	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_21 — Lab Sample ID: 240-194822-1

No Detections.

Client Sample ID: MW-103S_110223 — Lab Sample ID: 240-194822-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194822-1

Client Sample ID: TRIP BLANK_21
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194822-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/11/23 16:43*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 16:43*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 16:43*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 16:43*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194822-1

Client Sample ID: MW-103S_110223
Date Collected: 11/02/23 13:46
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194822-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/13/23 23:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 21:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 21:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 21:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/11/23 21:15*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 21:15*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 21:15*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 21:15*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194822-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194822-1	TRIP BLANK_21	109	77	90	95
240-194822-2	MW-103S_110223	109	75	89	93
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194822-2	MW-103S_110223	92
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	30.3		ug/L		121	63 - 134
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194822-1	TRIP BLANK_21	Total/NA	Water	8260D	
240-194822-2	MW-103S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194822-2	MW-103S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_21
Lab Sample ID: 240-194822-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 16:43

Client Sample ID: MW-103S_110223
Lab Sample ID: 240-194822-2
Date Collected: 11/02/23 13:46
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 21:15
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/13/23 23:52

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194822-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_21	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-103S_110223	11/02/23	13:46		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194822 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
| Return to Client | ✓ Disposal By Lab | Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~34401 Capitol St~~ SG 34424 Capitol St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Nolan Schendel	Arcadis	11-02-23/1335	NOVI Cold Storage	Arcadis	11-02-23/1335
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/3/23 1245		EETA	11/3/23 1240
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/3/23 1245		CET	11-4-23 800

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11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194822

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194822

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194822-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194822-1

		Sample Name:	TRIP BLANK_21				MW-103S_110223			
		Lab Sample ID:	2401948221				2401948222			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194822-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52095R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194822-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_21	240-194822-1	Water	11/02/2023		X	
MW-103S_110223	240-194822-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_21	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-103S_110223	11/02/23	13:46		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194822 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
| Return to Client | ✓ Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~34401 Capitol St~~ SG 34424 Capitol St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Nolan Schendel	Arcadis	11-02-23/1335	Novi Cold Storage	Arcadis	11-02-23/1335
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/3/23 1245		EEA	11/3/23 1240
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/3/23 1245		ET	11-4-23 800

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Client Sample ID: TRIP BLANK_21
Lab Sample ID: 240-194822-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/11/23 16:43*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 16:43*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 16:43*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 16:43*	*1*

Client Sample ID: MW-103S_110223
Lab Sample ID: 240-194822-2
Date Collected: 11/02/23 13:46
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/13/23 23:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 21:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 21:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 21:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 21:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/11/23 21:15*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/11/23 21:15*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 21:15*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 21:15*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:22:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194820-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/15/2023 4:22:55 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194820-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194820-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194820-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194820-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194820-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194820-1	TRIP BLANK_56	Water	11/02/23 00:00	11/04/23 08:00
240-194820-2	MW-149S_110223	Water	11/02/23 14:15	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194820-1

Client Sample ID: TRIP BLANK_56 — Lab Sample ID: 240-194820-1

No Detections.

Client Sample ID: MW-149S_110223 — Lab Sample ID: 240-194820-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.6		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194820-1

Client Sample ID: TRIP BLANK_56
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194820-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 15:53*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:53*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 15:53*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 15:53*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194820-1

Client Sample ID: MW-149S_110223
Date Collected: 11/02/23 14:15
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194820-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/13/23 23:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:25	1
Vinyl chloride	**1.6**		1.0	0.45	ug/L			11/11/23 20:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 20:25*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 20:25*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 20:25*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 20:25*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194820-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194820-1	TRIP BLANK_56	106	77	90	92
240-194820-2	MW-149S_110223	105	77	89	93
LCS 240-594284/5	Lab Control Sample	100	86	95	96
MB 240-594284/8	Method Blank	108	77	91	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194820-2	MW-149S_110223	90
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	30.3		ug/L		121	63 - 134		
cis-1,2-Dichloroethene			25.0	25.2		ug/L		101	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.8		ug/L		107	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136		
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194820-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194820-1	TRIP BLANK_56	Total/NA	Water	8260D	
240-194820-2	MW-149S_110223	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194820-2	MW-149S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194820-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_56
Lab Sample ID: 240-194820-1

Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 15:53

Client Sample ID: MW-149S_110223
Lab Sample ID: 240-194820-2

Date Collected: 11/02/23 14:15
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 20:25
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/13/23 23:05

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194820-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 56	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-149s_110223	11-2-23	1415		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194820 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34450 BEACON

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
JOE FOSTIK	Arcadis	11.2.23 / 1500	Nolan Schendel	Arcadis	11-02-23/1500
Nolan Schendel	Arcadis	11.02-23/1525	Novi Cold Storage	Arcadis	11-02-23/1525
Jammer Key	Arcadis	11/3/23 1245		EEA	11/3/23 12:40

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Relinquished by [signature] 11/3/2023 12:45 ET 11-4-23 800

11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194820

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	~~Yes~~ No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	~~Yes~~ No
-Were tamper/custody seals intact and uncompromised?	~~Yes~~ No ~~NA~~
3. Shippers' packing slip attached to the cooler(s)?	Yes ~~No~~
4. Did custody papers accompany the sample(s)?	~~Yes~~ No
5. Were the custody papers relinquished & signed in the appropriate place?	~~Yes~~ No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	~~Yes~~ No
7. Did all bottles arrive in good condition (Unbroken)?	~~Yes~~ No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	~~Yes~~ No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	~~Yes~~ No
11. Sufficient quantity received to perform indicated analyses?	~~Yes~~ No
12. Are these work share samples and all listed on the COC?	Yes ~~No~~
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No ~~NA~~ pH Strip Lot# HC316719
14. Were VOAs on the COC?	~~Yes~~ No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes ~~No~~ NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	~~Yes~~ No
17. Was a LL Hg or Me Hg trip blank present?	Yes ~~No~~

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194820

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
2 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
3 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194820-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194820-1

		Sample Name:	TRIP BLANK_56				MW-149S_110223			
		Lab Sample ID:	2401948201				2401948202			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.6	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194820-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52093R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194820-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_56	240-194820-1	Water	11/02/2023		X	
MW-149S_110223	240-194820-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 56	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-149s_110223	11-2-23	1415		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Analyses

240-194820 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34450 BEACON
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
JOE FOSTIK	Arcadis	11-2-23 / 1500	Nolan Schendel	Arcadis	11-02-23 / 1506
Nolan Schendel	Arcadis	11-02-23 / 1525	Novi Cold Storage	Arcadis	11-02-23 / 1525
Jammel Hey	Arcadis	11/3/23 1245	Received in Laboratory by:	Company: EETA	Date/Time: 11/3/23 12:40

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11/15/2023

Relinquished by [signature] 11/3/2023 12:45 ET 11-4-23 800

MICHIGAN 190

Client Sample ID: TRIP BLANK_56
Lab Sample ID: 240-194820-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 15:53*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:53*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 15:53*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/23 15:53*	*1*

Client Sample ID: MW-149S_110223
Lab Sample ID: 240-194820-2
Date Collected: 11/02/23 14:15
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/13/23 23:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:25	1
Vinyl chloride	**1.6**		1.0	0.45	ug/L			11/11/23 20:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 20:25*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 20:25*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 20:25*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 20:25*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/14/2023 7:39:32 AM Revision 1

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194752-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/14/2023 7:39:32 AM
Revision 1

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194752-1

Job ID: 240-194752-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194752-1

Report revised on 11/14/2023 to include the corrected Chain of Custody.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194752-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194752-1	TRIP BLANK_6	Water	11/01/23 00:00	11/03/23 08:00
240-194752-2	MW-169S_110123	Water	11/01/23 10:04	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_6 — Lab Sample ID: 240-194752-1

No Detections.

Client Sample ID: MW-169S_110123 — Lab Sample ID: 240-194752-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194752-1

Client Sample ID: TRIP BLANK_6
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194752-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 17:25*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 17:25*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/23 17:25*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/09/23 17:25*	*1*

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Client Sample ID: MW-169S_110123
Lab Sample ID: 240-194752-2
Date Collected: 11/01/23 10:04
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/09/23 14:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/23 19:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 19:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/09/23 19:02*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 19:02*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194752-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194752-1	TRIP BLANK_6	101	94	98	102
240-194752-2	MW-169S_110123	102	95	96	100
240-194858-C-5 MS	Matrix Spike	98	98	98	101
240-194858-C-5 MSD	Matrix Spike Duplicate	93	94	97	99
LCS 240-594032/5	Lab Control Sample	97	95	95	100
MB 240-594032/9	Method Blank	100	91	94	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194752-2	MW-169S_110123	83
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594032/9
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 14:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 14:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/09/23 14:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 14:12*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 14:12*	*1*

Lab Sample ID: LCS 240-594032/5
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.7		ug/L		99	63 - 134		
cis-1,2-Dichloroethene			20.0	18.9		ug/L		94	77 - 123		
Tetrachloroethene			20.0	19.5		ug/L		97	76 - 123		
trans-1,2-Dichloroethene			20.0	19.0		ug/L		95	75 - 124		
Trichloroethene			20.0	18.1		ug/L		91	70 - 122		
Vinyl chloride			20.0	21.9		ug/L		110	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	200	U	4000	3990		ug/L		100	56 - 135		
cis-1,2-Dichloroethene	2700		4000	6590		ug/L		97	66 - 128		
Tetrachloroethene	2000		4000	6000		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	200	U	4000	3770		ug/L		94	56 - 136		
Trichloroethene	6200		4000	9820		ug/L		91	61 - 124		
Vinyl chloride	200	U	4000	4530		ug/L		113	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MSD
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	200	U	4000	4200		ug/L		105	56 - 135	5	26
cis-1,2-Dichloroethene	2700		4000	6520		ug/L		96	66 - 128	1	14
Tetrachloroethene	2000		4000	6400		ug/L		110	62 - 131	6	20
trans-1,2-Dichloroethene	200	U	4000	4050		ug/L		101	56 - 136	7	15
Trichloroethene	6200		4000	9810		ug/L		91	61 - 124	0	15
Vinyl chloride	200	U	4000	4840		ug/L		121	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194752-2	MW-169S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194752-1	TRIP BLANK_6	Total/NA	Water	8260D	
240-194752-2	MW-169S_110123	Total/NA	Water	8260D	
MB 240-594032/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594032/5	Lab Control Sample	Total/NA	Water	8260D	
240-194858-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-194858-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_6
Lab Sample ID: 240-194752-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 17:25

Client Sample ID: MW-169S_110123
Lab Sample ID: 240-194752-2
Date Collected: 11/01/23 10:04
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 19:02
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 14:44

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194752-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_6	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1695_110123	11/01/23	1004		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~34450 Beacon St~~ 34450 Capitol St

Submit all results through Cadena at jt SG 11/13/2023 ıaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	Novi Cold Storage	Arcadis	11/01/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETDC	11-3-23 800

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11/14/2023 (Rev. 1)

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194452
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194752

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194752-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194752-1

		Sample Name:	TRIP BLANK_6				MW-169S_110123			
		Lab Sample ID:	2401947521				2401947522			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194752-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52073R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194752-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_6	240-194752-1	Water	11/01/2023		X	
MW-169S_110123	240-194752-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 02, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 2, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_6	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1695_110123	11/01/23	1004		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194752 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~34450 Beacon St~~ 34450 Capitol St

Submit all results through Cadena at jt SG 11/13/2023 ıaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	NOVI Cold Storage	Arcadis	11/01/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETMC	11-3-23 800

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Client Sample ID: TRIP BLANK_6
Lab Sample ID: 240-194752-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 17:25*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 17:25*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/23 17:25*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/09/23 17:25*	*1*

Client Sample ID: MW-169S_110123
Lab Sample ID: 240-194752-2
Date Collected: 11/01/23 10:04
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/09/23 14:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/23 19:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 19:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/09/23 19:02*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 19:02*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:43:40 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195397-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195397-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195397-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195397-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195397-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195397-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195397-1	TRIP BLANK_125	Water	11/09/23 00:00	11/14/23 10:00
240-195397-2	MW-168S_110923	Water	11/09/23 13:30	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195397-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_125 — Lab Sample ID: 240-195397-1

No Detections.

Client Sample ID: MW-168S_110923 — Lab Sample ID: 240-195397-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195397-1

Client Sample ID: TRIP BLANK_125
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195397-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 11:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 11:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 11:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/20/23 11:16*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/20/23 11:16*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/20/23 11:16*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/20/23 11:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195397-1

Client Sample ID: MW-168S_110923
Date Collected: 11/09/23 13:30
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195397-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 21:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 11:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 11:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 11:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 11:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 11:40*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/20/23 11:40*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/20/23 11:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/20/23 11:40*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195397-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195397-1	TRIP BLANK_125	88	94	105	88
240-195397-2	MW-168S_110923	103	93	104	98
240-195494-A-9 MS	Matrix Spike	84	100	106	86
240-195494-B-9 MSD	Matrix Spike Duplicate	87	106	104	89
LCS 240-595193/4	Lab Control Sample	88	107	107	98
MB 240-595193/7	Method Blank	95	102	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195397-2	MW-168S_110923	98
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595193/7
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 10:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 10:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 10:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 10:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/20/23 10:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/20/23 10:52*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/20/23 10:52*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/20/23 10:52*	*1*

Lab Sample ID: LCS 240-595193/4
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.5		ug/L		110	63 - 134
cis-1,2-Dichloroethene	25.0	26.4		ug/L		106	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	27.3		ug/L		109	75 - 124
Trichloroethene	25.0	26.4		ug/L		106	70 - 122
Vinyl chloride	12.5	11.3		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195494-A-9 MS
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.7		ug/L		107	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		112	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	25.6		ug/L		103	61 - 124
Vinyl chloride	1.0	U	12.5	9.22		ug/L		74	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195494-A-9 MS
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-195494-B-9 MSD
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	31.1		ug/L		124	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 136	1	15
Trichloroethene	1.0	U	25.0	25.5		ug/L		102	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.1		ug/L		81	43 - 157	9	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.96		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195397-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195397-1	TRIP BLANK_125	Total/NA	Water	8260D	
240-195397-2	MW-168S_110923	Total/NA	Water	8260D	
MB 240-595193/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595193/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-A-9 MS	Matrix Spike	Total/NA	Water	8260D	
240-195494-B-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195397-2	MW-168S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195397-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_125
Lab Sample ID: 240-195397-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 11:16

Client Sample ID: MW-168S_110923
Lab Sample ID: 240-195397-2
Date Collected: 11/09/23 13:30
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 11:40
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 21:51

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195397-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

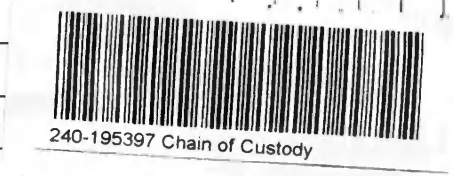
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_125	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-168S_110923	11/09/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/9/23 1530	Novi Cold Storage	Arcadis	11/10/23 1530
	Arcadis	11/13/23 0835		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by: Alisa Atkinson	EETMC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # :_____

Client Arcadis Site Name_____

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes) No	**Tests that are not checked for pH by Receiving:**
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	**VOAs**
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	**Oil and Grease**
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	**TOC**
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0225	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195397-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195397-1

		Sample Name:	TRIP BLANK_125				MW-168S_110923			
		Lab Sample ID:	2401953971				2401953972			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195397-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52154R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195397-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_125	240-195397-1	Water	11/09/2023		X	
MW-168S_110923	240-195397-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

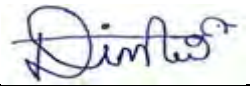
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

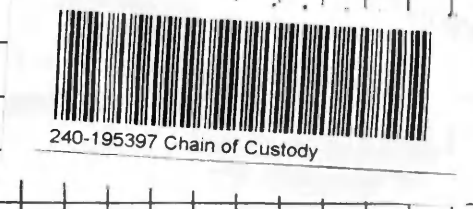
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alana Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_125	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-168S_110923	11/09/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Alaina Pitera	Arcadis	11/10/23 1530	Received by: Novi Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0835	Received by:	EEA	11/13/23
Relinquished by:	EEA	11/13/23	Received in Laboratory by: Alissa Atkinson	EETNC	11-14-23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_125
Lab Sample ID: 240-195397-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 11:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 11:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 11:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/20/23 11:16*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/20/23 11:16*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/20/23 11:16*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/20/23 11:16*	*1*

Client Sample ID: MW-168S_110923
Lab Sample ID: 240-195397-2
Date Collected: 11/09/23 13:30
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 21:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 11:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 11:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 11:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 11:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 11:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 11:40*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/20/23 11:40*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/20/23 11:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/20/23 11:40*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:40:09 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195293-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:40:09 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195293-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195293-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195293-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195293-1	TRIP BLANK_42	Water	11/09/23 00:00	11/11/23 08:00
240-195293-2	MW-152S_110923	Water	11/09/23 14:05	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_42 — Lab Sample ID: 240-195293-1

No Detections.

Client Sample ID: MW-152S_110923 — Lab Sample ID: 240-195293-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195293-1

Client Sample ID: TRIP BLANK_42
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195293-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 20:17*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/19/23 20:17*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 20:17*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 20:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195293-1

Client Sample ID: MW-152S_110923
Date Collected: 11/09/23 14:05
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195293-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/22/23 23:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 20:42*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 20:42*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 20:42*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 20:42*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195293-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195293-1	TRIP BLANK_42	103	94	98	97
240-195293-2	MW-152S_110923	102	97	99	94
LCS 240-595149/4	Lab Control Sample	103	98	97	101
MB 240-595149/7	Method Blank	103	95	99	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195293-2	MW-152S_110923	96
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.7		ug/L		103	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	24.1		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			25.0	25.1		ug/L		100	75 - 124		
Trichloroethene			25.0	25.4		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135		
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128		
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136		
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124		
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.96		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195293-1	TRIP BLANK_42	Total/NA	Water	8260D	
240-195293-2	MW-152S_110923	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195293-2	MW-152S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_42
Lab Sample ID: 240-195293-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 20:17

Client Sample ID: MW-152S_110923
Lab Sample ID: 240-195293-2
Date Collected: 11/09/23 14:05
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 20:42
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 23:27

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195293-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_42	11/09/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-152s_110923	11/09/23	1405		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195293 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34550 Beacon St. Livonia MI 48150

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	ARCADIS	11/01/23 15:00	Received by: Novi Cold Storage	ARCADIS	11/09/23 1500
Relinquished by: Tammer Key	Arcadis	11/10/23 1335	Received by:	FEDEX	11/10/23 1335
Relinquished by:	FEDEX	11/10/23 1340	Received in Laboratory by:	FEDEX	11-11-23 0900

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Alcad:s Site Name _____

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195293-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195293-1

		Sample Name:	TRIP BLANK_42				MW-152S_110923			
		Lab Sample ID:	2401952931				2401952932			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195293-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52147R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195293-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_42	240-195293-1	Water	11/09/2023		X	
MW-152S_110923	240-195293-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

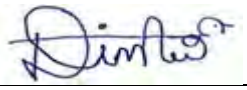
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_42	11/09/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-152s_110923	11/09/23	1405		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195293 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34550 Beacon St. Livonia MI 48150

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/09/23 15:00	Nov: Cold Storage	ARCADIS	11/09/23 1500
Kammer Kay	Arcadis	11/10/23 1335		FEDEX	11/10/23 1335
	FEDEX	11/10/23 1340	Received in Laboratory by:	EETNe	Date/Time: 11-11-23 0900

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Client Sample ID: TRIP BLANK_42
Lab Sample ID: 240-195293-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 20:17*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/19/23 20:17*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 20:17*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 20:17*	*1*

Client Sample ID: MW-152S_110923
Lab Sample ID: 240-195293-2
Date Collected: 11/09/23 14:05
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/22/23 23:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 20:42*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/19/23 20:42*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 20:42*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 20:42*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:34:43 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195187-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:34:43 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195187-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195187-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195187-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
Method 8260D: The MS/MSD for batch 595117 was not reported because the parent sample needed a different dilution. TRIP BLANK_35 (240-195187-1) and MW-130S_110823 (240-195187-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195187-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195187-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195187-1	TRIP BLANK_35	Water	11/08/23 00:00	11/10/23 08:00
240-195187-2	MW-130S_110823	Water	11/08/23 12:45	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195187-1

Client Sample ID: TRIP BLANK_35 — Lab Sample ID: 240-195187-1

No Detections.

Client Sample ID: MW-130S_110823 — Lab Sample ID: 240-195187-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195187-1

Client Sample ID: TRIP BLANK_35
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195187-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 13:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 13:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 13:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 13:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 13:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 13:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/23 13:56*	*1*
4-Bromofluorobenzene (Surr)	*67*		*56 - 136*		*11/18/23 13:56*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/18/23 13:56*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/18/23 13:56*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195187-1

Client Sample ID: MW-130S_110823
Date Collected: 11/08/23 12:45
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195187-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/22/23 15:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 15:53	1
Vinyl chloride	**3.4**		1.0	0.45	ug/L			11/18/23 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/23 15:53*	*1*
4-Bromofluorobenzene (Surr)	*66*		*56 - 136*		*11/18/23 15:53*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/18/23 15:53*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 15:53*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195187-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195187-1	TRIP BLANK_35	100	67	100	106
240-195187-2	MW-130S_110823	102	66	98	114
LCS 240-595117/5	Lab Control Sample	93	83	103	99
MB 240-595117/9	Method Blank	107	76	108	114

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195187-2	MW-130S_110823	102
240-195207-G-2 MS	Matrix Spike	99
240-195207-N-2 MSD	Matrix Spike Duplicate	103
LCS 240-595507/4	Lab Control Sample	99
MB 240-595507/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595117/9
Matrix: Water
Analysis Batch: 595117

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 11:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 11:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 11:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 11:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 11:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 11:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/18/23 11:59*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/23 11:59*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/18/23 11:59*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 11:59*	*1*

Lab Sample ID: LCS 240-595117/5
Matrix: Water
Analysis Batch: 595117

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.5		ug/L		97	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		93	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595507/6
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 09:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 09:09*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-595507/4
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195207-G-2 MS
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195207-N-2 MSD
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195187-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195187-1	TRIP BLANK_35	Total/NA	Water	8260D	
240-195187-2	MW-130S_110823	Total/NA	Water	8260D	
MB 240-595117/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595117/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195187-2	MW-130S_110823	Total/NA	Water	8260D SIM	
MB 240-595507/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595507/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195207-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195207-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195187-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_35
Lab Sample ID: 240-195187-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595117	AJS	EET CLE	11/18/23 13:56

Client Sample ID: MW-130S_110823
Lab Sample ID: 240-195187-2
Date Collected: 11/08/23 12:45
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595117	AJS	EET CLE	11/18/23 15:53
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 15:29

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195187-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

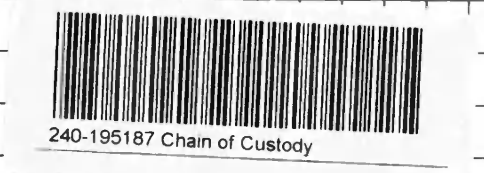
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-130S_110823	11-8-23	1245		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



MICHIGAN
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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34600 BEACON

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11-8-23 1445	Novi Cold storage	Arcadis	11/8/23 1445
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/9/23 1015		EETNC	11-10-23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** 195187
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11.10.23 Opened on 11/10/23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195187-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195187-1

		Sample Name:	TRIP BLANK_35				MW-130S_110823			
		Lab Sample ID:	2401951871				2401951872			
		Sample Date:	11/8/2023				11/8/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.4	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195187-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52132R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195187-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_35	240-195187-1	Water	11/08/2023		X	
MW-130S_110823	240-195187-2	Water	11/08/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-130S_110823	11-8-23	1245		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195187 Chain of Custody

MICHIGAN
190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34600 BEACON

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11-8-23 / 1445	Novi Coldstorage	Arcadis	11/8/23/1445
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/9/23 10115		EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_35
Lab Sample ID: 240-195187-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 13:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 13:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 13:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 13:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 13:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 13:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/23 13:56*	*1*
4-Bromofluorobenzene (Surr)	*67*		*56 - 136*		*11/18/23 13:56*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/18/23 13:56*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/18/23 13:56*	*1*

Client Sample ID: MW-130S_110823
Lab Sample ID: 240-195187-2
Date Collected: 11/08/23 12:45
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/22/23 15:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 15:53	1
Vinyl chloride	**3.4**		1.0	0.45	ug/L			11/18/23 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/23 15:53*	*1*
4-Bromofluorobenzene (Surr)	*66*		*56 - 136*		*11/18/23 15:53*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/18/23 15:53*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*11/18/23 15:53*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 5:30:46 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194992-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2023 5:30:46 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194992-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194992-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194992-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-164S_110323 (240-194992-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194992-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194992-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194992-1	TRIP BLANK_59	Water	11/03/23 00:00	11/08/23 08:00
240-194992-2	MW-164S_110323	Water	11/03/23 11:50	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194992-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_59 — Lab Sample ID: 240-194992-1

No Detections.

Client Sample ID: MW-164S_110323 — Lab Sample ID: 240-194992-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194992-1

Client Sample ID: TRIP BLANK_59
Date Collected: 11/03/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194992-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 12:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 12:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 12:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 12:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 12:35*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/10/23 12:35*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 12:35*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/23 12:35*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194992-1

Client Sample ID: MW-164S_110323
Date Collected: 11/03/23 11:50
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194992-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/15/23 00:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 16:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 16:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 16:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/10/23 16:20*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/10/23 16:20*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 16:20*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 16:20*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194992-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194730-B-3 MS	Matrix Spike	101	85	91	92
240-194730-B-3 MSD	Matrix Spike Duplicate	103	84	89	98
240-194992-1	TRIP BLANK_59	107	81	93	93
240-194992-2	MW-164S_110323	111	81	93	96
LCS 240-594169/5	Lab Control Sample	100	82	89	93
MB 240-594169/8	Method Blank	118	88	101	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194827-L-4 MS	Matrix Spike	97
240-194827-R-4 MSD	Matrix Spike Duplicate	97
240-194992-2	MW-164S_110323	105
LCS 240-594613/3	Lab Control Sample	98
MB 240-594613/5	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594169/8
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/10/23 11:20*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/10/23 11:20*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 11:20*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/10/23 11:20*	*1*

Lab Sample ID: LCS 240-594169/5
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.5		ug/L		110	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		101	77 - 123
Tetrachloroethene	25.0	25.6		ug/L		102	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.1		ug/L		100	70 - 122
Vinyl chloride	12.5	11.2		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	5.0	U	125	134		ug/L		107	56 - 135
cis-1,2-Dichloroethene	130		125	228		ug/L		80	66 - 128
Tetrachloroethene	5.0	U	125	114		ug/L		91	62 - 131
trans-1,2-Dichloroethene	5.0	U	125	119		ug/L		95	56 - 136
Trichloroethene	56		125	162		ug/L		84	61 - 124
Vinyl chloride	5.0	U	62.5	57.9		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MSD
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	5.0	U	125	141		ug/L		113	56 - 135	5	26
cis-1,2-Dichloroethene	130		125	240		ug/L		90	66 - 128	5	14
Tetrachloroethene	5.0	U	125	111		ug/L		89	62 - 131	3	20
trans-1,2-Dichloroethene	5.0	U	125	125		ug/L		100	56 - 136	5	15
Trichloroethene	56		125	177		ug/L		96	61 - 124	9	15
Vinyl chloride	5.0	U	62.5	60.8		ug/L		97	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594613/5
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/14/23 20:49*	*1*

Lab Sample ID: LCS 240-594613/3
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-194827-L-4 MS
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-194827-R-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194992-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194992-1	TRIP BLANK_59	Total/NA	Water	8260D	
240-194992-2	MW-164S_110323	Total/NA	Water	8260D	
MB 240-594169/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594169/5	Lab Control Sample	Total/NA	Water	8260D	
240-194730-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194730-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194992-2	MW-164S_110323	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-L-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194827-R-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194992-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_59
Lab Sample ID: 240-194992-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 12:35

Client Sample ID: MW-164S_110323
Lab Sample ID: 240-194992-2
Date Collected: 11/03/23 11:50
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 16:20
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/15/23 00:47

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194992-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2-0131

Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Ajana DHera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_59	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_110323	11/03/23	1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194992 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Ajana Dhera	Arcadis	11/03/23 1500	Arcadis cold storage	Arcadis	11/03/23 1500
Sommer Day	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rochelle Arcilla	Company: BETMC	Date/Time: 11/8/23 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 94992
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194992-1
Sample date: 2023-11-03
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194992-1

Sample Name: MW-164S_110323
Lab Sample ID: 2401949922
Sample Date: 11/3/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194992-1

		Sample Name:	TRIP BLANK_59				MW-164S_110323			
		Lab Sample ID:	2401949921				2401949922			
		Sample Date:	11/3/2023				11/3/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194992-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52103R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194992-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_59	240-194992-1	Water	11/03/2023		X	
MW-164S_110323	240-194992-2	Water	11/03/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-164S_110323 (240-194992-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190 2-0131 **Chain of Custody Record** MICHIGAN 190 TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alana Ptera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_59	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_110323	11/03/23	1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194992 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Alana Ptera	Arcadis	11/03/23 1500	Arcadis cold storage	Arcadis	11/03/23 1500
Sommer Gay	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Hardie	TEKTMC	11 8 23 800

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11/16/2023

Client Sample ID: TRIP BLANK_59
Lab Sample ID: 240-194992-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 12:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 12:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 12:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 12:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 12:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 12:35*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/10/23 12:35*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 12:35*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/23 12:35*	*1*

Client Sample ID: MW-164S_110323
Lab Sample ID: 240-194992-2
Date Collected: 11/03/23 11:50
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/15/23 00:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/10/23 16:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 16:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 16:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/10/23 16:20*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/10/23 16:20*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 16:20*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 16:20*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:32:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195669-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:32:04 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195669-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195669-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195669-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195669-1	TRIP BLANK_127	Water	11/13/23 00:00	11/17/23 09:40
240-195669-2	MW-153S_111323	Water	11/13/23 11:20	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_127 **Lab Sample ID: 240-195669-1**

No Detections.

Client Sample ID: MW-153S_111323 **Lab Sample ID: 240-195669-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195669-1

Client Sample ID: TRIP BLANK_127
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195669-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 18:38*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 18:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 18:38*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 18:38*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195669-1

Client Sample ID: MW-153S_111323
Date Collected: 11/13/23 11:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195669-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 06:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/25/23 06:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 07:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 07:29*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 07:29*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 07:29*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195669-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195669-1	TRIP BLANK_127	112	96	98	99
240-195669-2	MW-153S_111323	110	96	100	100
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195669-2	MW-153S_111323	96
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195669-2	MW-153S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195669-1	TRIP BLANK_127	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195669-2	MW-153S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_127
Lab Sample ID: 240-195669-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 18:38

Client Sample ID: MW-153S_111323
Lab Sample ID: 240-195669-2
Date Collected: 11/13/23 11:20
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 07:29
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 06:18

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195669-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only		
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_127	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-1535_111323	11/13/23	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-195669 Chain of Custody

MCL 1-5

M

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: [redacted] 3464W Beacon St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Alaina Pitera	Arcadis	11/15/23 1530	Received by: Novi Cold Storage	Arcadis	11/15/23 1330
Relinquished by:	Arcadis	11/16/23 0845	Received by:	EETA	11/16/23 10:15
Relinquished by:	EETA	11/16/23 10:20	Received in Laboratory by:	EC	11-17-23 940

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195669

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) NA
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA 11-18-23
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195069

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195669-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:2
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 595687.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195669-1

		Sample Name:	TRIP BLANK_127				MW-153S_111323			
		Lab Sample ID:	2401956691				2401956692			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195669-1

CADENA Verification Report: 2023-11-28

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52163R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195669-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_127	240-195669-1	Water	11/13/2023		X	
MW-153S_111323	240-195669-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

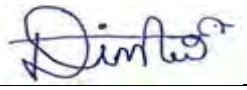
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis					
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	TestAmerica Lab COC No:	
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396		1 of 1
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time			For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day			Walk-in client
Project Number: 30167538.402.04	Method of Shipment/Carrier:				Lab sampling
PO # 30167538.402.04	Shipping/Tracking No:				Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Speci Special Instr
TRIP BLANK_127	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blan
MW-1535_N1323	11/13/23	1120		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8 3 VOAs for 8

240-195669 Chain of Custody

MICH 1-7

M

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: [redacted] 34644 Beacon St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/15/23 1530	Novi Cold Storage	Arcadis	11/15/23 1330
	Arcadis	11/16/23 0845		EETA	11/16/23 10:15
	EETA	11/16/23 10:20	Received in Laboratory by:	EC	11-17-23 940

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11/27/2023

Client Sample ID: TRIP BLANK_127
Lab Sample ID: 240-195669-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 18:38*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 18:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 18:38*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 18:38*	*1*

Client Sample ID: MW-153S_111323
Lab Sample ID: 240-195669-2
Date Collected: 11/13/23 11:20
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 06:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/25/23 06:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 07:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 07:29*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 07:29*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 07:29*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 6:57:59 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195198-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/24/2023 6:57:59 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195198-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195198-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195198-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195198-1	TRIP BLANK_45	Water	11/07/23 00:00	11/10/23 08:00
240-195198-2	MW-165S_110723	Water	11/07/23 12:55	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_45 — Lab Sample ID: 240-195198-1

No Detections.

Client Sample ID: MW-165S_110723 — Lab Sample ID: 240-195198-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195198-1

Client Sample ID: TRIP BLANK_45
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195198-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 15:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 15:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/23 15:48*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 15:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195198-1

Client Sample ID: MW-165S_110723
Date Collected: 11/07/23 12:55
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195198-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/21/23 09:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 05:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 05:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 05:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/23 05:26*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/16/23 05:26*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 05:26*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/23 05:26*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195198-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195198-1	TRIP BLANK_45	96	97	100	96
240-195198-2	MW-165S_110723	98	99	103	98
240-195201-F-2 MS	Matrix Spike	93	102	102	95
240-195201-I-2 MSD	Matrix Spike Duplicate	93	101	105	95
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195198-2	MW-165S_110723	99
240-195201-H-2 MS	Matrix Spike	104
240-195201-N-2 MSD	Matrix Spike Duplicate	103
LCS 240-595348/4	Lab Control Sample	101
MB 240-595348/6	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	18.1		ug/L		90	77 - 123
Tetrachloroethene	20.0	17.1		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	18.8		ug/L		94	75 - 124
Trichloroethene	20.0	18.6		ug/L		93	70 - 122
Vinyl chloride	20.0	23.1		ug/L		116	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195201-I-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595348/6
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 08:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/21/23 08:16*	*1*

Lab Sample ID: LCS 240-595348/4
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195201-H-2 MS
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.72		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195201-N-2 MSD
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195198-2	MW-165S_110723	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195201-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195198-1	TRIP BLANK_45	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195198-2	MW-165S_110723	Total/NA	Water	8260D SIM	
MB 240-595348/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595348/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195201-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195201-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_45
Lab Sample ID: 240-195198-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 15:48

Client Sample ID: MW-165S_110723
Lab Sample ID: 240-195198-2
Date Collected: 11/07/23 12:55
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 05:26
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 09:51

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195198-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

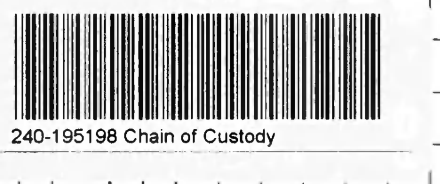
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alana Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_45	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-165S_110723	11/07/23	1255		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM



MICHIGAN
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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34669 Beacon St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Sommer Ley	Arcadis	11/9/23 0850		EETA	11/9/23 1000
	EETA	11/9/23 1015	Received in Laboratory by: Alissa Atkins	EETMC	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195198
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkison

Cooler Received on 11.10.23 Opened on 11/10/23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195198

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: ~~22~~	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: ~~22~~	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195198-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195198-1

		Sample Name:	TRIP BLANK_45				MW-165S_110723			
		Lab Sample ID:	2401951981				2401951982			
		Sample Date:	11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195198-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52134R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195198-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_45	240-195198-1	Water	11/07/2023		X	
MW-165S_110723	240-195198-2	Water	11/07/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alana Pitera	TAT if different from below: ☐ 3 weeks; 10 day ☑ 2 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_45	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-165S_110723	11/07/23	1255		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195198 Chain of Custody

MICHIGAN
190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34669 Beacon St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Alaina Pitera	Arcadis	11/07/23 1530	Received by: Novi Cold Storage	Arcadis	11/07/23 1530
Relinquished by: Sommer Ley	Arcadis	11/9/23 0850	Received by:	EETA	11/9/23 10:00
Relinquished by:	EETA	11/9/23 1011 5	Received in Laboratory by: Alissa	EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_45
Lab Sample ID: 240-195198-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 15:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 15:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/23 15:48*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 15:48*	*1*

Client Sample ID: MW-165S_110723
Lab Sample ID: 240-195198-2
Date Collected: 11/07/23 12:55
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/21/23 09:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 05:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 05:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 05:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 05:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/23 05:26*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/16/23 05:26*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 05:26*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/23 05:26*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 5:30:03 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194988-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2023 5:30:03 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194988-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194988-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-154S_110323 (240-194988-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194988-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194988-1	TRIP BLANK_60	Water	11/03/23 00:00	11/08/23 08:00
240-194988-2	MW-154S_110323	Water	11/03/23 13:30	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_60 — Lab Sample ID: 240-194988-1

No Detections.

Client Sample ID: MW-154S_110323 — Lab Sample ID: 240-194988-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194988-1

Client Sample ID: TRIP BLANK_60
Date Collected: 11/03/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194988-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 13:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/10/23 13:50*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 13:50*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/23 13:50*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194988-1

Client Sample ID: MW-154S_110323
Date Collected: 11/03/23 13:30
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194988-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/15/23 00:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 17:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 17:35*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/10/23 17:35*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/10/23 17:35*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 17:35*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194988-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194730-B-3 MS	Matrix Spike	101	85	91	92
240-194730-B-3 MSD	Matrix Spike Duplicate	103	84	89	98
240-194988-1	TRIP BLANK_60	108	77	90	92
240-194988-2	MW-154S_110323	107	73	88	94
LCS 240-594169/5	Lab Control Sample	100	82	89	93
MB 240-594169/8	Method Blank	118	88	101	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194827-L-4 MS	Matrix Spike	97
240-194827-R-4 MSD	Matrix Spike Duplicate	97
240-194988-2	MW-154S_110323	100
LCS 240-594613/3	Lab Control Sample	98
MB 240-594613/5	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594169/8
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/10/23 11:20*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/10/23 11:20*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 11:20*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/10/23 11:20*	*1*

Lab Sample ID: LCS 240-594169/5
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.5		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		101	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	25.9		ug/L		104	75 - 124		
Trichloroethene			25.0	25.1		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.2		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	5.0	U	125	134		ug/L		107	56 - 135		
cis-1,2-Dichloroethene	130		125	228		ug/L		80	66 - 128		
Tetrachloroethene	5.0	U	125	114		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	5.0	U	125	119		ug/L		95	56 - 136		
Trichloroethene	56		125	162		ug/L		84	61 - 124		
Vinyl chloride	5.0	U	62.5	57.9		ug/L		93	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MSD
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	5.0	U	125	141		ug/L		113	56 - 135	5	26
cis-1,2-Dichloroethene	130		125	240		ug/L		90	66 - 128	5	14
Tetrachloroethene	5.0	U	125	111		ug/L		89	62 - 131	3	20
trans-1,2-Dichloroethene	5.0	U	125	125		ug/L		100	56 - 136	5	15
Trichloroethene	56		125	177		ug/L		96	61 - 124	9	15
Vinyl chloride	5.0	U	62.5	60.8		ug/L		97	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594613/5
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/14/23 20:49*	*1*

Lab Sample ID: LCS 240-594613/3
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-194827-L-4 MS
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-194827-R-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194988-1	TRIP BLANK_60	Total/NA	Water	8260D	
240-194988-2	MW-154S_110323	Total/NA	Water	8260D	
MB 240-594169/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594169/5	Lab Control Sample	Total/NA	Water	8260D	
240-194730-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194730-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194988-2	MW-154S_110323	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-L-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194827-R-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_60
Lab Sample ID: 240-194988-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 13:50

Client Sample ID: MW-154S_110323
Lab Sample ID: 240-194988-2
Date Collected: 11/03/23 13:30
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 17:35
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/15/23 00:23

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194988-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

CH 19

2.0 13.1

Chain of Custody Record

MICHIGAN 190

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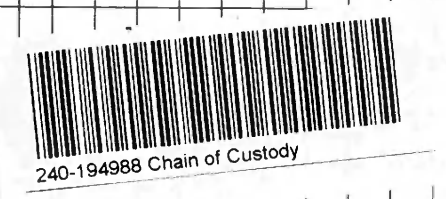
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:					
Company Name: Arcadis	☐ DW	☐ NPDES	☐ RCRA	☐ Other		
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396		of	COCs
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only		
Project Name: Ford LTP ~~On Site~~ offsite SG	Sampler Name: Alana Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client		
Project Number: 30167538.~~401.03~~ 402.04 SG	Method of Shipment/Carrier:			Lab sampling		
PO # 30167538.~~401.03~~ 402.04 SG	Shipping/Tracking No:			Job/SDG No:		

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_60	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-19S_110323	11/03/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments: Sample address: 34682 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alanna Pitera	Arcadis	11/03/23/ 1500	Novi cold storage	Arcadis	11/03/23 1500
Relinquished by: Jennifer Key	Company: Arcadis	Date/Time: 11/7/23 1350	Received by:	Company: FEDEX	Date/Time: 11/7/23 1350
Relinquished by:	Company: FEDEX	Date/Time: 11/7/23 1400	Received in Laboratory by: Rachelle Harrell	Company: BETMC	Date/Time: 11-8-23 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194988
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194988-1
Sample date: 2023-11-03
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected or UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194988-1

Sample Name: MW-154S_110323
Lab Sample ID: 2401949882
Sample Date: 11/3/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194988-1

		Sample Name:	TRIP BLANK_60				MW-154S_110323			
		Lab Sample ID:	2401949881				2401949882			
		Sample Date:	11/3/2023				11/3/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194988-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52102R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194988-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_60	240-194988-1	Water	11/03/2023		X	
MW-154S_110323	240-194988-2	Water	11/03/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-154S_110323 (240-194988-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

CH 19

2-0 13-1

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP ~~On-Site~~ offsite SG

Project Number: 30167538.~~401.03~~ 402.04 SG

PO # 30167538.~~401.03~~ 402.04 SG

Client Project Manager: Kris Hinskey

Telephone: 248-994-2240

Email: kristoffer.hinskey@arcadis.com

Sampler Name: Alana Pitera

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2240

Lab Contact: Mike DelMonico

Telephone: 330-497-9396

COC No:

1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

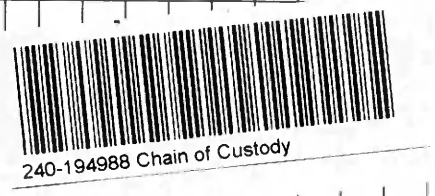
Analysis Turnaround Time

TAT if different from below

10 day

☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_60	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-19S_110323	11/03/23	1330		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample address: 34682 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Pitera	Arcadis	11/03/23/ 1500	Navi cold storage	Arcadis	11/03/23 1500
Jennifer Ley	Arcadis	11/7/23 1350	[illegible]	FEDEX	11/7/23 1350
[illegible]	FEDEX	11/7/23 1400	Rachelle Harrell	BETMC	11-8-23 800

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11/16/2023

Client Sample ID: TRIP BLANK_60
Lab Sample ID: 240-194988-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 13:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/10/23 13:50*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 13:50*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/23 13:50*	*1*

Client Sample ID: MW-154S_110323
Lab Sample ID: 240-194988-2
Date Collected: 11/03/23 13:30
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/15/23 00:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/10/23 17:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 17:35*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/10/23 17:35*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/10/23 17:35*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 17:35*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:57:53 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195668-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195668-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195668-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195668-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195668-1	TRIP BLANK_2	Water	11/13/23 00:00	11/17/23 09:40
240-195668-2	MW-182S_111323	Water	11/13/23 12:20	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_2 — Lab Sample ID: 240-195668-1

No Detections.

Client Sample ID: MW-182S_111323 — Lab Sample ID: 240-195668-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195668-1

Client Sample ID: TRIP BLANK_2
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195668-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/22/23 18:14*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 18:14*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 18:14*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 18:14*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195668-1

Client Sample ID: MW-182S_111323
Date Collected: 11/13/23 12:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195668-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 05:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 07:04*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 07:04*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 07:04*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/22/23 07:04*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195668-1	TRIP BLANK_2	114	97	99	100
240-195668-2	MW-182S_111323	110	97	100	101
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195668-2	MW-182S_111323	97
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195668-2	MW-182S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195668-1	TRIP BLANK_2	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195668-2	MW-182S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_2
Lab Sample ID: 240-195668-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 18:14

Client Sample ID: MW-182S_111323
Lab Sample ID: 240-195668-2
Date Collected: 11/13/23 12:20
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 07:04
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 05:54

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195668-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: S. Sider	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_2		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-182S_111323	11/13/2023	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195668 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: [redacted] 34766 Standish St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sierra Sider	Company: Arcadis	Date/Time: 11/13/2023 1335	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 11/13/2023 1335
Relinquished by: [signature]	Company: Arcadis	Date/Time: 11/16/23 0845	Received by: [signature]	Company: EEA	Date/Time: 11/16/23 10716
Relinquished by: [signature]	Company: EEA	Date/Time: 11/16/23 10:20	Received in Laboratory by: [signature]	Company: EC	Date/Time: 11-17-23 940

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195668
Barberton Facility

Client Arcadis Site Name Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA) 11-18-23
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	9	9
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195668

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195668-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers Were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195668-1

		Sample Name:	TRIP BLANK_2				MW-182S_111323			
		Lab Sample ID:	2401956681				2401956682			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195668-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52160R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195668-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_2	240-195668-1	Water	11/13/2023		X	
MW-182S_111323	240-195668-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

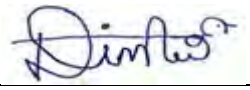
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_2		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-182S_111323	11/13/2023	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195668 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: [redacted] 34766 Standish St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	11/13/2023 1335	Novi Cold Storage	Arcadis	11/13/2023 1335
	Arcadis	11/16/23 0845		EZA	11/16/23 10:16
	EZA	11/16/23 10:20	Received in Laboratory by:	EC	11-17-23 950

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11/27/2023

Client Sample ID: TRIP BLANK_2
Lab Sample ID: 240-195668-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/22/23 18:14*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 18:14*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 18:14*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 18:14*	*1*

Client Sample ID: MW-182S_111323
Lab Sample ID: 240-195668-2
Date Collected: 11/13/23 12:20
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 05:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 07:04*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 07:04*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 07:04*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/22/23 07:04*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/28/2023 4:58:09 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195662-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/28/2023 4:58:09 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195662-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195662-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 595564 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195662-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195662-1	TRIP BLANK_142	Water	11/13/23 00:00	11/17/23 09:40
240-195662-2	MW-110S_111323	Water	11/13/23 12:30	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142 — Lab Sample ID: 240-195662-1

No Detections.

Client Sample ID: MW-110S_111323 — Lab Sample ID: 240-195662-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195662-1

Client Sample ID: TRIP BLANK_142
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195662-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 19:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/22/23 19:51*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/22/23 19:51*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 19:51*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/22/23 19:51*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195662-1

Client Sample ID: MW-110S_111323
Date Collected: 11/13/23 12:30
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195662-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 04:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 04:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 05:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 05:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 05:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 05:26*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 05:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 05:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 05:26*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195662-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195494-F-27 MSD	Matrix Spike Duplicate	92	92	103	90
240-195494-I-27 MS	Matrix Spike	85	93	102	84
240-195662-1	TRIP BLANK_142	89	86	100	86
240-195662-2	MW-110S_111323	111	99	101	100
240-195662-2 MS	MW-110S_111323	110	100	101	101
240-195662-2 MSD	MW-110S_111323	111	100	100	101
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595564/4	Lab Control Sample	90	98	110	91
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595564/7	Method Blank	95	100	107	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195662-2	MW-110S_111323	97
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		98	63 - 134
cis-1,2-Dichloroethene	25.0	25.7		ug/L		103	77 - 123
Tetrachloroethene	25.0	22.5		ug/L		90	76 - 123
trans-1,2-Dichloroethene	25.0	24.9		ug/L		99	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	11.1		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: MW-110S_111323
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: MW-110S_111323
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: 240-195662-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: MW-110S_111323
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: MB 240-595564/7
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/22/23 12:54	1
4-Bromofluorobenzene (Surr)	100		56 - 136		11/22/23 12:54	1
Toluene-d8 (Surr)	107		78 - 122		11/22/23 12:54	1
Dibromofluoromethane (Surr)	87		73 - 120		11/22/23 12:54	1

Lab Sample ID: LCS 240-595564/4
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.5		ug/L		118	63 - 134
cis-1,2-Dichloroethene	25.0	28.4		ug/L		114	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	29.9		ug/L		119	75 - 124
Trichloroethene	25.0	23.9		ug/L		95	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595564/4
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	13.0		ug/L		104	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-195494-F-27 MSD
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 135	12	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.4		ug/L		105	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	27.6		ug/L		110	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	25.0	24.1		ug/L		97	61 - 124	4	15
Vinyl chloride	1.0	U	12.5	12.0		ug/L		96	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-195494-I-27 MS
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.7		ug/L		95	66 - 128		
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		113	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	56 - 136		
Trichloroethene	1.0	U	25.0	23.2		ug/L		93	61 - 124		
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195662-2	MW-110S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-2 MS	MW-110S_111323	Total/NA	Water	8260D	
240-195662-2 MSD	MW-110S_111323	Total/NA	Water	8260D	

Analysis Batch: 595564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195662-1	TRIP BLANK_142	Total/NA	Water	8260D	
MB 240-595564/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595564/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-F-27 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-195494-I-27 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195662-2	MW-110S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142
Lab Sample ID: 240-195662-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595564	LEE	EET CLE	11/22/23 19:51

Client Sample ID: MW-110S_111323
Lab Sample ID: 240-195662-2
Date Collected: 11/13/23 12:30
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 05:26
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 04:18

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195662-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 142	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1105-111323	11/13/23	1230		6						6					W	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195662 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34850 Standish St.
Submit all results through Cadena at itomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EETA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/23 1020		EC	11-17-23 900

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MIGAN 190

11/28/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195662

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

MSC 11-18-23

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195662

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(2) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(4) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195662-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-28
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195662-1

		Sample Name:	TRIP BLANK_142				MW-110S_111323			
		Lab Sample ID:	2401956621				2401956622			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195662-1

CADENA Verification Report: 2023-11-28

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52165R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195662-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_142	240-195662-1	Water	11/13/2023		X	
MW-110S_111323	240-195662-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_142	Continuous Calibration Verification %D	Vinyl chloride	+27.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

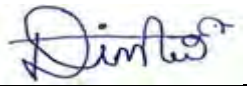
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 142	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1105-111323	11/13/23	1230		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195662 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34850 Standish St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

MICHIGAN 190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EFA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EFA	11/16/23 1020		EC	11-17-23 940

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 142	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1105-111323	11/13/23	1230		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195662 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34850 Standish St.
Submit all results through Cadena at tomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EFA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EFA	11/16/23 1620		EC	11-17-23 940

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LOGAN 190

Client Sample ID: TRIP BLANK_142
Lab Sample ID: 240-195662-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 19:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 19:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 19:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 19:51	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/22/23 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/22/23 19:51*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/22/23 19:51*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 19:51*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/22/23 19:51*	*1*

Client Sample ID: MW-110S_111323
Lab Sample ID: 240-195662-2
Date Collected: 11/13/23 12:30
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 04:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 04:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 05:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 05:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 05:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 05:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 05:26*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 05:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 05:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 05:26*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:28:02 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195403-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:28:02 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195403-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195403-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195403-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195403-1	TRIP BLANK_81	Water	11/10/23 00:00	11/14/23 10:00
240-195403-2	MW-116S_111023	Water	11/10/23 10:35	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_81 — Lab Sample ID: 240-195403-1

No Detections.

Client Sample ID: MW-116S_111023 — Lab Sample ID: 240-195403-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195403-1

Client Sample ID: TRIP BLANK_81
Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195403-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 19:13*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/19/23 19:13*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 19:13*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 19:13*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195403-1

Client Sample ID: MW-116S_111023
Date Collected: 11/10/23 10:35
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195403-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 19:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 19:37*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 19:37*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 19:37*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 19:37*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195403-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195284-B-4 MS	Matrix Spike	98	90	104	95
240-195284-B-4 MSD	Matrix Spike Duplicate	100	90	106	96
240-195403-1	TRIP BLANK_81	104	86	107	94
240-195403-2	MW-116S_111023	105	88	107	96
LCS 240-595140/5	Lab Control Sample	102	89	107	98
MB 240-595140/9	Method Blank	107	88	107	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195403-2	MW-116S_111023	97
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595140/9
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 15:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 15:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 15:12*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 15:12*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 15:12*	*1*

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	17.8		ug/L		89	63 - 134		
cis-1,2-Dichloroethene			20.0	17.2		ug/L		86	77 - 123		
Tetrachloroethene			20.0	19.7		ug/L		99	76 - 123		
trans-1,2-Dichloroethene			20.0	17.0		ug/L		85	75 - 124		
Trichloroethene			20.0	16.8		ug/L		84	70 - 122		
Vinyl chloride			20.0	19.9		ug/L		100	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	400	335		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	510		400	853		ug/L		85	66 - 128		
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136		
Trichloroethene	20	U	400	324		ug/L		81	61 - 124		
Vinyl chloride	380		400	769		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MSD
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	355		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	510		400	878		ug/L		91	66 - 128	3	14
Tetrachloroethene	20	U	400	398		ug/L		99	62 - 131	7	20
trans-1,2-Dichloroethene	20	U	400	363		ug/L		91	56 - 136	8	15
Trichloroethene	20	U	400	349		ug/L		87	61 - 124	7	15
Vinyl chloride	380		400	760		ug/L		94	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195403-1	TRIP BLANK_81	Total/NA	Water	8260D	
240-195403-2	MW-116S_111023	Total/NA	Water	8260D	
MB 240-595140/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595140/5	Lab Control Sample	Total/NA	Water	8260D	
240-195284-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195284-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195403-2	MW-116S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_81
Lab Sample ID: 240-195403-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 19:13

Client Sample ID: MW-116S_111023
Lab Sample ID: 240-195403-2
Date Collected: 11/10/23 10:35
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 19:37
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 19:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195403-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

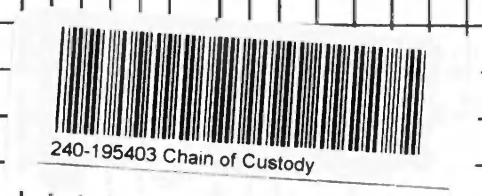
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client:
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_91	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1165_111023	11/10/23	1035		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34951 Wadsworth

Submit all results through Cadena at jtomalis@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/10/23 1310	Novi cold storage	Arcadis	11/10/23 1310
	Arcadis	11/13/23 0935		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by:	EETMC	11.14.23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler unpacked by: Alyssa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF _____ °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195403-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195403-1

		Sample Name:	TRIP BLANK_81				MW-116S_111023			
		Lab Sample ID:	2401954031				2401954032			
		Sample Date:	11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195403-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52158R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195403-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_81	240-195403-1	Water	11/10/2023		X	
MW-116S_111023	240-195403-2	Water	11/10/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

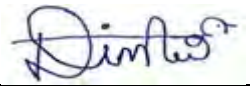
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1165_111023	11/10/23	1035		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195403 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 Wadsworth

Submit all results through Cadena at jtomalis@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/10/23 1310	Novi cold storage	Arcadis	11/10/23 1310
	Arcadis	11/13/23 0935		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by:	EETMC	11.14.23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_81
Lab Sample ID: 240-195403-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 19:13*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/19/23 19:13*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 19:13*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 19:13*	*1*

Client Sample ID: MW-116S_111023
Lab Sample ID: 240-195403-2
Date Collected: 11/10/23 10:35
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 19:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 19:37*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 19:37*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 19:37*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 19:37*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:48:14 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194768-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:48:14 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194768-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194768-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194768-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194768-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194768-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194768-1	TRIP BLANK_17	Water	11/01/23 00:00	11/03/23 08:00
240-194768-2	MW-179S_110123	Water	11/01/23 11:43	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194768-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_17 — Lab Sample ID: 240-194768-1

No Detections.

Client Sample ID: MW-179S_110123 — Lab Sample ID: 240-194768-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194768-1

Client Sample ID: TRIP BLANK_17
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194768-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 20:01*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 20:01*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/09/23 20:01*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/09/23 20:01*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194768-1

Client Sample ID: MW-179S_110123
Date Collected: 11/01/23 11:43
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194768-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/09/23 19:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 22:48*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 22:48*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/09/23 22:48*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/09/23 22:48*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194768-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194768-1	TRIP BLANK_17	104	101	103	104
240-194768-2	MW-179S_110123	104	101	102	105
240-194769-H-1 MS	Matrix Spike	100	101	100	101
240-194769-I-1 MSD	Matrix Spike Duplicate	99	101	99	98
LCS 240-594104/5	Lab Control Sample	111	114	111	110
MB 240-594104/8	Method Blank	111	108	110	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194768-2	MW-179S_110123	105
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594104/8
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/09/23 18:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/09/23 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/09/23 18:02*	*1*

Lab Sample ID: LCS 240-594104/5
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	25.4		ug/L		102	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.1		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.5		25.0	25.5		ug/L		96	66 - 128
Tetrachloroethene	0.46	J	25.0	23.0		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	0.90	J	25.0	23.6		ug/L		91	61 - 124
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194769-I-1 MSD
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 135	2	26
cis-1,2-Dichloroethene	1.5		25.0	26.4		ug/L		100	66 - 128	4	14
Tetrachloroethene	0.46	J	25.0	23.4		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 136	0	15
Trichloroethene	0.90	J	25.0	24.0		ug/L		93	61 - 124	2	15
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194768-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194768-2	MW-179S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194768-1	TRIP BLANK_17	Total/NA	Water	8260D	
240-194768-2	MW-179S_110123	Total/NA	Water	8260D	
MB 240-594104/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594104/5	Lab Control Sample	Total/NA	Water	8260D	
240-194769-H-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194769-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194768-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_17
Lab Sample ID: 240-194768-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 20:01

Client Sample ID: MW-179S_110123
Lab Sample ID: 240-194768-2
Date Collected: 11/01/23 11:43
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 22:48
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 19:29

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194768-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

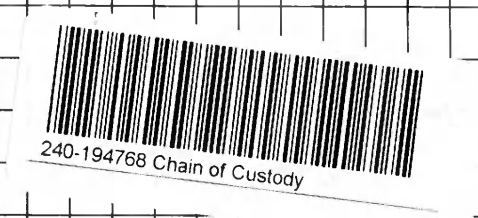
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_17	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1795_110123	11/01/23	11:43		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34870 Wadsworth St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	NOVI cold storage	Arcadis	11/01/23 17:15
	Arcadis	11/2/23 1023		EEA	11/2/23 1023
	EEA	11/2/23 1023	Received in Laboratory by:	EETC	11-3-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194768
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194768

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194768-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194768-1

		Sample Name:	TRIP BLANK_17				MW-179S_110123			
		Lab Sample ID:	2401947681				2401947682			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194768-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52111R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194768-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_17	240-194768-1	Water	11/01/2023		X	
MW-179S_110123	240-194768-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_17	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1795_110123	11/01/23	11:43		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194768 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34870 Wadsworth St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	Novi cold storage	Arcadis	11/01/23 17:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023	Jen Hall	EEA	11/2/23 1023
Relinquished by: Jen Hall	Company: EEA	Date/Time: 11/2/23 1023	Received in Laboratory by:	Company: TETNC	Date/Time: 11-3-23 800

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11/3/2023

Client Sample ID: TRIP BLANK_17
Lab Sample ID: 240-194768-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 20:01*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 20:01*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/09/23 20:01*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/09/23 20:01*	*1*

Client Sample ID: MW-179S_110123
Lab Sample ID: 240-194768-2
Date Collected: 11/01/23 11:43
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/09/23 19:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 22:48*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/09/23 22:48*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/09/23 22:48*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/09/23 22:48*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:55:24 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194751-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:55:24 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194751-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194751-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194751-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194751-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194751-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194751-1	TRIP BLANK_5	Water	11/01/23 00:00	11/03/23 08:00
240-194751-2	MW-180SR_110123	Water	11/01/23 13:04	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194751-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_5 — Lab Sample ID: 240-194751-1

No Detections.

Client Sample ID: MW-180SR_110123 — Lab Sample ID: 240-194751-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194751-1

Client Sample ID: TRIP BLANK_5
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194751-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 17:01*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 17:01*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/23 17:01*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/23 17:01*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194751-1

Client Sample ID: MW-180SR_110123
Date Collected: 11/01/23 13:04
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194751-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/10/23 12:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 18:38*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 18:38*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 18:38*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 18:38*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194751-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194751-1	TRIP BLANK_5	101	95	98	101
240-194751-2	MW-180SR_110123	101	94	97	100
240-194858-C-5 MS	Matrix Spike	98	98	98	101
240-194858-C-5 MSD	Matrix Spike Duplicate	93	94	97	99
LCS 240-594032/5	Lab Control Sample	97	95	95	100
MB 240-594032/9	Method Blank	100	91	94	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194751-2	MW-180SR_110123	105
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594032/9
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 14:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/23 14:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/09/23 14:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/23 14:12*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 14:12*	*1*

Lab Sample ID: LCS 240-594032/5
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	18.1		ug/L		91	70 - 122
Vinyl chloride	20.0	21.9		ug/L		110	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	200	U	4000	3990		ug/L		100	56 - 135
cis-1,2-Dichloroethene	2700		4000	6590		ug/L		97	66 - 128
Tetrachloroethene	2000		4000	6000		ug/L		100	62 - 131
trans-1,2-Dichloroethene	200	U	4000	3770		ug/L		94	56 - 136
Trichloroethene	6200		4000	9820		ug/L		91	61 - 124
Vinyl chloride	200	U	4000	4530		ug/L		113	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194858-C-5 MS
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194858-C-5 MSD
Matrix: Water
Analysis Batch: 594032

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	200	U	4000	4200		ug/L		105	56 - 135	5	26
cis-1,2-Dichloroethene	2700		4000	6520		ug/L		96	66 - 128	1	14
Tetrachloroethene	2000		4000	6400		ug/L		110	62 - 131	6	20
trans-1,2-Dichloroethene	200	U	4000	4050		ug/L		101	56 - 136	7	15
Trichloroethene	6200		4000	9810		ug/L		91	61 - 124	0	15
Vinyl chloride	200	U	4000	4840		ug/L		121	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194751-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194751-1	TRIP BLANK_5	Total/NA	Water	8260D	
240-194751-2	MW-180SR_110123	Total/NA	Water	8260D	
MB 240-594032/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594032/5	Lab Control Sample	Total/NA	Water	8260D	
240-194858-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-194858-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194751-2	MW-180SR_110123	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194751-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_5
Lab Sample ID: 240-194751-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 17:01

Client Sample ID: MW-180SR_110123
Lab Sample ID: 240-194751-2
Date Collected: 11/01/23 13:04
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594032	HMB	EET CLE	11/09/23 18:38
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 12:31

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194751-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

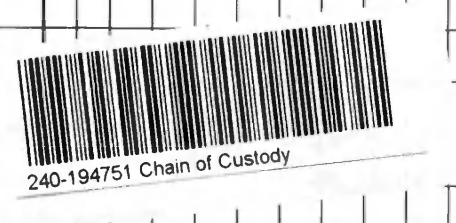
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schenkel	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_5	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-180SR_110123	11/01/23	1304		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34891 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schenkel	Arcadis	11/01/23 17:15	Novi Cold Storage	Arcadis	11/01/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETMC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194751
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Darry Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1C Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194751

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194751-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194751-1

		Sample Name:	TRIP BLANK_5				MW-180SR_110123			
		Lab Sample ID:	2401947511				2401947512			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194751-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52284R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194751-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_5	240-194751-1	Water	11/01/2023		X	
MW-180SR_110123	240-194751-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

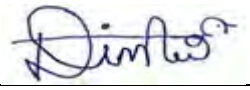
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schenkel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_5	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-180SR_110123	11/01/23	1304		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194751 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34841 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schenkel	Arcadis	11/01/23 17:15	Novi Cold Storage	Arcadis	11/01/23 1715
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023		EETAC	11-3-23 800

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Client Sample ID: TRIP BLANK_5
Lab Sample ID: 240-194751-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 17:01*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 17:01*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/23 17:01*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/23 17:01*	*1*

Client Sample ID: MW-180SR_110123
Lab Sample ID: 240-194751-2
Date Collected: 11/01/23 13:04
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/10/23 12:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 18:38*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/09/23 18:38*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/09/23 18:38*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 18:38*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:23:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195970-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:23:04 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195970-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195970-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/25/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-596013 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195970-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195970-1	TRIP BLANK_107	Water	11/21/23 00:00	11/25/23 10:00
240-195970-2	MW-104S_112123	Water	11/21/23 12:40	11/25/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_107 — Lab Sample ID: 240-195970-1

No Detections.

Client Sample ID: MW-104S_112123 — Lab Sample ID: 240-195970-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195970-1

Client Sample ID: TRIP BLANK_107
Date Collected: 11/21/23 00:00
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195970-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 14:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 14:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 14:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/29/23 14:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 14:18*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 14:18*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 14:18*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195970-1

Client Sample ID: MW-104S_112123
Date Collected: 11/21/23 12:40
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195970-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 16:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 15:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 15:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 15:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/29/23 15:35*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 15:35*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/23 15:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/23 15:35*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195970-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195970-1	TRIP BLANK_107	97	96	105	100
240-195970-2	MW-104S_112123	98	96	102	99
240-195972-D-4 MS	Matrix Spike	94	101	105	96
240-195972-E-4 MSD	Matrix Spike Duplicate	93	103	105	96
LCS 240-596013/5	Lab Control Sample	89	98	106	98
MB 240-596013/9	Method Blank	95	98	101	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195931-I-3 MS	Matrix Spike	98
240-195931-M-3 MSD	Matrix Spike Duplicate	98
240-195970-2	MW-104S_112123	97
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-596013/9
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 11:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 11:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 11:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 11:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/29/23 11:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/23 11:23*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/23 11:23*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/23 11:23*	*1*

Lab Sample ID: LCS 240-596013/5
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	22.0		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			20.0	19.0		ug/L		95	77 - 123		
Tetrachloroethene			20.0	20.8		ug/L		104	76 - 123		
trans-1,2-Dichloroethene			20.0	20.6		ug/L		103	75 - 124		
Trichloroethene			20.0	18.3		ug/L		92	70 - 122		
Vinyl chloride			20.0	23.8		ug/L		119	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195972-D-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128		
Tetrachloroethene	1.0	U	20.0	18.8		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.8		ug/L		99	56 - 136		
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	22.5		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195972-D-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195972-E-4 MSD
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		97	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	21.9		ug/L		110	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195931-I-3 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195931-M-3 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 596013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195970-1	TRIP BLANK_107	Total/NA	Water	8260D	
240-195970-2	MW-104S_112123	Total/NA	Water	8260D	
MB 240-596013/9	Method Blank	Total/NA	Water	8260D	
LCS 240-596013/5	Lab Control Sample	Total/NA	Water	8260D	
240-195972-D-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195972-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195970-2	MW-104S_112123	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195931-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195931-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_107
Lab Sample ID: 240-195970-1

Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 14:18

Client Sample ID: MW-104S_112123
Lab Sample ID: 240-195970-2

Date Collected: 11/21/23 12:40
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 15:35
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 16:58

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195970-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below 10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_107	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-104S_112123	11/21/23	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D LT 3 VOAs for 8260 SIM

240-195970 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34900 Stanidish St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/23 1730	Novi Cold Storage	ARCADIS	11/21/23 1730
	ARCADIS	11/22/23 1406		CETA	11/22/23 1406
	CETA	11/22/23 1406	Received in Laboratory by:	CETNC	11-25-23 1000

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Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** 195970
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 11-25-23 Opened on 11-27-23

Cooler unpacked by: DME

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 2 Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195970-1
Sample date: 2023-11-21
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

No significant QC anomalies or exceptions to report.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195970-1

		Sample Name:	TRIP BLANK_107				MW-104S_112123			
		Lab Sample ID:	2401959701				2401959702			
		Sample Date:	11/21/2023				11/21/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195970-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52177R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195970-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_107	240-195970-1	Water	11/21/2023		X	
MW-104S_112123	240-195970-2	Water	11/21/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_107 MW-104S_112123	Continuing Calibration Verification %D	Vinyl chloride	+29.9%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only		
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Speci Special Instr
TRIP BLANK_107	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-104S_112123	11/21/23	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260 LT 3 VOAs for 8260 SIM

240-195970 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 39900 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/23 1730	Novi Cold Storage	ARCADIS	11/21/23 1730
	ARCADIS	11/22/23 1406		CETA	11/22/23 1406
	CETA	11/22/23 1406	Received in Laboratory by:	CETNC	11-25-23 1000

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11/01/2023

Client Sample ID: TRIP BLANK_107
Lab Sample ID: 240-195970-1
Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 14:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 14:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 14:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 14:18	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/29/23 14:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 14:18*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 14:18*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 14:18*	*1*

Client Sample ID: MW-104S_112123
Lab Sample ID: 240-195970-2
Date Collected: 11/21/23 12:40
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 16:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 15:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 15:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 15:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:35	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/29/23 15:35*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 15:35*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/23 15:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/23 15:35*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:39:01 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195291-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:39:01 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195291-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195291-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
Method 8260D_SIM: The following sample was analyzed outside of analytical holding time due to instrument malfunction: MW-159S_110923 (240-195291-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195291-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195291-1	TRIP BLANK_75	Water	11/09/23 00:00	11/11/23 08:00
240-195291-2	MW-159S_110923	Water	11/09/23 14:44	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_75 — Lab Sample ID: 240-195291-1

No Detections.

Client Sample ID: MW-159S_110923 — Lab Sample ID: 240-195291-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195291-1

Client Sample ID: TRIP BLANK_75
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195291-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 18:39*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 18:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 18:39*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 18:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195291-1

Client Sample ID: MW-159S_110923
Date Collected: 11/09/23 14:44
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195291-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			11/24/23 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 20:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 19:03*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 19:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 19:03*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 19:03*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195291-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195291-1	TRIP BLANK_75	104	95	98	93
240-195291-2	MW-159S_110923	102	95	98	98
LCS 240-595149/4	Lab Control Sample	103	98	97	101
MB 240-595149/7	Method Blank	103	95	99	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195291-2	MW-159S_110923	97
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.7		ug/L		103	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	24.1		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			25.0	25.1		ug/L		100	75 - 124		
Trichloroethene			25.0	25.4		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135		
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128		
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136		
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124		
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195291-1	TRIP BLANK_75	Total/NA	Water	8260D	
240-195291-2	MW-159S_110923	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195291-2	MW-159S_110923	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_75
Lab Sample ID: 240-195291-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 18:39

Client Sample ID: MW-159S_110923
Lab Sample ID: 240-195291-2
Date Collected: 11/09/23 14:44
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 19:03
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 20:42

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195291-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_75	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1595_110923	11/09/23	1444		G						G					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Page 18 of 19

240-195291 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34920 Beacon
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-09-23 / 18:05	NOVI Cold Storage	Arcadis	11-09-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/10/23 1335	[signature]	FEDEX	11/10/23 1355
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	FEDEX	11/10/23 1360	[signature]	CETNC	11-11-23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - covered	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195291-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HTQ - GCMS VOC SIM sample -002 analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195291-1

		Sample Name:	MW-159S_110923			
		Lab Sample ID:	2401952912			
		Sample Date:	11/9/2023			
	Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC						
OSW-8260DSIM						
	1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195291-1

		Sample Name:	TRIP BLANK_75				MW-159S_110923			
		Lab Sample ID:	2401952911				2401952912			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	UJ

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195291-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52145R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195291-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_75	240-195291-1	Water	11/09/2023		X	
MW-159S_110923	240-195291-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
MW-159S_110923 (SIM analysis)	15 Days	14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8260-SIM were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

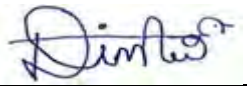
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 16, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_75	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1595_110923	11/09/23	1444		G						G					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34920 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-04-23 / 18:05	NOVI Cold Storage	Arcadis	11-04-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jammel Ely	Arcadis	11/10/23 1335		FEDEX	11/10/23 1335
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEDEX	11/10/23 1810	Alissa Atherton	EETNC	11-11-23 0800

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240-195291 Chain of Custody

11/27/2023

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_75	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1595_110923	11/09/23	1444		G						G					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195291 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34920 Beacon
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-04-23 / 18:05	NOVI Cold Storage	Arcadis	11-04-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/10/23 1335	[signature]	FEDEX	11/10/23 1355
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	FEDEX	11/10/23 1800	[signature]	CETNC	11-11-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_75
Lab Sample ID: 240-195291-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 18:39*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 18:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 18:39*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 18:39*	*1*

Client Sample ID: MW-159S_110923
Lab Sample ID: 240-195291-2
Date Collected: 11/09/23 14:44
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	~~U H~~ UJ	2.0	0.86	ug/L			11/24/23 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 20:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 19:03*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 19:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 19:03*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 19:03*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:44:46 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195402-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:44:46 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195402-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195402-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195402-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195402-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195402-1	TRIP BLANK_82	Water	11/10/23 00:00	11/14/23 10:00
240-195402-2	MW-185S_111023	Water	11/10/23 09:32	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_82 — Lab Sample ID: 240-195402-1

No Detections.

Client Sample ID: MW-185S_111023 — Lab Sample ID: 240-195402-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_82
Lab Sample ID: 240-195402-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 18:25*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/19/23 18:25*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/19/23 18:25*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 18:25*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195402-1

Client Sample ID: MW-185S_111023
Date Collected: 11/10/23 09:32
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195402-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 18:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 18:49*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/19/23 18:49*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 18:49*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 18:49*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195402-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195284-B-4 MS	Matrix Spike	98	90	104	95
240-195284-B-4 MSD	Matrix Spike Duplicate	100	90	106	96
240-195402-1	TRIP BLANK_82	105	86	106	97
240-195402-2	MW-185S_111023	103	85	104	93
LCS 240-595140/5	Lab Control Sample	102	89	107	98
MB 240-595140/9	Method Blank	107	88	107	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195402-2	MW-185S_111023	97
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595140/9
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 15:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 15:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 15:12*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 15:12*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 15:12*	*1*

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	17.8		ug/L		89	63 - 134		
cis-1,2-Dichloroethene			20.0	17.2		ug/L		86	77 - 123		
Tetrachloroethene			20.0	19.7		ug/L		99	76 - 123		
trans-1,2-Dichloroethene			20.0	17.0		ug/L		85	75 - 124		
Trichloroethene			20.0	16.8		ug/L		84	70 - 122		
Vinyl chloride			20.0	19.9		ug/L		100	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	400	335		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	510		400	853		ug/L		85	66 - 128		
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136		
Trichloroethene	20	U	400	324		ug/L		81	61 - 124		
Vinyl chloride	380		400	769		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MSD
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	355		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	510		400	878		ug/L		91	66 - 128	3	14
Tetrachloroethene	20	U	400	398		ug/L		99	62 - 131	7	20
trans-1,2-Dichloroethene	20	U	400	363		ug/L		91	56 - 136	8	15
Trichloroethene	20	U	400	349		ug/L		87	61 - 124	7	15
Vinyl chloride	380		400	760		ug/L		94	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195402-1	TRIP BLANK_82	Total/NA	Water	8260D	
240-195402-2	MW-185S_111023	Total/NA	Water	8260D	
MB 240-595140/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595140/5	Lab Control Sample	Total/NA	Water	8260D	
240-195284-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195284-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195402-2	MW-185S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_82
Lab Sample ID: 240-195402-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 18:25

Client Sample ID: MW-185S_111023
Lab Sample ID: 240-195402-2
Date Collected: 11/10/23 09:32
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 18:49
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 18:42

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195402-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_82	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1855_111023	11/10/23	0932		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195402 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34921 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/10/23 1310	Novi Cold Storage	Arcadis	11/10/23 1310
	Arcadis	11/13/23 0835		EEN	11/13/23
	EEN	11/13/23	Alissa Attanasio	EEN	11-14-23

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alyssa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195402-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195402-1

		Sample Name:	TRIP BLANK_82				MW-185S_111023			
		Lab Sample ID:	2401954021				2401954022			
		Sample Date:	11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195402-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52157R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195402-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_82	240-195402-1	Water	11/10/2023		X	
MW-185S_111023	240-195402-2	Water	11/10/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

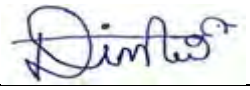
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client:
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_82	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1855_111023	11/10/23	0932		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195402 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34921 Beacon
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/10/23 1310	Novi Cold Storage	Arcadis	11/10/23 1310
	Arcadis	11/13/23 0835		EENA	11/13/23
	EENA	11/13/23	Received in Laboratory by: Alissa Attanasio	EENC	11-14-23

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Client Sample ID: TRIP BLANK_82
Lab Sample ID: 240-195402-1
Date Collected: 11/10/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 18:25*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/19/23 18:25*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/19/23 18:25*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 18:25*	*1*

Client Sample ID: MW-185S_111023
Lab Sample ID: 240-195402-2
Date Collected: 11/10/23 09:32
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 18:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 18:49*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/19/23 18:49*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 18:49*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 18:49*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:31:46 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195667-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:31:46 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195667-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195667-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195667-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195667-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195667-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195667-1	TRIP BLANK_130	Water	11/13/23 00:00	11/17/23 09:40
240-195667-2	MW-183S_111323	Water	11/13/23 11:05	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195667-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_130 — Lab Sample ID: 240-195667-1

No Detections.

Client Sample ID: MW-183S_111323 — Lab Sample ID: 240-195667-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195667-1

Client Sample ID: TRIP BLANK_130
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195667-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/22/23 17:49*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 17:49*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/23 17:49*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 17:49*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195667-1

Client Sample ID: MW-183S_111323
Date Collected: 11/13/23 11:05
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195667-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/25/23 05:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 06:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 06:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 06:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 06:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 06:40*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 06:40*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 06:40*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/22/23 06:40*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195667-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195667-1	TRIP BLANK_130	109	99	102	99
240-195667-2	MW-183S_111323	112	96	98	101
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195667-2	MW-183S_111323	96
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195667-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195667-2	MW-183S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195667-1	TRIP BLANK_130	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195667-2	MW-183S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195667-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_130
Lab Sample ID: 240-195667-1

Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 17:49

Client Sample ID: MW-183S_111323
Lab Sample ID: 240-195667-2

Date Collected: 11/13/23 11:05
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 06:40
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 05:30

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195667-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 130	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1835-111323	11/13/23	1105		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195667 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34934 Standish St.
Submit all results through Cadena at jtomalin@cadenac m. Cadena #E203631
Level IV Reporting requested.

MICHIGAN 190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EETA	11/16/23 10:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/23 10120		EC	11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195067

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195667

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195667-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers Were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195667-1

		Sample Name:	TRIP BLANK_130				MW-183S_111323			
		Lab Sample ID:	2401956671				2401956672			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195667-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52159R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195667-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_130	240-195667-1	Water	11/13/2023		X	
MW-183S_111323	240-195667-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

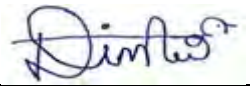
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_130	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1835-111323	11/13/23	1105		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195667 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34934 Standish St.
Submit all results through Cadena at jtomalin@cadenac... m. Cadena #E203631
Level IV Reporting requested.

MICHIGAN 190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 10:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 940

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Client Sample ID: TRIP BLANK_130
Lab Sample ID: 240-195667-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/22/23 17:49*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 17:49*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/23 17:49*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 17:49*	*1*

Client Sample ID: MW-183S_111323
Lab Sample ID: 240-195667-2
Date Collected: 11/13/23 11:05
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/25/23 05:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 06:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 06:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 06:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 06:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 06:40*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 06:40*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 06:40*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/22/23 06:40*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:48:51 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194770-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:48:51 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194770-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194770-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194770-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 594008 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-112S_103023 (240-194770-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194770-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194770-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194770-1	TRIP BLANK_11	Water	10/30/23 00:00	11/03/23 08:00
240-194770-2	MW-112S_103023	Water	10/30/23 14:35	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194770-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_11 — Lab Sample ID: 240-194770-1

No Detections.

Client Sample ID: MW-112S_103023 — Lab Sample ID: 240-194770-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194770-1

Client Sample ID: TRIP BLANK_11
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194770-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 17:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/09/23 17:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/09/23 17:11*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/23 17:11*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194770-1

Client Sample ID: MW-112S_103023
Date Collected: 10/30/23 14:35
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194770-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*137*	*S1+*	*66 - 120*		*11/09/23 19:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/09/23 17:34*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/09/23 17:34*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/09/23 17:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/09/23 17:34*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194770-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194602-C-2 MS	Matrix Spike	98	98	96	93
240-194602-C-2 MSD	Matrix Spike Duplicate	108	103	105	98
240-194770-1	TRIP BLANK_11	106	98	95	97
240-194770-2	MW-112S_103023	105	98	111	94
LCS 240-594008/4	Lab Control Sample	99	92	101	95
MB 240-594008/7	Method Blank	111	95	99	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194770-2	MW-112S_103023	137 S1+
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594008/7
Matrix: Water
Analysis Batch: 594008

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 11:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 11:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 11:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 11:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 11:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 11:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 11:21*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/09/23 11:21*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/09/23 11:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 11:21*	*1*

Lab Sample ID: LCS 240-594008/4
Matrix: Water
Analysis Batch: 594008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	26.1		ug/L		104	77 - 123
Tetrachloroethene	25.0	25.5		ug/L		102	76 - 123
trans-1,2-Dichloroethene	25.0	28.2		ug/L		113	75 - 124
Trichloroethene	25.0	26.9		ug/L		108	70 - 122
Vinyl chloride	12.5	9.99		ug/L		80	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194602-C-2 MS
Matrix: Water
Analysis Batch: 594008

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	27		500	514		ug/L		97	56 - 135
cis-1,2-Dichloroethene	10	J	500	460		ug/L		90	66 - 128
Tetrachloroethene	20	U	500	477		ug/L		95	62 - 131
trans-1,2-Dichloroethene	20	U	500	443		ug/L		89	56 - 136
Trichloroethene	600	F1	500	849	F1	ug/L		49	61 - 124
Vinyl chloride	20	U	250	196		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194602-C-2 MS
Matrix: Water
Analysis Batch: 594008

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194602-C-2 MSD
Matrix: Water
Analysis Batch: 594008

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	27		500	535		ug/L		102	56 - 135	4	26
cis-1,2-Dichloroethene	10	J	500	509		ug/L		100	66 - 128	10	14
Tetrachloroethene	20	U	500	470		ug/L		94	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	463		ug/L		93	56 - 136	5	15
Trichloroethene	600	F1	500	865	F1	ug/L		52	61 - 124	2	15
Vinyl chloride	20	U	250	217		ug/L		87	43 - 157	10	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194770-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194770-1	TRIP BLANK_11	Total/NA	Water	8260D	
240-194770-2	MW-112S_103023	Total/NA	Water	8260D	
MB 240-594008/7	Method Blank	Total/NA	Water	8260D	
LCS 240-594008/4	Lab Control Sample	Total/NA	Water	8260D	
240-194602-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-194602-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194770-2	MW-112S_103023	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194770-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_11
Lab Sample ID: 240-194770-1

Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594008	LEE	EET CLE	11/09/23 17:11

Client Sample ID: MW-112S_103023
Lab Sample ID: 240-194770-2

Date Collected: 10/30/23 14:35
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594008	LEE	EET CLE	11/09/23 17:34
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 19:53

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194770-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 11	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1125_103023	10/30/23	1435		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194770 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	10/30/23 1643	Novi Cold Storage	Arcadis	10/30/23 1643
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # 5C Foam Box Client Cooler Box Other_____

Packing material used: Bubble Wrap Foam Plastic Bag None Other_____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes) No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	(Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?_____	(Yes) No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM_____ Date_____ by_____ via Verbal Voice Mail Other

Concerning_____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s)_____were received after the recommended holding time had expired.

Sample(s)_____were received in a broken container.

Sample(s)_____were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s)_____were further preserved in the laboratory.

Time preserved:_____Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen:_____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194770-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-17
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM sample -002 SURROGATE recovery was outlying biased high for 1 surrogate. Associated client sample results were non-detect so qualification was not required based on this high bias QC outlier.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194770-1

		Sample Name:	TRIP BLANK_11				MW-112S_103023			
		Lab Sample ID:	2401947701				2401947702			
		Sample Date:	10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194770-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52112R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194770-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_11	240-194770-1	Water	10/30/2023		X	
MW-112S_103023	240-194770-2	Water	10/30/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_11 MW-112S_103023	Continuous Calibration Verification %D	Vinyl chloride	+20.7%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 11	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1125_103023	10/30/23	1435		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194770 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	10/30/23 1643	Novi Cold Storage	Arcadis	10/30/23 1643
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023		EETC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_11
Lab Sample ID: 240-194770-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:11	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/09/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 17:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/09/23 17:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/09/23 17:11*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/23 17:11*	*1*

Client Sample ID: MW-112S_103023
Lab Sample ID: 240-194770-2
Date Collected: 10/30/23 14:35
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*137*	*S1+*	*66 - 120*		*11/09/23 19:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 17:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:34	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/09/23 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/09/23 17:34*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/09/23 17:34*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*11/09/23 17:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/09/23 17:34*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:36:58 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195288-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:36:58 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195288-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195288-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195288-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195288-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195288-1	TRIP BLANK_76	Water	11/09/23 00:00	11/11/23 08:00
240-195288-2	MW-89S_110923	Water	11/09/23 13:46	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

Client Sample ID: TRIP BLANK_76 — Lab Sample ID: 240-195288-1

No Detections.

Client Sample ID: MW-89S_110923 — Lab Sample ID: 240-195288-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.6		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.63	J	1.0	0.51	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

Client Sample ID: TRIP BLANK_76
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195288-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*		*11/19/23 19:09*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 19:09*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/19/23 19:09*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/19/23 19:09*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

Client Sample ID: MW-89S_110923
Date Collected: 11/09/23 13:46
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195288-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 23:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:34	1
cis-1,2-Dichloroethene	**5.6**		1.0	0.46	ug/L			11/19/23 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:34	1
trans-1,2-Dichloroethene	**0.63**	**J**	1.0	0.51	ug/L			11/19/23 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/19/23 19:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 19:34*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 19:34*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/19/23 19:34*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195250-B-5 MS	Matrix Spike	80	80	103	87
240-195250-B-5 MSD	Matrix Spike Duplicate	83	90	105	90
240-195288-1	TRIP BLANK_76	82	79	103	85
240-195288-2	MW-89S_110923	85	79	104	89
LCS 240-595142/6	Lab Control Sample	82	92	108	90
MB 240-595142/10	Method Blank	84	84	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195288-2	MW-89S_110923	97
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595142/10
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/19/23 14:01*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/19/23 14:01*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 14:01*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/19/23 14:01*	*1*

Lab Sample ID: LCS 240-595142/6
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.4		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			20.0	18.9		ug/L		94	77 - 123		
Tetrachloroethene			20.0	20.3		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			20.0	19.0		ug/L		95	75 - 124		
Trichloroethene			20.0	17.9		ug/L		89	70 - 122		
Vinyl chloride			20.0	17.0		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-195250-B-5 MS
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	100	U	2000	1920		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	74	J	2000	1950		ug/L		94	66 - 128		
Tetrachloroethene	100	U	2000	2020		ug/L		101	62 - 131		
trans-1,2-Dichloroethene	100	U	2000	1890		ug/L		95	56 - 136		
Trichloroethene	46	J	2000	1820		ug/L		89	61 - 124		
Vinyl chloride	100	U	2000	1710		ug/L		86	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*62 - 137*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195250-B-5 MS
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-195250-B-5 MSD
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2000	2010		ug/L		101	56 - 135	5	26
cis-1,2-Dichloroethene	74	J	2000	2050		ug/L		99	66 - 128	5	14
Tetrachloroethene	100	U	2000	2060		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	100	U	2000	1980		ug/L		99	56 - 136	5	15
Trichloroethene	46	J	2000	1910		ug/L		93	61 - 124	5	15
Vinyl chloride	100	U	2000	1810		ug/L		90	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.96		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195288-1

GC/MS VOA

Analysis Batch: 595142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195288-1	TRIP BLANK_76	Total/NA	Water	8260D	
240-195288-2	MW-89S_110923	Total/NA	Water	8260D	
MB 240-595142/10	Method Blank	Total/NA	Water	8260D	
LCS 240-595142/6	Lab Control Sample	Total/NA	Water	8260D	
240-195250-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195250-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195288-2	MW-89S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195288-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_76
Lab Sample ID: 240-195288-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595142	HMB	EET CLE	11/19/23 19:09

Client Sample ID: MW-89S_110923
Lab Sample ID: 240-195288-2
Date Collected: 11/09/23 13:46
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595142	HMB	EET CLE	11/19/23 19:34
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 23:51

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195288-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

3.1/3.3

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 76	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-895_110923	11/09/23	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195288 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-09-23 / 18:05	NOVI Cold Storage	Arcadis	11-09-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/23 1335		FEDEX	11/10/23 1335
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEDEX	11/10/23 1340	Alissa	FEDEX	11-11-23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195288-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195288-1

		Sample Name:	TRIP BLANK_76				MW-89S_110923			
		Lab Sample ID:	2401952881				2401952882			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	5.6	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	0.63	1.0	ug/l	J
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195288-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52143R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195288-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_76	240-195288-1	Water	11/09/2023		X	
MW-89S_110923	240-195288-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

3.1/3.3

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 76	—	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
✓ MW-895_110923	11/09/23	1340		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195288 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-09-23 / 18:05	NOVI COH Storage	Arcadis	11-09-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/10/23 1335	[signature]	EETM	11/10/23 1355
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETM	11/10/23 1340	[signature]	EETNE	11-11-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_76
Lab Sample ID: 240-195288-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*		*11/19/23 19:09*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 19:09*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/19/23 19:09*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/19/23 19:09*	*1*

Client Sample ID: MW-89S_110923
Lab Sample ID: 240-195288-2
Date Collected: 11/09/23 13:46
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 23:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:34	1
cis-1,2-Dichloroethene	**5.6**		1.0	0.46	ug/L			11/19/23 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:34	1
trans-1,2-Dichloroethene	**0.63**	**J**	1.0	0.51	ug/L			11/19/23 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/19/23 19:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 19:34*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 19:34*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/19/23 19:34*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:37:53 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195289-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:37:53 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195289-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195289-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195289-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195289-1	TRIP BLANK_74	Water	11/09/23 00:00	11/11/23 08:00
240-195289-2	MW-158S_110923	Water	11/09/23 12:20	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_74 **Lab Sample ID: 240-195289-1**

No Detections.

Client Sample ID: MW-158S_110923 **Lab Sample ID: 240-195289-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195289-1

Client Sample ID: TRIP BLANK_74
Date Collected: 11/09/23 00:00
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195289-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/19/23 20:00*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/19/23 20:00*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/19/23 20:00*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/19/23 20:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195289-1

Client Sample ID: MW-158S_110923
Date Collected: 11/09/23 12:20
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195289-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/23 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/23/23 00:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/19/23 20:26*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 20:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 20:26*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/19/23 20:26*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195289-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195250-B-5 MS	Matrix Spike	80	80	103	87
240-195250-B-5 MSD	Matrix Spike Duplicate	83	90	105	90
240-195289-1	TRIP BLANK_74	83	82	105	88
240-195289-2	MW-158S_110923	83	79	104	89
LCS 240-595142/6	Lab Control Sample	82	92	108	90
MB 240-595142/10	Method Blank	84	84	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195289-2	MW-158S_110923	95
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595142/10
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/19/23 14:01*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/19/23 14:01*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 14:01*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/19/23 14:01*	*1*

Lab Sample ID: LCS 240-595142/6
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.4		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			20.0	18.9		ug/L		94	77 - 123		
Tetrachloroethene			20.0	20.3		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			20.0	19.0		ug/L		95	75 - 124		
Trichloroethene			20.0	17.9		ug/L		89	70 - 122		
Vinyl chloride			20.0	17.0		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-195250-B-5 MS
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	100	U	2000	1920		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	74	J	2000	1950		ug/L		94	66 - 128		
Tetrachloroethene	100	U	2000	2020		ug/L		101	62 - 131		
trans-1,2-Dichloroethene	100	U	2000	1890		ug/L		95	56 - 136		
Trichloroethene	46	J	2000	1820		ug/L		89	61 - 124		
Vinyl chloride	100	U	2000	1710		ug/L		86	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*62 - 137*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195250-B-5 MS
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-195250-B-5 MSD
Matrix: Water
Analysis Batch: 595142

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2000	2010		ug/L		101	56 - 135	5	26
cis-1,2-Dichloroethene	74	J	2000	2050		ug/L		99	66 - 128	5	14
Tetrachloroethene	100	U	2000	2060		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	100	U	2000	1980		ug/L		99	56 - 136	5	15
Trichloroethene	46	J	2000	1910		ug/L		93	61 - 124	5	15
Vinyl chloride	100	U	2000	1810		ug/L		90	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.96		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195289-1	TRIP BLANK_74	Total/NA	Water	8260D	
240-195289-2	MW-158S_110923	Total/NA	Water	8260D	
MB 240-595142/10	Method Blank	Total/NA	Water	8260D	
LCS 240-595142/6	Lab Control Sample	Total/NA	Water	8260D	
240-195250-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195250-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195289-2	MW-158S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_74
Lab Sample ID: 240-195289-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595142	HMB	EET CLE	11/19/23 20:00

Client Sample ID: MW-158S_110923
Lab Sample ID: 240-195289-2
Date Collected: 11/09/23 12:20
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595142	HMB	EET CLE	11/19/23 20:26
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/23/23 00:15

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195289-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_74	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1585_110923	11/09/23	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195289 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments: SG 11/14/2023

Sample Address: ~~34940 Beacon~~ 34950 Beacon

Submit all results through Cadena at jtomelia@cadenaco.com. Cadena #E203831

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-04-23/ 18:05	Novi cold storage	Arcadis	11-05-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/23 1335		EET	11/10/23 1335
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	11/10/23 1340		EET NC	11-11-23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195289-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195289-1

		Sample Name:	TRIP BLANK_74				MW-158S_110923			
		Lab Sample ID:	2401952891				2401952892			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195289-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52148R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195289-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_74	240-195289-1	Water	11/09/2023		X	
MW-158S_110923	240-195289-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

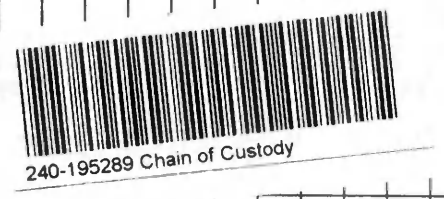
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM						Sample Specific Notes / Special Instructions:
TRIP BLANK_74	—	---		1						1					N	G	X	X	X	X	X	X							1 Trip Blank
MW-1585_110923	11/09/23	1220		6						6					N	G	X	X	X	X	X	X	X						3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34540 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-04-23 / 18:05	Novi Cold Storage	Arcadis	11-04-23 / 18:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/10/23 1335	[signature]	FEDEX	11/10/23 1336
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	FEDEX	11/10/23 1340	[signature]	EE TNC	11-11-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_74
Lab Sample ID: 240-195289-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/19/23 20:00*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/19/23 20:00*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/19/23 20:00*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/19/23 20:00*	*1*

Client Sample ID: MW-158S_110923
Lab Sample ID: 240-195289-2
Date Collected: 11/09/23 12:20
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/23 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/23/23 00:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*11/19/23 20:26*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/19/23 20:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/19/23 20:26*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/19/23 20:26*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/9/2023 7:03:45 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194761-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/9/2023 7:03:45 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*3	ISTD response or retention time outside acceptable limits.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194761-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194761-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the Method Blank (MB) was outside the upper control limit. Samples associated with the MB did not contain any target analytes and had qualifying surrogates and internal standards ; therefore, re-extraction and/or re-analysis was not performed. the following sample is affected: MW-88S_103023 (240-194761-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194761-1	TRIP BLANK_66	Water	10/30/23 00:00	11/03/23 08:00
240-194761-2	MW-88S_103023	Water	10/30/23 11:50	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194761-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_66 — Lab Sample ID: 240-194761-1

No Detections.

Client Sample ID: MW-88S_103023 — Lab Sample ID: 240-194761-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

Client Sample ID: TRIP BLANK_66
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194761-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 15:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 15:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 15:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 15:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 15:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/07/23 15:43*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/07/23 15:43*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/07/23 15:43*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 15:43*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

Client Sample ID: MW-88S_103023
Date Collected: 10/30/23 11:50
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194761-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/08/23 04:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/07/23 16:06*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/07/23 16:06*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/07/23 16:06*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/07/23 16:06*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194531-F-1 MSD	Matrix Spike Duplicate	97	99	101	100
240-194531-I-1 MS	Matrix Spike	103	97	97	97
240-194761-1	TRIP BLANK_66	98	85	98	95
240-194761-2	MW-88S_103023	100	90	92	91
LCS 240-593723/4	Lab Control Sample	100	96	99	89
MB 240-593723/7	Method Blank	95	89	88	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-C-3 MS	Matrix Spike	46 S1-
240-194630-F-3 MSD	Matrix Spike Duplicate	42 S1-
240-194761-2	MW-88S_103023	103
LCS 240-593811/4	Lab Control Sample	83
MB 240-593811/6	Method Blank	126 S1+

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-593723/7
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 12:58*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 12:58*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/07/23 12:58*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/07/23 12:58*	*1*

Lab Sample ID: LCS 240-593723/4
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.8		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		92	77 - 123		
Tetrachloroethene			25.0	25.4		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	24.1		ug/L		96	75 - 124		
Trichloroethene			25.0	25.6		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.7		ug/L		111	56 - 135	16	26
cis-1,2-Dichloroethene	1.4		25.0	24.5		ug/L		92	66 - 128	12	14
Tetrachloroethene	15		25.0	42.6		ug/L		109	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 136	9	15
Trichloroethene	26		25.0	49.4		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.7		ug/L		86	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194531-I-1 MS
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	21.8		ug/L		81	66 - 128
Tetrachloroethene	15		25.0	42.7		ug/L		110	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136
Trichloroethene	26		25.0	49.8		ug/L		96	61 - 124
Vinyl chloride	1.0	U	12.5	9.56		ug/L		76	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-593811/6
Matrix: Water
Analysis Batch: 593811

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/23 19:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*126*	*S1+*	*66 - 120*		*11/07/23 19:18*	*1*

Lab Sample ID: LCS 240-593811/4
Matrix: Water
Analysis Batch: 593811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.62		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-194630-C-3 MS
Matrix: Water
Analysis Batch: 593811

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	3.5	*3 F1 F2	10.0	38.7	F1 *3	ug/L		352	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*46*	*S1-*	*66 - 120*

Lab Sample ID: 240-194630-F-3 MSD
Matrix: Water
Analysis Batch: 593811

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	3.5	*3 F1 F2	10.0	32.4	F1 F2	ug/L		289	51 - 153	18	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*42*	*S1-*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194761-1

GC/MS VOA

Analysis Batch: 593723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194761-1	TRIP BLANK_66	Total/NA	Water	8260D	
240-194761-2	MW-88S_103023	Total/NA	Water	8260D	
MB 240-593723/7	Method Blank	Total/NA	Water	8260D	
LCS 240-593723/4	Lab Control Sample	Total/NA	Water	8260D	
240-194531-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194531-I-1 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 593811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194761-2	MW-88S_103023	Total/NA	Water	8260D SIM	
MB 240-593811/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-593811/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194761-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_66
Lab Sample ID: 240-194761-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 15:43

Client Sample ID: MW-88S_103023
Lab Sample ID: 240-194761-2
Date Collected: 10/30/23 11:50
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 16:06
Total/NA	Analysis	8260D SIM		1	593811	MRL	EET CLE	11/08/23 04:02

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194761-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com		
Phone: 248-994-2240	Sampler Name: Kent Kasper		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Analysis Turnaround Time: TAT if different from below — 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ C66	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-885-103023	10/30/23	1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194761 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Kent Kasper	Arcadis	10/30/23 1643	Received by: Novi Cold Storage	Arcadis	10/30/23 1643
Relinquished by:	Arcadis	11/2/23 1023	Received by:	EETA	11/2/23 1023
Relinquished by:	EETA	11/2/23 1023	Received in Laboratory by:	EETC	11-3-23 800

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11/9/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 94761
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194761

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: ~~22~~	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: ~~22~~	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: ~~22~~	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194761-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

CMS VOC SIM method blank surrogate recovery outliers did not result in qualification of client sample data.

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194761-1

		Sample Name:	TRIP BLANK_66				MW-88S_103023			
		Lab Sample ID:	2401947611				2401947612			
		Sample Date:	10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194761-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52105R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194761-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_66	240-194761-1	Water	10/30/2023		X	
MW-88S_103023	240-194761-2	Water	10/30/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below	For lab use only
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day	Walk-in client
Project Number: 30167538.402.04	Shipping/Tracking No:		Lab sampling
PO # 30167538.402.04			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ C66	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-885_103023	10/30/23	1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194761 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Woodworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	10/30/23 1643	Novi Cold Storage	Arcadis	10/30/23 1643
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EEA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/2/23 1023		TETC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_66
Lab Sample ID: 240-194761-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 15:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 15:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 15:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 15:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 15:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/07/23 15:43*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/07/23 15:43*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/07/23 15:43*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 15:43*	*1*

Client Sample ID: MW-88S_103023
Lab Sample ID: 240-194761-2
Date Collected: 10/30/23 11:50
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/08/23 04:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/07/23 16:06*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/07/23 16:06*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/07/23 16:06*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/07/23 16:06*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:30:42 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195666-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:30:42 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195666-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195666-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195666-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195666-1	TRIP BLANK_141	Water	11/13/23 00:00	11/17/23 09:40
240-195666-2	MW-126S_111323	Water	11/13/23 09:25	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_141 — Lab Sample ID: 240-195666-1

No Detections.

Client Sample ID: MW-126S_111323 — Lab Sample ID: 240-195666-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195666-1

Client Sample ID: TRIP BLANK_141
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195666-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 17:25*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 17:25*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 17:25*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 17:25*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195666-1

Client Sample ID: MW-126S_111323
Date Collected: 11/13/23 09:25
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195666-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/25/23 05:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 06:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 06:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 06:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 06:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 06:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 06:15*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 06:15*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195666-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195666-1	TRIP BLANK_141	110	96	100	100
240-195666-2	MW-126S_111323	108	97	99	97
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195666-2	MW-126S_111323	98
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195666-2	MW-126S_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195666-1	TRIP BLANK_141	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195666-2	MW-126S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_141
Lab Sample ID: 240-195666-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 17:25

Client Sample ID: MW-126S_111323
Lab Sample ID: 240-195666-2
Date Collected: 11/13/23 09:25
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 06:15
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 05:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195666-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day (✓ 3 weeks, 2 weeks, 1 week, 2 days, 1 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 141	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1265_111323	11/13/23	0925		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195666 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34966 Standish St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 940

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 1956666

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

MJC 11-18-23

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195666

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195666-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195666-1

		Sample Name:	TRIP BLANK_141				MW-126S_111323			
		Lab Sample ID:	2401956661				2401956662			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195666-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52161R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195666-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_141	240-195666-1	Water	11/13/2023		X	
MW-126S_111323	240-195666-2	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

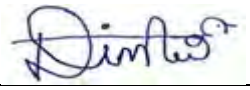
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day; ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 141	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1265_111323	11/13/23	0925		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195666 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34966 Standish St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 940

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MICHIGAN 190

Client Sample ID: TRIP BLANK_141
Lab Sample ID: 240-195666-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 17:25*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 17:25*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 17:25*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/22/23 17:25*	*1*

Client Sample ID: MW-126S_111323
Lab Sample ID: 240-195666-2
Date Collected: 11/13/23 09:25
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 05:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/25/23 05:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 06:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 06:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 06:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 06:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 06:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 06:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 06:15*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 06:15*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 5:31:23 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194993-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2023 5:31:23 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194993-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194993-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194993-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-109S_110223 (240-194993-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194993-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194993-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194993-1	TRIP BLANK_50	Water	11/02/23 00:00	11/08/23 08:00
240-194993-2	MW-109S_110223	Water	11/02/23 14:15	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194993-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_50 — Lab Sample ID: 240-194993-1

No Detections.

Client Sample ID: MW-109S_110223 — Lab Sample ID: 240-194993-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194993-1

Client Sample ID: TRIP BLANK_50
Date Collected: 11/02/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194993-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 13:00*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/10/23 13:00*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 13:00*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/23 13:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194993-1

Client Sample ID: MW-109S_110223
Date Collected: 11/02/23 14:15
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194993-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 01:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/15/23 01:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 16:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 16:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 16:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 16:44*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/10/23 16:44*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/10/23 16:44*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/23 16:44*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194993-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194730-B-3 MS	Matrix Spike	101	85	91	92
240-194730-B-3 MSD	Matrix Spike Duplicate	103	84	89	98
240-194993-1	TRIP BLANK_50	107	76	90	93
240-194993-2	MW-109S_110223	108	75	89	92
LCS 240-594169/5	Lab Control Sample	100	82	89	93
MB 240-594169/8	Method Blank	118	88	101	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194827-L-4 MS	Matrix Spike	97
240-194827-R-4 MSD	Matrix Spike Duplicate	97
240-194993-2	MW-109S_110223	101
LCS 240-594613/3	Lab Control Sample	98
MB 240-594613/5	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594169/8
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/10/23 11:20*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/10/23 11:20*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 11:20*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/10/23 11:20*	*1*

Lab Sample ID: LCS 240-594169/5
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.5		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		101	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	25.9		ug/L		104	75 - 124		
Trichloroethene			25.0	25.1		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.2		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	5.0	U	125	134		ug/L		107	56 - 135		
cis-1,2-Dichloroethene	130		125	228		ug/L		80	66 - 128		
Tetrachloroethene	5.0	U	125	114		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	5.0	U	125	119		ug/L		95	56 - 136		
Trichloroethene	56		125	162		ug/L		84	61 - 124		
Vinyl chloride	5.0	U	62.5	57.9		ug/L		93	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MSD
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	5.0	U	125	141		ug/L		113	56 - 135	5	26
cis-1,2-Dichloroethene	130		125	240		ug/L		90	66 - 128	5	14
Tetrachloroethene	5.0	U	125	111		ug/L		89	62 - 131	3	20
trans-1,2-Dichloroethene	5.0	U	125	125		ug/L		100	56 - 136	5	15
Trichloroethene	56		125	177		ug/L		96	61 - 124	9	15
Vinyl chloride	5.0	U	62.5	60.8		ug/L		97	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594613/5
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/14/23 20:49*	*1*

Lab Sample ID: LCS 240-594613/3
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-194827-L-4 MS
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-194827-R-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194993-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194993-1	TRIP BLANK_50	Total/NA	Water	8260D	
240-194993-2	MW-109S_110223	Total/NA	Water	8260D	
MB 240-594169/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594169/5	Lab Control Sample	Total/NA	Water	8260D	
240-194730-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194730-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194993-2	MW-109S_110223	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-L-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194827-R-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194993-1

Client Sample ID: TRIP BLANK_50

Lab Sample ID: 240-194993-1

Date Collected: 11/02/23 00:00

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 13:00

Client Sample ID: MW-109S_110223

Lab Sample ID: 240-194993-2

Date Collected: 11/02/23 14:15

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 16:44
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/15/23 01:11

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194993-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190 2013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP ~~On-Site~~ SG off site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.~~401.03~~ SG 402.04				
PO # 30167538.~~401.03~~ SG 402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 50	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-109S_110223	11/02/23	1415		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-194993 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ an Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments: Sample adress: 34990 Beacon st.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/02/23 1600	NCW Cold Storage	Arcadis	11/03/23 1500
Sommer Hay	Arcadis	11/7/23 1350		Fasta	11/7/23 1350
	Fasta	11/7/23 1400	Rachelle Arvizo	ESTLC	11823 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194993
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8 23 Opened on 11-8 23

Cooler unpacked by: Rachelle Hadet

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194993-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194993-1

Sample Name: MW-109S_110223
Lab Sample ID: 2401949932
Sample Date: 11/2/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194993-1

		Sample Name:	TRIP BLANK_50				MW-109S_110223			
		Lab Sample ID:	2401949931				2401949932			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194993-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52104R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194993-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_50	240-194993-1	Water	11/02/2023		X	
MW-109S_110223	240-194993-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-109S_110223 (240-194993-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190 | 2013.1 | **Chain of Custody Record** | MICHIGAN 190 | TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	**Analysis Turnaround Time**		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Ptera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP ~~On-Site~~ SG off site	Method of Shipment/Carrier:			
Project Number: 30167538.~~401.03~~ SG 402.04	Shipping/Tracking No:			
PO # 30167538.~~401.03~~ SG 402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	$ZnAc/NaOH$	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 50	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-109S_110223	11/02/23	1415		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-194993 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ An Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments: Sample adress: 34990 Beacon St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Ptera	Arcadis	11/02/23 1600	NCW Cold Storage	Arcadis	11/03/23 1500
Sommer Sky	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Harris	Company: ETNLC	Date/Time: 11823 800

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11/16/2023

Client Sample ID: TRIP BLANK_50
Lab Sample ID: 240-194993-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/10/23 13:00*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/10/23 13:00*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 13:00*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/23 13:00*	*1*

Client Sample ID: MW-109S_110223
Lab Sample ID: 240-194993-2
Date Collected: 11/02/23 14:15
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/23 01:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/15/23 01:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/10/23 16:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 16:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 16:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 16:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/10/23 16:44*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/10/23 16:44*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/10/23 16:44*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/23 16:44*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:45:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194762-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:45:20 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194762-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194762-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194762-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194762-1	TRIP BLANK_10	Water	10/30/23 00:00	11/03/23 08:00
240-194762-2	MW-181S_103023	Water	10/30/23 13:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_10 — Lab Sample ID: 240-194762-1

No Detections.

Client Sample ID: MW-181S_103023 — Lab Sample ID: 240-194762-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194762-1

Client Sample ID: TRIP BLANK_10
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194762-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/07/23 16:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/07/23 16:29*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/07/23 16:29*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/07/23 16:29*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194762-1

Client Sample ID: MW-181S_103023
Date Collected: 10/30/23 13:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194762-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 20:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/07/23 16:52*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/07/23 16:52*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 16:52*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/07/23 16:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194762-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194531-F-1 MSD	Matrix Spike Duplicate	97	99	101	100
240-194531-I-1 MS	Matrix Spike	103	97	97	97
240-194762-1	TRIP BLANK_10	115	94	98	97
240-194762-2	MW-181S_103023	102	97	99	101
LCS 240-593723/4	Lab Control Sample	100	96	99	89
MB 240-593723/7	Method Blank	95	89	88	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194762-2	MW-181S_103023	100
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-593723/7
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 12:58*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 12:58*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/07/23 12:58*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/07/23 12:58*	*1*

Lab Sample ID: LCS 240-593723/4
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.8		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		92	77 - 123		
Tetrachloroethene			25.0	25.4		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	24.1		ug/L		96	75 - 124		
Trichloroethene			25.0	25.6		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.7		ug/L		111	56 - 135	16	26
cis-1,2-Dichloroethene	1.4		25.0	24.5		ug/L		92	66 - 128	12	14
Tetrachloroethene	15		25.0	42.6		ug/L		109	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 136	9	15
Trichloroethene	26		25.0	49.4		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.7		ug/L		86	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194531-I-1 MS
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	21.8		ug/L		81	66 - 128
Tetrachloroethene	15		25.0	42.7		ug/L		110	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136
Trichloroethene	26		25.0	49.8		ug/L		96	61 - 124
Vinyl chloride	1.0	U	12.5	9.56		ug/L		76	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 593723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194762-1	TRIP BLANK_10	Total/NA	Water	8260D	
240-194762-2	MW-181S_103023	Total/NA	Water	8260D	
MB 240-593723/7	Method Blank	Total/NA	Water	8260D	
LCS 240-593723/4	Lab Control Sample	Total/NA	Water	8260D	
240-194531-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194531-I-1 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194762-2	MW-181S_103023	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_10
Lab Sample ID: 240-194762-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 16:29

Client Sample ID: MW-181S_103023
Lab Sample ID: 240-194762-2
Date Collected: 10/30/23 13:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 16:52
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 20:40

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194762-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240
Project Name: Ford LTP Off-Site
Project Number: 30167538.402.04
PO # 30167538.402.04

Regulatory program: | DW | NPDES | RCRA | Other

Client Project Manager: Kris Hinskey
Telephone: 248-994-2240
Email: kristoffer.hinskey@arcadis.com
Sampler Name: Kent Kasper
Method of Shipment/Carrier:
Shipping/Tracking No:

Site Contact: Christina Weaver
Telephone: 248-994-2240

Lab Contact: Mike DelMonico
Telephone: 330-497-9396

Analysis Turnaround Time
TAT if different from below
10 day
3 weeks
2 weeks
1 week
2 days
1 day

COC No:
1 of 1 COCs
For lab use only
Walk-in client
Lab sampling
Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_10	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1815_103023	10/30/23	1320		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194762 Chain of Custody

Possible Hazard Identification
Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34990 Wadsworth
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Kent Kasper	Arcadis	10/30/23 1643	Received by: Novi Cold Storage	Arcadis	10/30/23 1643
Relinquished by:	Arcadis	11/2/23 1023	Received by: Jeri Hall	EETA	11/2/23 1023
Relinquished by:	EETA	11/2/23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194762
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194762

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194762-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194762-1

		Sample Name:	TRIP BLANK_10				MW-181S_103023			
		Lab Sample ID:	2401947621				2401947622			
		Sample Date:	10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194762-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52106R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194762-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_10	240-194762-1	Water	10/30/2023		X	
MW-181S_103023	240-194762-2	Water	10/30/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below				
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day	3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day			
Project Number: 30167538.402.04	Shipping/Tracking No:					
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					For lab use only / Sample Specific Notes / Special Instructions:
J TRIP BLANK_10	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
J MW-1815_103023	10/30/23	1320		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194762 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34990 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	10/30/23 1643	Novi Cold Storage	Arcadis	10/30/23 1643
	Arcadis	11/2/23 1023		EE74	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETNC	11-3-23 806

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Client Sample ID: TRIP BLANK_10
Lab Sample ID: 240-194762-1

Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/07/23 16:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/07/23 16:29*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/07/23 16:29*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/07/23 16:29*	*1*

Client Sample ID: MW-181S_103023
Lab Sample ID: 240-194762-2

Date Collected: 10/30/23 13:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/09/23 20:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 16:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 16:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 16:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 16:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/07/23 16:52*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/07/23 16:52*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 16:52*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/07/23 16:52*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:47:07 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194766-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:47:07 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194766-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194766-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194766-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194766-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194766-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194766-1	TRIP BLANK_68	Water	11/01/23 00:00	11/03/23 08:00
240-194766-2	MW-170S_110123	Water	11/01/23 15:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194766-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_68 — Lab Sample ID: 240-194766-1

No Detections.

Client Sample ID: MW-170S_110123 — Lab Sample ID: 240-194766-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194766-1

Client Sample ID: TRIP BLANK_68
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194766-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 19:14*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/09/23 19:14*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 19:14*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/09/23 19:14*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194766-1

Client Sample ID: MW-170S_110123
Date Collected: 11/01/23 15:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194766-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/09/23 18:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 22:01*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*11/09/23 22:01*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 22:01*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/09/23 22:01*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194766-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194766-1	TRIP BLANK_68	106	106	107	107
240-194766-2	MW-170S_110123	106	104	107	106
240-194769-H-1 MS	Matrix Spike	100	101	100	101
240-194769-I-1 MSD	Matrix Spike Duplicate	99	101	99	98
LCS 240-594104/5	Lab Control Sample	111	114	111	110
MB 240-594104/8	Method Blank	111	108	110	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194766-2	MW-170S_110123	105
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594104/8
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/09/23 18:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/09/23 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/09/23 18:02*	*1*

Lab Sample ID: LCS 240-594104/5
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	25.4		ug/L		102	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.1		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.5		25.0	25.5		ug/L		96	66 - 128
Tetrachloroethene	0.46	J	25.0	23.0		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	0.90	J	25.0	23.6		ug/L		91	61 - 124
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194769-I-1 MSD
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 135	2	26
cis-1,2-Dichloroethene	1.5		25.0	26.4		ug/L		100	66 - 128	4	14
Tetrachloroethene	0.46	J	25.0	23.4		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 136	0	15
Trichloroethene	0.90	J	25.0	24.0		ug/L		93	61 - 124	2	15
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194766-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194766-2	MW-170S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194766-1	TRIP BLANK_68	Total/NA	Water	8260D	
240-194766-2	MW-170S_110123	Total/NA	Water	8260D	
MB 240-594104/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594104/5	Lab Control Sample	Total/NA	Water	8260D	
240-194769-H-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194769-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194766-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_68
Lab Sample ID: 240-194766-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 19:14

Client Sample ID: MW-170S_110123
Lab Sample ID: 240-194766-2
Date Collected: 11/01/23 15:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 22:01
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 18:41

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194766-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Kent Kasper	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04					
PO # 30167538.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 68	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1765-110123	11/1/23	1520		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194766 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 31991 Beacon St.

Submit all results through Cadena at jtomalia@cadenceo.com. Cadena : E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
	Arcadis	11/2/23 1023		EEA	11/2/23 1023
	EEA	11/2/23 1023	Received in Laboratory by:	EETMC	11-3-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194766

Client Arcadis Site Name

Cooler unpacked by: Nancy Reyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 1947666

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194766-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194766-1

		Sample Name:	TRIP BLANK_68				MW-170S_110123			
		Lab Sample ID:	2401947661				2401947662			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194766-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52109R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194766-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_68	240-194766-1	Water	11/01/2023		X	
MW-170S_110123	240-194766-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day (✓)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	3 weeks / 2 weeks (✓) / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 68	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1705-110123	11/1/23	1520		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194766 Chain of Custody

Possible Hazard Identification: Non-Hazard (✓) | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab (✓) | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34991 Beacon St.

Submit all results through Cadena at jtomalia@cadenceo.com. Cadena : E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		TEA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	TEA	11/2/23 1023		EETPC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_68
Lab Sample ID: 240-194766-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 19:14*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/09/23 19:14*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 19:14*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/09/23 19:14*	*1*

Client Sample ID: MW-170S_110123
Lab Sample ID: 240-194766-2
Date Collected: 11/01/23 15:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/09/23 18:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 22:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 22:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 22:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 22:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 22:01*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*11/09/23 22:01*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 22:01*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/09/23 22:01*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:38:09 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195290-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:38:09 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195290-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195290-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195290-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195290-1	TRIP BLANK_73	Water	11/09/23 00:00	11/11/23 08:00
240-195290-2	MW-223S_110923	Water	11/09/23 12:13	11/11/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_73 — Lab Sample ID: 240-195290-1

No Detections.

Client Sample ID: MW-223S_110923 — Lab Sample ID: 240-195290-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_73
Lab Sample ID: 240-195290-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:50*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 17:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 17:50*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:50*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195290-1

Client Sample ID: MW-223S_110923
Date Collected: 11/09/23 12:13
Date Received: 11/11/23 08:00

Lab Sample ID: 240-195290-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/23 00:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/23/23 00:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 18:14*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 18:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/19/23 18:14*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 18:14*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195290-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195290-1	TRIP BLANK_73	105	95	98	95
240-195290-2	MW-223S_110923	102	96	100	97
LCS 240-595149/4	Lab Control Sample	103	98	97	101
MB 240-595149/7	Method Blank	103	95	99	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195290-2	MW-223S_110923	97
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.7		ug/L		103	63 - 134
cis-1,2-Dichloroethene	25.0	25.4		ug/L		102	77 - 123
Tetrachloroethene	25.0	24.1		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	25.1		ug/L		100	75 - 124
Trichloroethene	25.0	25.4		ug/L		102	70 - 122
Vinyl chloride	12.5	10.2		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.96		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195290-1	TRIP BLANK_73	Total/NA	Water	8260D	
240-195290-2	MW-223S_110923	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195290-2	MW-223S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_73
Lab Sample ID: 240-195290-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 17:50

Client Sample ID: MW-223S_110923
Lab Sample ID: 240-195290-2
Date Collected: 11/09/23 12:13
Matrix: Water
Date Received: 11/11/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 18:14
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/23/23 00:39

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195290-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

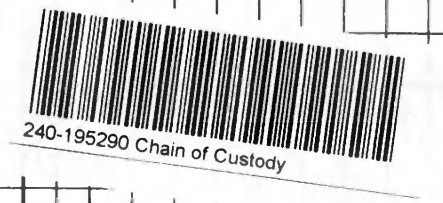
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_73	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2235_110923	11/9/23	1213		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35000 Plymouth Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/9/23 1345	Novi Cold Storage	Arcadis	11/9/23 1345
Relinquished by: Sommer Guy	Arcadis	11/10/23 1335		EETA	11/10/23 1335
Relinquished by:	Company: EETA	Date/Time: 11/10/23 1340	Received in Laboratory by: Alissa Atkinson	Company: EE TNC	Date/Time: 11·11·23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-11-23 Opened on 11-11-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.3 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A - Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195290-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195290-1

		Sample Name:	TRIP BLANK_73				MW-223S_110923			
		Lab Sample ID:	2401952901				2401952902			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195290-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52144R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195290-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_73	240-195290-1	Water	11/09/2023		X	
MW-223S_110923	240-195290-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_73	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2235_110923	11/9/23	1213		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195290 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35000 Plymouth Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/9/23 1345	Novi Coldstorage	Arcadis	11/9/23 1345
Sommer Guy	Arcadis	11/10/23 1335		EETA	11/10/23 1335
	EETA	11/10/23 1340	Received in Laboratory by: Alissa Atkinson	EETNC	11.11.23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_73
Lab Sample ID: 240-195290-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:50*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 17:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/19/23 17:50*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:50*	*1*

Client Sample ID: MW-223S_110923
Lab Sample ID: 240-195290-2
Date Collected: 11/09/23 12:13
Matrix: Water
Date Received: 11/11/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/23 00:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/23/23 00:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 18:14*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/19/23 18:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/19/23 18:14*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 18:14*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:39:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195751-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195751-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195751-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195751-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/18/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.7°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195751-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195751-1	TRIP BLANK_84	Water	11/16/23 00:00	11/18/23 08:00
240-195751-2	MW-191S_111623	Water	11/16/23 10:07	11/18/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

Client Sample ID: TRIP BLANK_84 — Lab Sample ID: 240-195751-1

No Detections.

Client Sample ID: MW-191S_111623 — Lab Sample ID: 240-195751-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.9		1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

Client Sample ID: TRIP BLANK_84
Date Collected: 11/16/23 00:00
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195751-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 19:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 19:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/26/23 19:32*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/26/23 19:32*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/26/23 19:32*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 19:32*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

Client Sample ID: MW-191S_111623
Date Collected: 11/16/23 10:07
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195751-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/28/23 22:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 23:18	1
cis-1,2-Dichloroethene	**5.9**		1.0	0.46	ug/L			11/26/23 23:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 23:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 23:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 23:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 22:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/26/23 23:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/27/23 22:42*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/26/23 23:18*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/27/23 22:42*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/26/23 23:18*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 22:42*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/26/23 23:18*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/27/23 22:42*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195660-B-33 MS	Matrix Spike	106	97	109	105
240-195660-B-33 MSD	Matrix Spike Duplicate	107	99	107	105
240-195749-C-2 MS	Matrix Spike	102	98	109	99
240-195749-C-2 MSD	Matrix Spike Duplicate	101	97	108	99
240-195751-1	TRIP BLANK_84	112	83	102	102
240-195751-2	MW-191S_111623	116	85	107	106
240-195751-2	MW-191S_111623	108	81	103	99
LCS 240-595705/5	Lab Control Sample	106	97	106	105
LCS 240-595841/5	Lab Control Sample	103	97	108	99
MB 240-595705/8	Method Blank	111	86	104	102
MB 240-595841/8	Method Blank	107	84	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195751-2	MW-191S_111623	101
240-195835-H-3 MS	Matrix Spike	100
240-195835-N-3 MSD	Matrix Spike Duplicate	106
LCS 240-595988/4	Lab Control Sample	104
MB 240-595988/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595705/8
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 17:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 17:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 17:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 17:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 17:26*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 17:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 17:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 17:26*	*1*

Lab Sample ID: LCS 240-595705/5
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.1		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	23.7		ug/L		95	77 - 123		
Tetrachloroethene			25.0	26.8		ug/L		107	76 - 123		
trans-1,2-Dichloroethene			25.0	24.2		ug/L		97	75 - 124		
Trichloroethene			25.0	24.9		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	506		ug/L		101	56 - 135		
cis-1,2-Dichloroethene	20	U	500	470		ug/L		94	66 - 128		
Tetrachloroethene	20	U	500	498		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	20	U	500	467		ug/L		93	56 - 136		
Trichloroethene	32		500	501		ug/L		94	61 - 124		
Vinyl chloride	20	U	250	236		ug/L		94	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MSD
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	511		ug/L		102	56 - 135	1	26
cis-1,2-Dichloroethene	20	U	500	471		ug/L		94	66 - 128	0	14
Tetrachloroethene	20	U	500	507		ug/L		101	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	476		ug/L		95	56 - 136	2	15
Trichloroethene	32		500	508		ug/L		95	61 - 124	1	15
Vinyl chloride	20	U	250	225		ug/L		90	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/27/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 18:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/27/23 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/27/23 18:31*	*1*

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.5		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128		
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136		
Trichloroethene	20	U	500	435		ug/L		87	61 - 124		
Vinyl chloride	690		250	900		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595988/6
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 19:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 19:09*	*1*

Lab Sample ID: LCS 240-595988/4
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.51		ug/L		95	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195835-H-3 MS
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Lab Sample ID: 240-195835-N-3 MSD
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195751-1

GC/MS VOA

Analysis Batch: 595705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195751-1	TRIP BLANK_84	Total/NA	Water	8260D	
240-195751-2	MW-191S_111623	Total/NA	Water	8260D	
MB 240-595705/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595705/5	Lab Control Sample	Total/NA	Water	8260D	
240-195660-B-33 MS	Matrix Spike	Total/NA	Water	8260D	
240-195660-B-33 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195751-2	MW-191S_111623	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195749-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195751-2	MW-191S_111623	Total/NA	Water	8260D SIM	
MB 240-595988/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595988/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195835-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195835-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195751-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_84
Lab Sample ID: 240-195751-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 19:32

Client Sample ID: MW-191S_111623
Lab Sample ID: 240-195751-2
Date Collected: 11/16/23 10:07
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 23:18
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/27/23 22:42
Total/NA	Analysis	8260D SIM		1	595988	CS	EET CLE	11/28/23 22:20

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195751-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

3.6/4.7

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [DW NPDES [RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_84	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-191S_111623	11/16/23	1007		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195751 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard [Flammable Skin Irritant [Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[Return to Client ☑ Disposal By Lab Archive For [Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35015 Glendale
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	Novi Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/23 1150		EETA	11/17/23 1150
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/17/23 11:50	Alissa Atkinson	EETMC	11-18-23 0800

MICHIGAN 190

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195751

Client Arcadis | Site Name | Cooler unpacked by: Alissa Atkeson

Cooler Received on 11-18-23 | Opened on 11-18-23

FedEx: 1st Grd Exp | UPS | FAS | (Waypoint) | Client Drop Off | Eurofins Courier | Other

Receipt After-hours: Drop-off Date/Time | Storage Location

Eurofins Cooler # EC | Foam Box | Client Cooler | Box | Other

Packing material used: (Bubble Wrap) (Foam) | Plastic Bag | None | Other

COOLANT: (Wet Ice) | Blue Ice | Dry Ice | Water | None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF* 1.1 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 4.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195751-1
Sample date: 2023-11-16
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195751-1

		Sample Name:	TRIP BLANK_84				MW-191S_111623			
		Lab Sample ID:	2401957511				2401957512			
		Sample Date:	11/16/2023				11/16/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	5.9	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195751-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52171R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195751-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_84	240-195751-1	Water	11/16/2023		X	
MW-191S_111623	240-195751-2	Water	11/16/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

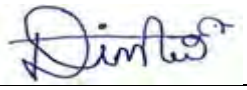
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

3.6/4.7

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_84	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1915_111623	11/16/23	1007		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195751 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client [✓] Disposal By Lab [ ] Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35015 Glendale
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by: Nolan Schendel	Company: Arcadis	Date/Time: 11/17/23 0700	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 11/17/23 0700
Relinquished by: Jommel Ley	Company: Arcadis	Date/Time: 11/17/23 1150	Received by:	Company: EETA	Date/Time: 11/17/23 1150
Relinquished by:	Company: EETA	Date/Time: 11/17/23 11:50	Received in Laboratory by: Alissa Atkinson	Company: EETN C	Date/Time: 11-18-23 0800

MICHIGAN 190

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12/01/2023

Client Sample ID: TRIP BLANK_84
Lab Sample ID: 240-195751-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 19:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 19:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 19:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/26/23 19:32*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/26/23 19:32*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/26/23 19:32*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 19:32*	*1*

Client Sample ID: MW-191S_111623
Lab Sample ID: 240-195751-2
Date Collected: 11/16/23 10:07
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/28/23 22:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 23:18	1
cis-1,2-Dichloroethene	**5.9**		1.0	0.46	ug/L			11/26/23 23:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 23:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 23:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 23:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 22:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/26/23 23:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/27/23 22:42*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/26/23 23:18*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/27/23 22:42*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/26/23 23:18*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 22:42*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/26/23 23:18*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/27/23 22:42*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:46:33 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194764-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:46:33 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194764-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194764-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194764-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194764-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194764-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194764-1	TRIP BLANK_9	Water	11/01/23 00:00	11/03/23 08:00
240-194764-2	MW-125_110123	Water	11/01/23 13:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194764-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_9 — Lab Sample ID: 240-194764-1

No Detections.

Client Sample ID: MW-125_110123 — Lab Sample ID: 240-194764-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194764-1

Client Sample ID: TRIP BLANK_9
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194764-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 18:26*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/09/23 18:26*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 18:26*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 18:26*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194764-1

Client Sample ID: MW-125_110123
Date Collected: 11/01/23 13:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194764-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/09/23 18:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 21:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 21:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 21:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 21:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 21:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 21:13*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/09/23 21:13*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/09/23 21:13*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/09/23 21:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194764-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194764-1	TRIP BLANK_9	108	106	107	108
240-194764-2	MW-125_110123	108	103	105	106
240-194769-H-1 MS	Matrix Spike	100	101	100	101
240-194769-I-1 MSD	Matrix Spike Duplicate	99	101	99	98
LCS 240-594104/5	Lab Control Sample	111	114	111	110
MB 240-594104/8	Method Blank	111	108	110	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194764-2	MW-125_110123	79
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594104/8
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/09/23 18:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/09/23 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/09/23 18:02*	*1*

Lab Sample ID: LCS 240-594104/5
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.3		ug/L		109	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.1		ug/L		97	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	1.5		25.0	25.5		ug/L		96	66 - 128		
Tetrachloroethene	0.46	J	25.0	23.0		ug/L		90	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136		
Trichloroethene	0.90	J	25.0	23.6		ug/L		91	61 - 124		
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194769-I-1 MSD
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 135	2	26
cis-1,2-Dichloroethene	1.5		25.0	26.4		ug/L		100	66 - 128	4	14
Tetrachloroethene	0.46	J	25.0	23.4		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 136	0	15
Trichloroethene	0.90	J	25.0	24.0		ug/L		93	61 - 124	2	15
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194764-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194764-2	MW-125_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194764-1	TRIP BLANK_9	Total/NA	Water	8260D	
240-194764-2	MW-125_110123	Total/NA	Water	8260D	
MB 240-594104/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594104/5	Lab Control Sample	Total/NA	Water	8260D	
240-194769-H-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194769-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194764-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_9
Lab Sample ID: 240-194764-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 18:26

Client Sample ID: MW-125_110123
Lab Sample ID: 240-194764-2
Date Collected: 11/01/23 13:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 21:13
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 18:18

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194764-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_9	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-125_110123	11/1/23	1320		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194764 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35601 Veronica St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EET	11/2/23 1023
	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	11/2/23 1023		EETMC	11-3-23 806

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194769
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 194764

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.4	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194764-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194764-1

		Sample Name:	TRIP BLANK_9				MW-125_110123			
		Lab Sample ID:	2401947641				2401947642			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194764-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52108R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194764-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_9	240-194764-1	Water	11/01/2023		X	
MW-125_110123	240-194764-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 13, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 13, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

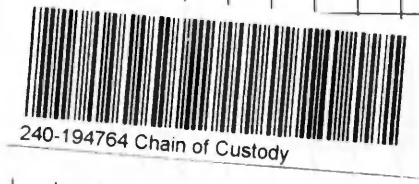
TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_9	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-125_110123	11/1/23	1320		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35601 Veronica St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/1/23 1515	Novi Cold Storage	Arcadis	11/1/23 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETMC	11-3-23 806

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Client Sample ID: TRIP BLANK_9
Lab Sample ID: 240-194764-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 18:26*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/09/23 18:26*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/09/23 18:26*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 18:26*	*1*

Client Sample ID: MW-125_110123
Lab Sample ID: 240-194764-2
Date Collected: 11/01/23 13:20
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/09/23 18:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 21:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 21:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 21:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 21:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 21:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/09/23 21:13*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/09/23 21:13*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/09/23 21:13*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/09/23 21:13*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:57:50 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195671-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:57:50 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195671-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195671-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195671-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195671-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195671-1	TRIP BLANK_135	Water	11/13/23 00:00	11/17/23 09:40
240-195671-2	MW-129_111323	Water	11/13/23 14:35	11/17/23 09:40
240-195671-3	MW-129S_111323	Water	11/13/23 15:55	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195671-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_135 — Lab Sample ID: 240-195671-1

No Detections.

Client Sample ID: MW-129_111323 — Lab Sample ID: 240-195671-2

No Detections.

Client Sample ID: MW-129S_111323 — Lab Sample ID: 240-195671-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

Client Sample ID: TRIP BLANK_135
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195671-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 20:17*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 20:17*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 20:17*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 20:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

Client Sample ID: MW-129_111323
Date Collected: 11/13/23 14:35
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195671-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 06:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 07:54*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 07:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 07:54*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 07:54*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

Client Sample ID: MW-129S_111323
Date Collected: 11/13/23 15:55
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195671-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 07:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/25/23 07:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 12:52*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 12:52*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 12:52*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/22/23 12:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195662-E-2 MS	Matrix Spike	110	100	101	101
240-195662-F-2 MSD	Matrix Spike Duplicate	111	100	100	101
240-195671-1	TRIP BLANK_135	111	99	101	97
240-195671-2	MW-129_111323	111	98	99	99
240-195671-3	MW-129S_111323	108	97	98	94
LCS 240-595468/4	Lab Control Sample	107	100	100	102
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595468/7	Method Blank	108	96	101	99
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195671-2	MW-129_111323	97
240-195671-3	MW-129S_111323	95
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595468/7
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 00:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 00:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 00:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 00:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 00:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 00:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 00:07*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 00:07*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 00:07*	*1*

Lab Sample ID: LCS 240-595468/4
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	25.7		ug/L		103	77 - 123		
Tetrachloroethene			25.0	22.5		ug/L		90	76 - 123		
trans-1,2-Dichloroethene			25.0	24.9		ug/L		99	75 - 124		
Trichloroethene			25.0	25.0		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.1		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.71		ug/L		78	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195662-E-2 MS
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195662-F-2 MSD
Matrix: Water
Analysis Batch: 595468

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		82	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	7	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	8.92		ug/L		71	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195671-1

GC/MS VOA

Analysis Batch: 595468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195671-2	MW-129_111323	Total/NA	Water	8260D	
MB 240-595468/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595468/4	Lab Control Sample	Total/NA	Water	8260D	
240-195662-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195662-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195671-1	TRIP BLANK_135	Total/NA	Water	8260D	
240-195671-3	MW-129S_111323	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195671-2	MW-129_111323	Total/NA	Water	8260D SIM	
240-195671-3	MW-129S_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195671-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_135
Lab Sample ID: 240-195671-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 20:17

Client Sample ID: MW-129_111323
Lab Sample ID: 240-195671-2
Date Collected: 11/13/23 14:35
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595468	LEE	EET CLE	11/22/23 07:54
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 06:42

Client Sample ID: MW-129S_111323
Lab Sample ID: 240-195671-3
Date Collected: 11/13/23 15:55
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 12:52
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 07:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195671-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_135	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-129-111323	11/13/23	1435		6						6					W	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-1295-111323	11/13/23	1555		6						6					N	G	X	X	X	X	X	X	X	

240-195671 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35601 Veronica St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting required.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1070
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 940

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195671

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

11-18-23

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195671

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195671-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:3
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 595687.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195671-1

		Sample Name:	TRIP BLANK_135				MW-129_111323				MW-129S_111323			
		Lab Sample ID:	2401956711				2401956712				2401956713			
		Sample Date:	11/13/2023				11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195671-1

CADENA Verification Report: 2023-11-28

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52164R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195671-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_135	240-195671-1	Water	11/13/2023		X	
MW-129_111323	240-195671-2	Water	11/13/2023		X	X
MW-129S_111323	240-195671-3	Water	11/13/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

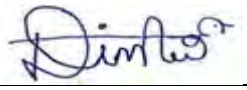
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_135	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-129-111323	11/13/23	1435		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-1295-111323	11/13/23	1555		6						6					N	G	X	X	X	X	X	X	X	↓

240-195671 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35601 Veronica St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting required.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/13/23 1715	Novi Cold Storage	Arcadis	11/13/23 1715
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1071
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 940

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Client Sample ID: TRIP BLANK_135
Lab Sample ID: 240-195671-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 20:17*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 20:17*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 20:17*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 20:17*	*1*

Client Sample ID: MW-129_111323
Lab Sample ID: 240-195671-2
Date Collected: 11/13/23 14:35
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 06:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 07:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 07:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 07:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 07:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 07:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 07:54*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 07:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/23 07:54*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 07:54*	*1*

Client Sample ID: MW-129S_111323
Lab Sample ID: 240-195671-3
Date Collected: 11/13/23 15:55
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 07:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/25/23 07:06*	*1*

Client Sample ID: MW-129S_111323
Lab Sample ID: 240-195671-3

Date Collected: 11/13/23 15:55
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/22/23 12:52*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 12:52*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 12:52*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/22/23 12:52*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 11:13:22 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195665-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/1/2023 11:13:22 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195665-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195665-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 595564 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195665-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195665-1	TRIP BLANK_128	Water	11/15/23 00:00	11/17/23 09:40
240-195665-2	MW-125S_111523	Water	11/15/23 12:35	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_128 — Lab Sample ID: 240-195665-1

No Detections.

Client Sample ID: MW-125S_111523 — Lab Sample ID: 240-195665-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195665-1

Client Sample ID: TRIP BLANK_128
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195665-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/22/23 20:39*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 20:39*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/22/23 20:39*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/22/23 20:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195665-1

Client Sample ID: MW-125S_111523
Date Collected: 11/15/23 12:35
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195665-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/23 14:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 21:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 21:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 21:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 21:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/22/23 21:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/22/23 21:04*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 21:04*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/22/23 21:04*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195665-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195494-F-27 MSD	Matrix Spike Duplicate	92	92	103	90
240-195494-I-27 MS	Matrix Spike	85	93	102	84
240-195665-1	TRIP BLANK_128	101	96	104	90
240-195665-2	MW-125S_111523	96	89	100	88
LCS 240-595564/4	Lab Control Sample	90	98	110	91
MB 240-595564/7	Method Blank	95	100	107	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195665-2	MW-125S_111523	95
500-242620-C-12 MS	Matrix Spike	95
500-242620-C-12 MSD	Matrix Spike Duplicate	94
LCS 240-595853/4	Lab Control Sample	93
MB 240-595853/6	Method Blank	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595564/7
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/22/23 12:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:54*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/22/23 12:54*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/23 12:54*	*1*

Lab Sample ID: LCS 240-595564/4
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	29.5		ug/L		118	63 - 134		
cis-1,2-Dichloroethene			25.0	28.4		ug/L		114	77 - 123		
Tetrachloroethene			25.0	27.2		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			25.0	29.9		ug/L		119	75 - 124		
Trichloroethene			25.0	23.9		ug/L		95	70 - 122		
Vinyl chloride			12.5	13.0		ug/L		104	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-195494-F-27 MSD
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 135	12	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.4		ug/L		105	66 - 128	10	14
Tetrachloroethene	1.0	U	25.0	27.6		ug/L		110	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	25.0	24.1		ug/L		97	61 - 124	4	15
Vinyl chloride	1.0	U	12.5	12.0		ug/L		96	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195494-F-27 MSD
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-195494-I-27 MS
Matrix: Water
Analysis Batch: 595564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.7		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		113	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.2		ug/L		93	61 - 124
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595853/6
Matrix: Water
Analysis Batch: 595853

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 05:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/23 05:23*	*1*

Lab Sample ID: LCS 240-595853/4
Matrix: Water
Analysis Batch: 595853

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*

Lab Sample ID: 500-242620-C-12 MS
Matrix: Water
Analysis Batch: 595853

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	40		10.0	49.3		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 500-242620-C-12 MSD
Matrix: Water
Analysis Batch: 595853

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	40		10.0	52.8		ug/L		133	51 - 153	7	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195665-1	TRIP BLANK_128	Total/NA	Water	8260D	
240-195665-2	MW-125S_111523	Total/NA	Water	8260D	
MB 240-595564/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595564/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-F-27 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-195494-I-27 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 595853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195665-2	MW-125S_111523	Total/NA	Water	8260D SIM	
MB 240-595853/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595853/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242620-C-12 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242620-C-12 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_128
Lab Sample ID: 240-195665-1
Date Collected: 11/15/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595564	LEE	EET CLE	11/22/23 20:39

Client Sample ID: MW-125S_111523
Lab Sample ID: 240-195665-2
Date Collected: 11/15/23 12:35
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595564	LEE	EET CLE	11/22/23 21:04
Total/NA	Analysis	8260D SIM		1	595853	CS	EET CLE	11/28/23 14:11

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195665-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
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City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Analyses		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below				Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day	3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:					Job/SDG No:
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specif Special Instr
TRIP BLANK_128	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-125_111523	11/15/23	1235		6						6					N	G	X	X	X	X	X	XX		3 VOAs for 82 3 VOAs for 83

240-195665 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35601 Veranca St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	ARCADIS	11/15/23 1930	Novi Cold Storage	ARCADIS	11/15/23 1330
	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Arcadis	11/16/23 0845		EZTA	11/15/23 10:15
Relinquished by:	Company: EZTA	Date/Time: 11/15/23 10:20	Received in Laboratory by:	Company: EC	Date/Time: 11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195665

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-18 JJ

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195665

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 04, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195665-1
Sample date: 2023-11-15
Report received by CADENA: 2023-12-04
Initial Data Verification completed by CADENA: 2023-12-04
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195665-1

		Sample Name:	TRIP BLANK_128				MW-125S_111523			
		Lab Sample ID:	2401956651				2401956652			
		Sample Date:	11/15/2023				11/15/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195665-1

CADENA Verification Report: 2023-12-04

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52314R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195665-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_128	240-195665-1	Water	11/15/2023		X	
MW-125S_111523	240-195665-2	Water	11/15/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_128 MW-125S_111523	Continuing Calibration Verification %D	Vinyl chloride	+27.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 19, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only		
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite = C / Grab = G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specif Special Instr
TRIP BLANK_128	---	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blan
MW-25S_111523	11/15/23	1235		6						6					N	G	X	X	X	X	X	XX						3 VOAs for 8 3 VOAs for 8

240-195665 Chain of Custody

Page 386 of 388

MICHIGAN

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 35601 Veranca St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Alaina Pitera	ARCADIS	11/15/23 1330	Novi Cold Storage	ARCADIS	11/15/23 1330
	Arcadis	11/16/23 0845		EZTA	11/15/23 10:15
	EZTA	11/15/23 10:20	Received in Laboratory by:	EC	11-17-23 940

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11/04/2023

Client Sample ID: TRIP BLANK_128
Lab Sample ID: 240-195665-1
Date Collected: 11/15/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 20:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 20:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 20:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 20:39	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/22/23 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/22/23 20:39*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/23 20:39*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/22/23 20:39*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/22/23 20:39*	*1*

Client Sample ID: MW-125S_111523
Lab Sample ID: 240-195665-2
Date Collected: 11/15/23 12:35
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/23 14:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 21:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 21:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 21:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 21:04	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/22/23 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/22/23 21:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/22/23 21:04*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 21:04*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/22/23 21:04*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 7:57:42 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-194727-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

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11/16/2023 7:57:42 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194727-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194727-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D: The MS/MSD was analyzed outside of tune time and will be reanalyzed: DUP-06 (240-194727-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194727-1	TRIP BLANK_18	Water	11/01/23 00:00	11/03/23 08:00
240-194727-2	MW-220S_110123	Water	11/01/23 13:16	11/03/23 08:00
240-194727-3	MW-69_110123	Water	11/01/23 14:40	11/03/23 08:00
240-194727-4	DUP-06	Water	11/01/23 00:00	11/03/23 08:00
240-194727-5	MW-22_110123	Water	11/01/23 16:20	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: TRIP BLANK_18 — Lab Sample ID: 240-194727-1

No Detections.

Client Sample ID: MW-220S_110123 — Lab Sample ID: 240-194727-2

No Detections.

Client Sample ID: MW-69_110123 — Lab Sample ID: 240-194727-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.4		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: DUP-06 — Lab Sample ID: 240-194727-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-22_110123 — Lab Sample ID: 240-194727-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	57		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1600		40	18	ug/L	40		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: TRIP BLANK_18

Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194727-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 02:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 02:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 02:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 02:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 02:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/10/23 02:26*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/10/23 02:26*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/10/23 02:26*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/10/23 02:26*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: MW-220S_110123
Date Collected: 11/01/23 13:16
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194727-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/08/23 18:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 08:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 08:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 08:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 08:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 08:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 08:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/10/23 08:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/10/23 08:00*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 08:00*	*1*
Dibromofluoromethane (Surr)	*118*		*73 - 120*		*11/10/23 08:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: MW-69_110123
Date Collected: 11/01/23 14:40
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194727-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.4		2.0	0.86	ug/L			11/08/23 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*11/08/23 18:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 08:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 08:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 08:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 08:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 08:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 08:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/10/23 08:20*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/10/23 08:20*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/10/23 08:20*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/10/23 08:20*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: DUP-06
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194727-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**8.0**		2.0	0.86	ug/L			11/08/23 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*11/08/23 19:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 15:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 15:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 15:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:39	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/10/23 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/10/23 15:39*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/10/23 15:39*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 15:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/10/23 15:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: MW-22_110123
Date Collected: 11/01/23 16:20
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194727-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**57**		2.0	0.86	ug/L			11/08/23 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/08/23 19:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	40	U	40	20	ug/L			11/09/23 19:24	40
cis-1,2-Dichloroethene	40	U	40	18	ug/L			11/09/23 19:24	40
Tetrachloroethene	40	U	40	18	ug/L			11/09/23 19:24	40
trans-1,2-Dichloroethene	40	U	40	20	ug/L			11/09/23 19:24	40
Trichloroethene	40	U	40	18	ug/L			11/09/23 19:24	40
Vinyl chloride	**1600**		40	18	ug/L			11/09/23 19:24	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/09/23 19:24*	*40*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/09/23 19:24*	*40*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/09/23 19:24*	*40*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/09/23 19:24*	*40*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194693-B-9 MSD	Matrix Spike Duplicate	99	86	89	93
240-194693-C-9 MS	Matrix Spike	99	83	88	92
240-194721-B-10 MS	Matrix Spike	95	89	89	108
240-194721-C-10 MSD	Matrix Spike Duplicate	96	95	92	106
240-194727-1	TRIP BLANK_18	106	91	97	111
240-194727-2	MW-220S_110123	106	91	93	118
240-194727-3	MW-69_110123	105	90	91	115
240-194727-4	DUP-06	97	98	101	97
240-194727-5	MW-22_110123	109	76	89	93
LCS 240-594017/5	Lab Control Sample	105	86	92	98
LCS 240-594095/7	Lab Control Sample	95	94	91	103
LCS 240-594227/5	Lab Control Sample	96	103	106	97
MB 240-594017/8	Method Blank	120	88	104	103
MB 240-594095/13	Method Blank	102	87	93	108
MB 240-594227/9	Method Blank	96	101	101	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-B-3 MS	Matrix Spike	78
240-194630-B-3 MSD	Matrix Spike Duplicate	112
240-194727-2	MW-220S_110123	105
240-194727-3	MW-69_110123	87
240-194727-4	DUP-06	91
240-194727-5	MW-22_110123	89
LCS 240-593888/4	Lab Control Sample	83
MB 240-593888/6	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594017/8
Matrix: Water
Analysis Batch: 594017

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*		*11/09/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/09/23 12:02*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/09/23 12:02*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/09/23 12:02*	*1*

Lab Sample ID: LCS 240-594017/5
Matrix: Water
Analysis Batch: 594017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		114	63 - 134
cis-1,2-Dichloroethene	25.0	24.0		ug/L		96	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	25.5		ug/L		102	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122
Vinyl chloride	12.5	12.7		ug/L		102	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194693-B-9 MSD
Matrix: Water
Analysis Batch: 594017

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.7		ug/L		95	56 - 136	1	15
Trichloroethene	1.0	U	25.0	25.2		ug/L		101	61 - 124	6	15
Vinyl chloride	44	F1	12.5	45.8	F1	ug/L		17	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194693-B-9 MSD
Matrix: Water
Analysis Batch: 594017

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194693-C-9 MS
Matrix: Water
Analysis Batch: 594017

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.8		ug/L		95	61 - 124
Vinyl chloride	44	F1	12.5	49.0	F1	ug/L		42	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: MB 240-594095/13
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/10/23 01:27*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 01:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/10/23 01:27*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/10/23 01:27*	*1*

Lab Sample ID: LCS 240-594095/7
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	50.0	49.3		ug/L		99	63 - 134
cis-1,2-Dichloroethene	50.0	46.0		ug/L		92	77 - 123
Tetrachloroethene	50.0	53.4		ug/L		107	76 - 123
trans-1,2-Dichloroethene	50.0	45.7		ug/L		91	75 - 124
Trichloroethene	50.0	49.3		ug/L		99	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594095/7
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			50.0	42.5		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-194721-B-10 MS
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	1.0	U	50.0	47.4		ug/L		95	66 - 128		
Trichloroethene	1.0	U	50.0	50.2		ug/L		100	61 - 124		
Vinyl chloride	1.0	U	50.0	38.6		ug/L		77	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194721-C-10 MSD
Matrix: Water
Analysis Batch: 594095

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	50.0	49.7		ug/L		99	66 - 128	5	14
Trichloroethene	1.0	U	50.0	54.0		ug/L		108	61 - 124	7	15
Vinyl chloride	1.0	U	50.0	40.7		ug/L		81	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: MB 240-594227/9
Matrix: Water
Analysis Batch: 594227

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 15:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 15:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 15:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:13	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-594227/9
Matrix: Water
Analysis Batch: 594227

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/10/23 15:13*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/23 15:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 15:13*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 15:13*	*1*

Lab Sample ID: LCS 240-594227/5
Matrix: Water
Analysis Batch: 594227

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	23.3		ug/L		116	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	21.5		ug/L		107	76 - 123
trans-1,2-Dichloroethene	20.0	21.1		ug/L		105	75 - 124
Trichloroethene	20.0	19.7		ug/L		99	70 - 122
Vinyl chloride	20.0	21.8		ug/L		109	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-593888/6
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/08/23 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/08/23 12:17*	*1*

Lab Sample ID: LCS 240-593888/4
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-194630-B-3 MS
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	20	U F1 F2	100	126		ug/L		126	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-194630-B-3 MSD
Matrix: Water
Analysis Batch: 593888

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	20	U F1 F2	100	177	F1 F2	ug/L		177	51 - 153	33	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

GC/MS VOA

Analysis Batch: 593888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194727-2	MW-220S_110123	Total/NA	Water	8260D SIM	
240-194727-3	MW-69_110123	Total/NA	Water	8260D SIM	
240-194727-4	DUP-06	Total/NA	Water	8260D SIM	
240-194727-5	MW-22_110123	Total/NA	Water	8260D SIM	
MB 240-593888/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-593888/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-B-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194727-5	MW-22_110123	Total/NA	Water	8260D	
MB 240-594017/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594017/5	Lab Control Sample	Total/NA	Water	8260D	
240-194693-B-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194693-C-9 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 594095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194727-1	TRIP BLANK_18	Total/NA	Water	8260D	
240-194727-2	MW-220S_110123	Total/NA	Water	8260D	
240-194727-3	MW-69_110123	Total/NA	Water	8260D	
MB 240-594095/13	Method Blank	Total/NA	Water	8260D	
LCS 240-594095/7	Lab Control Sample	Total/NA	Water	8260D	
240-194721-B-10 MS	Matrix Spike	Total/NA	Water	8260D	
240-194721-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194727-4	DUP-06	Total/NA	Water	8260D	
MB 240-594227/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594227/5	Lab Control Sample	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Client Sample ID: TRIP BLANK_18
Lab Sample ID: 240-194727-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594095	TJL2	EET CLE	11/10/23 02:26

Client Sample ID: MW-220S_110123
Lab Sample ID: 240-194727-2
Date Collected: 11/01/23 13:16
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594095	TJL2	EET CLE	11/10/23 08:00
Total/NA	Analysis	8260D SIM		1	593888	MRL	EET CLE	11/08/23 18:15

Client Sample ID: MW-69_110123
Lab Sample ID: 240-194727-3
Date Collected: 11/01/23 14:40
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594095	TJL2	EET CLE	11/10/23 08:20
Total/NA	Analysis	8260D SIM		1	593888	MRL	EET CLE	11/08/23 18:39

Client Sample ID: DUP-06
Lab Sample ID: 240-194727-4
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 15:39
Total/NA	Analysis	8260D SIM		1	593888	MRL	EET CLE	11/08/23 19:03

Client Sample ID: MW-22_110123
Lab Sample ID: 240-194727-5
Date Collected: 11/01/23 16:20
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		40	594017	MRL	EET CLE	11/09/23 19:24
Total/NA	Analysis	8260D SIM		1	593888	MRL	EET CLE	11/08/23 19:27

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-194727-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szczechler	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day	☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.401.03				
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_1		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-22S_110123	11/1/23	1316		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-69_110123	11/1/23	1440		6						6					N	G	X	X	X	X	X	X	X	
DUP-06	11/1/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-22_110123	11/1/23	1620		6						6					N	G	X	X	X	X	X	X	X	

240-194727 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szczechler	Arcadis	11/2/23 1023			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETMC	11-3-23 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194727
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194727

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194727-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194727-1

	Sample Name:	TRIP BLANK_18				MW-220S_110123				MW-69_110123				DUP-06				MW-22_110123			
	Lab Sample ID:	2401947271				2401947272				2401947273				2401947274				2401947275			
	Sample Date:	11/1/2023				11/1/2023				11/1/2023				11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.1	1.0	ug/l	---	1600	40	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	7.4	2.0	ug/l	---	8.0	2.0	ug/l	---	57	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:28:05 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195406-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 4:28:05 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195406-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195406-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): DUP_05 (240-195406-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195406-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195406-1	TRIP BLANK_79	Water	11/09/23 00:00	11/14/23 10:00
240-195406-2	MW-66_110923	Water	11/09/23 12:30	11/14/23 10:00
240-195406-3	MW-65_110923	Water	11/10/23 14:03	11/14/23 10:00
240-195406-4	MW-64_111023	Water	11/09/23 15:28	11/14/23 10:00
240-195406-5	DUP_03	Water	11/09/23 00:00	11/14/23 10:00
240-195406-6	MW-23_110923	Water	11/09/23 15:40	11/14/23 10:00
240-195406-7	DUP_05	Water	11/09/23 00:00	11/14/23 10:00
240-195406-8	MW-194_111023	Water	11/10/23 11:20	11/14/23 10:00
240-195406-9	MW-194S_111023	Water	11/10/23 12:30	11/14/23 10:00
240-195406-10	MW-09_111023	Water	11/10/23 13:58	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: TRIP BLANK_79 — Lab Sample ID: 240-195406-1

No Detections.

Client Sample ID: MW-66_110923 — Lab Sample ID: 240-195406-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-65_110923 — Lab Sample ID: 240-195406-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.2		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	7.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-64_111023 — Lab Sample ID: 240-195406-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.76	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	4.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP_03 — Lab Sample ID: 240-195406-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.5		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	9.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-23_110923 — Lab Sample ID: 240-195406-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	11000		500	230	ug/L	500		8260D	Total/NA
trans-1,2-Dichloroethene	420	J	500	260	ug/L	500		8260D	Total/NA
Trichloroethene	690		500	220	ug/L	500		8260D	Total/NA
Vinyl chloride	630		500	230	ug/L	500		8260D	Total/NA

Client Sample ID: DUP_05 — Lab Sample ID: 240-195406-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9900	B	200	92	ug/L	200		8260D	Total/NA
trans-1,2-Dichloroethene	400		200	100	ug/L	200		8260D	Total/NA
Trichloroethene	550		200	88	ug/L	200		8260D	Total/NA
Vinyl chloride	520		200	90	ug/L	200		8260D	Total/NA

Client Sample ID: MW-194_111023 — Lab Sample ID: 240-195406-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.50	J B	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-194S_111023 — Lab Sample ID: 240-195406-9

No Detections.

Client Sample ID: MW-09_111023 — Lab Sample ID: 240-195406-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.2		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.93	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: TRIP BLANK_79
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 20:01*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/19/23 20:01*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/19/23 20:01*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 20:01*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-66_110923
Date Collected: 11/09/23 12:30
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			11/22/23 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/22/23 22:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 00:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 00:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 00:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 00:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 00:17	1
Vinyl chloride	1.8		1.0	0.45	ug/L			11/19/23 00:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/19/23 00:17*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/19/23 00:17*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/19/23 00:17*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/19/23 00:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-65_110923
Date Collected: 11/10/23 14:03
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/24/23 19:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 00:42	1
cis-1,2-Dichloroethene	**4.2**		1.0	0.46	ug/L			11/19/23 00:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 00:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 00:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 00:42	1
Vinyl chloride	**7.8**		1.0	0.45	ug/L			11/19/23 00:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/19/23 00:42*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/19/23 00:42*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/19/23 00:42*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/19/23 00:42*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-64_111023
Date Collected: 11/09/23 15:28
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 23:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 01:07	1
cis-1,2-Dichloroethene	**0.76**	**J**	1.0	0.46	ug/L			11/19/23 01:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 01:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 01:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 01:07	1
Vinyl chloride	**4.0**		1.0	0.45	ug/L			11/19/23 01:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/19/23 01:07*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/19/23 01:07*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 01:07*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/19/23 01:07*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: DUP_03
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 17:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 01:31	1
cis-1,2-Dichloroethene	**4.5**		1.0	0.46	ug/L			11/19/23 01:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 01:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 01:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 01:31	1
Vinyl chloride	**9.2**		1.0	0.45	ug/L			11/19/23 01:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/19/23 01:31*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/19/23 01:31*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/19/23 01:31*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/19/23 01:31*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-23_110923
Date Collected: 11/09/23 15:40
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/22/23 18:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	500	U	500	250	ug/L			11/19/23 01:56	500
cis-1,2-Dichloroethene	**11000**		500	230	ug/L			11/19/23 01:56	500
Tetrachloroethene	500	U	500	220	ug/L			11/19/23 01:56	500
trans-1,2-Dichloroethene	**420**	**J**	500	260	ug/L			11/19/23 01:56	500
Trichloroethene	**690**		500	220	ug/L			11/19/23 01:56	500
Vinyl chloride	**630**		500	230	ug/L			11/19/23 01:56	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 01:56*	*500*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/19/23 01:56*	*500*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 01:56*	*500*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/19/23 01:56*	*500*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: DUP_05

Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-7

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/22/23 18:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	200	U	200	98	ug/L			11/19/23 18:51	200
cis-1,2-Dichloroethene	**9900**	**B**	200	92	ug/L			11/19/23 18:51	200
Tetrachloroethene	200	U	200	88	ug/L			11/19/23 18:51	200
trans-1,2-Dichloroethene	**400**		200	100	ug/L			11/19/23 18:51	200
Trichloroethene	**550**		200	88	ug/L			11/19/23 18:51	200
Vinyl chloride	**520**		200	90	ug/L			11/19/23 18:51	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/19/23 18:51*	*200*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/19/23 18:51*	*200*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/19/23 18:51*	*200*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/19/23 18:51*	*200*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-194_111023
Date Collected: 11/10/23 11:20
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-8
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 14:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:16	1
cis-1,2-Dichloroethene	**0.50**	**J B**	1.0	0.46	ug/L			11/19/23 19:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/19/23 19:16*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/19/23 19:16*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/19/23 19:16*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/19/23 19:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-194S_111023

Lab Sample ID: 240-195406-9

Date Collected: 11/10/23 12:30

Matrix: Water

Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 14:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 19:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 19:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/19/23 19:40*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/19/23 19:40*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 19:40*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 19:40*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: MW-09_111023
Date Collected: 11/10/23 13:58
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195406-10
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.2		2.0	0.86	ug/L			11/24/23 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/24/23 15:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 20:05	1
Vinyl chloride	0.93	J	1.0	0.45	ug/L			11/19/23 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 20:05*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/19/23 20:05*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*11/19/23 20:05*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/19/23 20:05*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195284-B-4 MS	Matrix Spike	98	90	104	95
240-195284-B-4 MSD	Matrix Spike Duplicate	100	90	106	96
240-195326-E-2 MS	Matrix Spike	103	88	91	92
240-195326-I-2 MSD	Matrix Spike Duplicate	99	84	89	90
240-195406-1	TRIP BLANK_79	102	84	105	94
240-195406-2	MW-66_110923	106	74	88	90
240-195406-3	MW-65_110923	108	76	89	92
240-195406-4	MW-64_111023	108	74	90	92
240-195406-5	DUP_03	115	77	92	97
240-195406-6	MW-23_110923	107	74	90	92
240-195406-7	DUP_05	108	76	91	91
240-195406-8	MW-194_111023	121	82	102	105
240-195406-9	MW-194S_111023	108	75	90	94
240-195406-10	MW-09_111023	104	72	87	87
240-195409-A-3 MS	Matrix Spike	100	87	89	93
240-195409-F-3 MSD	Matrix Spike Duplicate	97	84	89	89
LCS 240-595138/5	Lab Control Sample	100	84	91	93
LCS 240-595140/5	Lab Control Sample	102	89	107	98
LCS 240-595154/5	Lab Control Sample	105	87	94	97
MB 240-595138/8	Method Blank	105	78	91	90
MB 240-595140/9	Method Blank	107	88	107	98
MB 240-595154/8	Method Blank	110	75	90	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195207-G-2 MS	Matrix Spike	99
240-195207-N-2 MSD	Matrix Spike Duplicate	103
240-195406-2	MW-66_110923	96
240-195406-3	MW-65_110923	97
240-195406-4	MW-64_111023	98
240-195406-5	DUP_03	101
240-195406-6	MW-23_110923	105
240-195406-7	DUP_05	107
240-195406-8	MW-194_111023	100
240-195406-9	MW-194S_111023	100
240-195406-10	MW-09_111023	101
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-195406-1
Project/Site: Ford LTP - On Site

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
		DCA							
Lab Sample ID	Client Sample ID	(66-120)							
LCS 240-595507/4	Lab Control Sample	99							
LCS 240-595638/4	Lab Control Sample	101							
LCS 240-595685/4	Lab Control Sample	99							
MB 240-595507/6	Method Blank	98							
MB 240-595638/5	Method Blank	101							
MB 240-595685/5	Method Blank	100							

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595138/8
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 23:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 23:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 23:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 23:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 23:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 23:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/23 23:04*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/18/23 23:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/23 23:04*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/18/23 23:04*	*1*

Lab Sample ID: LCS 240-595138/5
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.1		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	22.1		ug/L		89	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.8		ug/L		91	70 - 122
Vinyl chloride	12.5	11.7		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195409-A-3 MS
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135
cis-1,2-Dichloroethene	3.0		25.0	30.4		ug/L		110	66 - 128
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	56 - 136
Trichloroethene	57	F1	25.0	64.6	E F1	ug/L		31	61 - 124
Vinyl chloride	1.0	U	12.5	12.0		ug/L		96	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195409-A-3 MS
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195409-F-3 MSD
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135	1	26
cis-1,2-Dichloroethene	3.0		25.0	26.5		ug/L		94	66 - 128	14	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 136	8	15
Trichloroethene	57	F1	25.0	69.9	E F1	ug/L		52	61 - 124	8	15
Vinyl chloride	1.0	U	12.5	12.8		ug/L		102	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-595140/9
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 15:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 15:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 15:12*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 15:12*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 15:12*	*1*

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.8		ug/L		89	63 - 134
cis-1,2-Dichloroethene	20.0	17.2		ug/L		86	77 - 123
Tetrachloroethene	20.0	19.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	16.8		ug/L		84	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	19.9		ug/L		100	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	400	335		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	510		400	853		ug/L		85	66 - 128		
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136		
Trichloroethene	20	U	400	324		ug/L		81	61 - 124		
Vinyl chloride	380		400	769		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MSD
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	355		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	510		400	878		ug/L		91	66 - 128	3	14
Tetrachloroethene	20	U	400	398		ug/L		99	62 - 131	7	20
trans-1,2-Dichloroethene	20	U	400	363		ug/L		91	56 - 136	8	15
Trichloroethene	20	U	400	349		ug/L		87	61 - 124	7	15
Vinyl chloride	380		400	760		ug/L		94	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-595154/8
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:12	1
cis-1,2-Dichloroethene	0.605	J	1.0	0.46	ug/L			11/19/23 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/19/23 17:12*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/19/23 17:12*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 17:12*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:12*	*1*

Lab Sample ID: LCS 240-595154/5
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.1		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	23.2		ug/L		93	77 - 123
Tetrachloroethene	25.0	24.1		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.5		ug/L		94	75 - 124
Trichloroethene	25.0	22.6		ug/L		90	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195326-E-2 MS
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	66 - 128
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	11.2		ug/L		90	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195326-I-2 MSD
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	3	14
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		91	56 - 136	0	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	0	15
Vinyl chloride	1.0	U	12.5	11.4		ug/L		91	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595507/6
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 09:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 09:09*	*1*

Lab Sample ID: LCS 240-595507/4
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195207-G-2 MS
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195207-N-2 MSD
Matrix: Water
Analysis Batch: 595507

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.96		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/24/23 13:54*	*1*

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195409-G-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

GC/MS VOA

Analysis Batch: 595138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-2	MW-66_110923	Total/NA	Water	8260D	
240-195406-3	MW-65_110923	Total/NA	Water	8260D	
240-195406-4	MW-64_111023	Total/NA	Water	8260D	
240-195406-5	DUP_03	Total/NA	Water	8260D	
240-195406-6	MW-23_110923	Total/NA	Water	8260D	
MB 240-595138/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595138/5	Lab Control Sample	Total/NA	Water	8260D	
240-195409-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-195409-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-1	TRIP BLANK_79	Total/NA	Water	8260D	
MB 240-595140/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595140/5	Lab Control Sample	Total/NA	Water	8260D	
240-195284-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195284-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-7	DUP_05	Total/NA	Water	8260D	
240-195406-8	MW-194_111023	Total/NA	Water	8260D	
240-195406-9	MW-194S_111023	Total/NA	Water	8260D	
240-195406-10	MW-09_111023	Total/NA	Water	8260D	
MB 240-595154/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595154/5	Lab Control Sample	Total/NA	Water	8260D	
240-195326-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195326-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-5	DUP_03	Total/NA	Water	8260D SIM	
240-195406-6	MW-23_110923	Total/NA	Water	8260D SIM	
240-195406-7	DUP_05	Total/NA	Water	8260D SIM	
MB 240-595507/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595507/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195207-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195207-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-2	MW-66_110923	Total/NA	Water	8260D SIM	
240-195406-4	MW-64_111023	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-3	MW-65_110923	Total/NA	Water	8260D SIM	

GC/MS VOA (Continued)

Analysis Batch: 595685 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195406-8	MW-194_111023	Total/NA	Water	8260D SIM	
240-195406-9	MW-194S_111023	Total/NA	Water	8260D SIM	
240-195406-10	MW-09_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-195406-1
Matrix: Water
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 20:01

Client Sample ID: MW-66_110923

Lab Sample ID: 240-195406-2
Matrix: Water
Date Collected: 11/09/23 12:30
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 00:17
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 22:39

Client Sample ID: MW-65_110923

Lab Sample ID: 240-195406-3
Matrix: Water
Date Collected: 11/10/23 14:03
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 00:42
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 19:30

Client Sample ID: MW-64_111023

Lab Sample ID: 240-195406-4
Matrix: Water
Date Collected: 11/09/23 15:28
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 01:07
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 23:03

Client Sample ID: DUP_03

Lab Sample ID: 240-195406-5
Matrix: Water
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 01:31
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 17:52

Client Sample ID: MW-23_110923

Lab Sample ID: 240-195406-6
Matrix: Water
Date Collected: 11/09/23 15:40
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		500	595138	CDG	EET CLE	11/19/23 01:56
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 18:16

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195406-1

Client Sample ID: DUP_05

Lab Sample ID: 240-195406-7

Date Collected: 11/09/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		200	595154	CDG	EET CLE	11/19/23 18:51
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 18:40

Client Sample ID: MW-194_111023

Lab Sample ID: 240-195406-8

Date Collected: 11/10/23 11:20

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595154	CDG	EET CLE	11/19/23 19:16
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 14:18

Client Sample ID: MW-194S_111023

Lab Sample ID: 240-195406-9

Date Collected: 11/10/23 12:30

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595154	CDG	EET CLE	11/19/23 19:40
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 14:42

Client Sample ID: MW-09_111023

Lab Sample ID: 240-195406-10

Date Collected: 11/10/23 13:58

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595154	CDG	EET CLE	11/19/23 20:05
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 15:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195406-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.401.03	Shipping/Tracking No:			
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_79		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-66_110923	11/9/23	1230		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B
MW-65_110923	11/9/23	1403		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B SIM
MW-64_111023	11/10/23	1528		6						6					N	G	X	X	X	X	X	X	X	
DUP-03	11/9/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-23_110923	11/9/23	1540		6						6					N	G	X	X	X	X	X	X	X	
DUP-05	11/9/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-194_111023	11/10/23	1120		6						6					N	G	X	X	X	X	X	X	X	
MW-194S_111023	11/10/23	1230		6						6					N	G	X	X	X	X	X	X	X	
MW-09_111023	11/10/23	1358		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

240-195406 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/23 1445	NOVI cold storage	Arcadis	11/10/23 1445
	Arcadis	11/13/23 0835		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by:	EETNC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN #_____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?_____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM_____ Date_____ by_____ via Verbal Voice Mail Other

Concerning_____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s)_____were received after the recommended holding time had expired.

Sample(s)_____ were received in a broken container.

Sample(s)_____were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s)_____were further preserved in the laboratory.

Time preserved:_____Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen:_____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195406-1
Sample date: 2023-11-09 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:10
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MBK - METHOD BLANKS had detections BELOW the Reporting Limit (RL) for these analytes. The listed client sample results had concentrations LESS than 5X the method blank levels so client sample results reported below the RL are considered non-detect at the RL and qualified with UB flags and results greater than the RL are non-detect at the sample concentration reported and qualified with B flags : GCMS VOC QC batch 595154 - CIS-1,2-DICHLOROETHYLENE - UB flag - sample -008.

HSP - GCMS VOC container was received with headspace according to the laboratory submittal case narrative and sample receipt documents. Client sample GCMS VOC results noted should be considered estimated and qualified with J flags if detected and UJ flags if non-detect. GCMS VOC sample -007 - J/UJ flags.

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 595138.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

Qualifiers added during verification have been added to the electronic data which is available for download from the CADENA CLMS. Refer to the attached table of analytical results that have been qualified during verification.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195406-1

		Sample Name:	DUP_05				MW-194_111023			
		Lab Sample ID:	2401954067				2401954068			
		Sample Date:	11/9/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	200	ug/l	UJ				
cis-1,2-Dichloroethene	156-59-2	9900	200	ug/l	J	0.50	1.0	ug/l	UB
Tetrachloroethene	127-18-4	ND	200	ug/l	UJ				
trans-1,2-Dichloroethene	156-60-5	400	200	ug/l	J				
Trichloroethene	79-01-6	550	200	ug/l	J				
Vinyl chloride	75-01-4	520	200	ug/l	J				

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195406-1

	Sample Name:	TRIP BLANK_79				MW-09_111023				MW-66_110923				MW-65_110923				MW-64_111023				DUP_03				MW-23_110923				DUP_05				MW-194_111023				MW-194S_111023			
	Lab Sample ID:	2401954061				24019540610				2401954062				2401954063				2401954064				2401954065				2401954066				2401954067				2401954068				2401954069			
	Sample Date:	11/9/2023				11/10/2023				11/9/2023				11/10/2023				11/9/2023				11/9/2023				11/9/2023				11/9/2023				11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																							
OSW-8260D																																							
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	500	ug/l	---	ND	200	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.2	1.0	ug/l	---	0.76	1.0	ug/l	J	4.5	1.0	ug/l	---	11000	500	ug/l	---	9900	200	ug/l	J	0.50	1.0	ug/l	UB	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	500	ug/l	---	ND	200	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	420	500	ug/l	J	400	200	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	690	500	ug/l	---	550	200	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.93	1.0	ug/l	J	1.8	1.0	ug/l	---	7.8	1.0	ug/l	---	4.0	1.0	ug/l	---	9.2	1.0	ug/l	---	630	500	ug/l	---	520	200	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																																							
1,4-Dioxane	123-91-1					4.2	2.0	ug/l	---	1.7	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:29:07 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195409-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:29:07 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195409-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195409-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195409-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-48R_111023 (240-195409-2) and MW-68_111023 (240-195409-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195409-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195409-1	TRIP BLANK_86	Water	11/10/23 00:00	11/14/23 10:00
240-195409-2	MW-48R_111023	Water	11/10/23 10:10	11/14/23 10:00
240-195409-3	MW-67_111023	Water	11/10/23 11:10	11/14/23 10:00
240-195409-4	MW-58_111023	Water	11/10/23 12:35	11/14/23 10:00
240-195409-5	MW-68_111023	Water	11/10/23 01:50	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: TRIP BLANK_86 — Lab Sample ID: 240-195409-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.52	J B	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-48R_111023 — Lab Sample ID: 240-195409-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	10		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.87	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-67_111023 — Lab Sample ID: 240-195409-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.0		1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	57	F1	1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-58_111023 — Lab Sample ID: 240-195409-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.57	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.48	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-68_111023 — Lab Sample ID: 240-195409-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	3.4		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.85	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	22		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: TRIP BLANK_86
Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195409-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:37	1
cis-1,2-Dichloroethene	**0.52**	**J B**	1.0	0.46	ug/L			11/19/23 17:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/19/23 17:37*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/19/23 17:37*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/19/23 17:37*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/19/23 17:37*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: MW-48R_111023
Date Collected: 11/10/23 10:10
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195409-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	10		2.0	0.86	ug/L			11/24/23 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/24/23 15:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 04:00	1
cis-1,2-Dichloroethene	0.87	J	1.0	0.46	ug/L			11/19/23 04:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 04:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 04:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 04:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 04:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/19/23 04:00*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/19/23 04:00*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 04:00*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 04:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: MW-67_111023

Date Collected: 11/10/23 11:10
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195409-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/24/23 15:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 04:25	1
cis-1,2-Dichloroethene	**3.0**		1.0	0.46	ug/L			11/19/23 04:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 04:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 04:25	1
Trichloroethene	**57**	**F1**	1.0	0.44	ug/L			11/19/23 04:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 04:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/19/23 04:25*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/19/23 04:25*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/19/23 04:25*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/19/23 04:25*	*1*

Client: ARCADIS US Inc
Job ID: 240-195409-1
Project/Site: Ford LTP - On Site

Client Sample ID: MW-58_111023
Lab Sample ID: 240-195409-4
Date Collected: 11/10/23 12:35
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.0**		2.0	0.86	ug/L			11/24/23 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/24/23 16:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 04:50	1
cis-1,2-Dichloroethene	**0.57**	**J**	1.0	0.46	ug/L			11/19/23 04:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 04:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 04:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 04:50	1
Vinyl chloride	**0.48**	**J**	1.0	0.45	ug/L			11/19/23 04:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/19/23 04:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/19/23 04:50*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/19/23 04:50*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 04:50*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: MW-68_111023
Date Collected: 11/10/23 01:50
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195409-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.1**		2.0	0.86	ug/L			11/24/23 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/24/23 16:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 05:15	1
cis-1,2-Dichloroethene	**3.4**		1.0	0.46	ug/L			11/19/23 05:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 05:15	1
trans-1,2-Dichloroethene	**0.85**	**J**	1.0	0.51	ug/L			11/19/23 05:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 05:15	1
Vinyl chloride	**22**		1.0	0.45	ug/L			11/19/23 05:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/19/23 05:15*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/19/23 05:15*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 05:15*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 05:15*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195326-E-2 MS	Matrix Spike	103	88	91	92
240-195326-I-2 MSD	Matrix Spike Duplicate	99	84	89	90
240-195409-1	TRIP BLANK_86	102	73	88	87
240-195409-2	MW-48R_111023	110	74	90	93
240-195409-3	MW-67_111023	111	75	89	93
240-195409-3 MS	MW-67-MS_111023	100	87	89	93
240-195409-3 MSD	MW-67-MSD_111023	97	84	89	89
240-195409-4	MW-58_111023	115	77	94	95
240-195409-5	MW-68_111023	115	75	90	96
LCS 240-595138/5	Lab Control Sample	100	84	91	93
LCS 240-595154/5	Lab Control Sample	105	87	94	97
MB 240-595138/8	Method Blank	105	78	91	90
MB 240-595154/8	Method Blank	110	75	90	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195409-2	MW-48R_111023	102
240-195409-3	MW-67_111023	102
240-195409-3 MS	MW-67-MS_111023	95
240-195409-3 MSD	MW-67-MSD_111023	96
240-195409-4	MW-58_111023	101
240-195409-5	MW-68_111023	102
LCS 240-595685/4	Lab Control Sample	99
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595138/8
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 23:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 23:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 23:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 23:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 23:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 23:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/23 23:04*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/18/23 23:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/23 23:04*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/18/23 23:04*	*1*

Lab Sample ID: LCS 240-595138/5
Matrix: Water
Analysis Batch: 595138

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.1		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	22.1		ug/L		89	77 - 123		
Tetrachloroethene			25.0	23.4		ug/L		94	76 - 123		
trans-1,2-Dichloroethene			25.0	23.7		ug/L		95	75 - 124		
Trichloroethene			25.0	22.8		ug/L		91	70 - 122		
Vinyl chloride			12.5	11.7		ug/L		94	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195409-3 MS
Matrix: Water
Analysis Batch: 595138

Client Sample ID: MW-67-MS_111023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	3.0		25.0	30.4		ug/L		110	66 - 128		
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	56 - 136		
Trichloroethene	57	F1	25.0	64.6	E F1	ug/L		31	61 - 124		
Vinyl chloride	1.0	U	12.5	12.0		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195409-3 MS
Matrix: Water
Analysis Batch: 595138

Client Sample ID: MW-67-MS_111023
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195409-3 MSD
Matrix: Water
Analysis Batch: 595138

Client Sample ID: MW-67-MSD_111023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135	1	26
cis-1,2-Dichloroethene	3.0		25.0	26.5		ug/L		94	66 - 128	14	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 136	8	15
Trichloroethene	57	F1	25.0	69.9	E F1	ug/L		52	61 - 124	8	15
Vinyl chloride	1.0	U	12.5	12.8		ug/L		102	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-595154/8
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:12	1
cis-1,2-Dichloroethene	0.605	J	1.0	0.46	ug/L			11/19/23 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/19/23 17:12*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/19/23 17:12*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/19/23 17:12*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/19/23 17:12*	*1*

Lab Sample ID: LCS 240-595154/5
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.1		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	23.2		ug/L		93	77 - 123
Tetrachloroethene	25.0	24.1		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.5		ug/L		94	75 - 124
Trichloroethene	25.0	22.6		ug/L		90	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595154/5
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195326-E-2 MS
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	66 - 128		
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136		
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	11.2		ug/L		90	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195326-I-2 MSD
Matrix: Water
Analysis Batch: 595154

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	3	14
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		91	56 - 136	0	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	0	15
Vinyl chloride	1.0	U	12.5	11.4		ug/L		91	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-595685/5
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		66 - 120		11/24/23 13:54	1

Lab Sample ID: LCS 240-595685/4
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		66 - 120

Lab Sample ID: 240-195409-3 MS
Matrix: Water
Analysis Batch: 595685

Client Sample ID: MW-67-MS_111023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		66 - 120

Lab Sample ID: 240-195409-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: MW-67-MSD_111023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		66 - 120

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

GC/MS VOA

Analysis Batch: 595138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195409-2	MW-48R_111023	Total/NA	Water	8260D	
240-195409-3	MW-67_111023	Total/NA	Water	8260D	
240-195409-4	MW-58_111023	Total/NA	Water	8260D	
240-195409-5	MW-68_111023	Total/NA	Water	8260D	
MB 240-595138/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595138/5	Lab Control Sample	Total/NA	Water	8260D	
240-195409-3 MS	MW-67-MS_111023	Total/NA	Water	8260D	
240-195409-3 MSD	MW-67-MSD_111023	Total/NA	Water	8260D	

Analysis Batch: 595154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195409-1	TRIP BLANK_86	Total/NA	Water	8260D	
MB 240-595154/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595154/5	Lab Control Sample	Total/NA	Water	8260D	
240-195326-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195326-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195409-2	MW-48R_111023	Total/NA	Water	8260D SIM	
240-195409-3	MW-67_111023	Total/NA	Water	8260D SIM	
240-195409-4	MW-58_111023	Total/NA	Water	8260D SIM	
240-195409-5	MW-68_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-3 MS	MW-67-MS_111023	Total/NA	Water	8260D SIM	
240-195409-3 MSD	MW-67-MSD_111023	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195409-1

Client Sample ID: TRIP BLANK_86

Lab Sample ID: 240-195409-1
Matrix: Water
Date Collected: 11/10/23 00:00
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595154	CDG	EET CLE	11/19/23 17:37

Client Sample ID: MW-48R_111023

Lab Sample ID: 240-195409-2
Matrix: Water
Date Collected: 11/10/23 10:10
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 04:00
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 15:30

Client Sample ID: MW-67_111023

Lab Sample ID: 240-195409-3
Matrix: Water
Date Collected: 11/10/23 11:10
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 04:25
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 15:54

Client Sample ID: MW-58_111023

Lab Sample ID: 240-195409-4
Matrix: Water
Date Collected: 11/10/23 12:35
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 04:50
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 16:18

Client Sample ID: MW-68_111023

Lab Sample ID: 240-195409-5
Matrix: Water
Date Collected: 11/10/23 01:50
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595138	CDG	EET CLE	11/19/23 05:15
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 16:42

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195409-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.401.03	Shipping/Tracking No:			
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 86	11/10/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-48R_111023	11/10/23	1000		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-67_111023	11/10/23	1110		~~18~~ 6	GL					~~18~~ 6	GL				N	G	X	X	X	X	X	X	X	MS/MSD parent
MW-67-MS_111023	11/10/23	1110		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-67-MSD_111023	11/10/23	1110		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-58_111023	11/10/23	1235		6						6					N	G	X	X	X	X	X	X	X	
MW-68_111023	11/10/23	1350		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Month

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Onsite

240-195409 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/23 15:00	Novi Cold Storage	ARCADIS	11/10/23 15:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/13/230835		EEA	11/13/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/13/23	Alissa Atkinson	EETNC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # :_____

Client Arcadis Site Name_____

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11.14.23 Opened on 11.14.23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes) No	**Tests that are not checked for pH by Receiving:** VOAs, Oil and Grease, TOC
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning_____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195409-1
Sample date: 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:5
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

TBK - TRIP BLANKS had detections BELOW the Reporting Limit (RL) for these analytes. The listed client sample results had concentrations LESS than 5X the method blank levels so client sample results reported below the RL are considered non-detect at the RL and qualified with UB flags and results greater than the RL are non-detect at the sample concentration reported and qualified with B flags : GCMS VOC CIS-1,2-DICHLOROETHYLENE - UB flags - samples -02 and -04.

MBK - METHOD BLANKS had detections BELOW the Reporting Limit (RL) for these analytes. The listed client sample results had concentrations LESS than 5X the method blank levels so client sample results reported below the RL are considered non-detect at the RL and qualified with UB flags and results greater than the RL are non-detect at the sample concentration reported and qualified with B flags : GCMS VOC CIS-1,2-DICHLOROETHYLENE - UB flag - sample -01. NOTE: trip blank detection was treated as a QC sample so detection was used to qualify other field sample results before qualifying based on method blank detection.

MSD - MS and MSD recovery outliers or one recovery and the MS/MSD RPD were outliers with the recovery biased LOW for these analytes. Results for the client sample spiked only should be considered estimated and qualified with a J flag if detected and UJ flags if non-detect for these analytes: GCMS VOC sample -003 - TRICHLOROETHYLENE - J flag.

HSP - GCMS VOC container was received with headspace according to the laboratory submittal case narrative and sample receipt documents. Client sample GCMS VOC results noted should be considered estimated and qualified with J flags if detected and UJ flags if non-detect. GCMS VOC samples -002 and -005 - J/UJ flags.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

Qualifiers added during verification have been added to the electronic data which is available for download from the CADENA CLMS. Refer to the attached table of analytical results that have been qualified during verification.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195409-1

		Sample Name:	TRIP BLANK_86				MW-48R_111023				MW-67_111023				MW-58_111023				MW-68_111023			
		Lab Sample ID:	2401954091				2401954092				2401954093				2401954094				2401954095			
		Sample Date:	11/10/2023				11/10/2023				11/10/2023				11/10/2023				11/10/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
	OSW-8260D																					
	1,1-Dichloroethene	75-35-4					ND	1.0	ug/l	UJ									ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	0.52	1.0	ug/l	UB	0.87	1.0	ug/l	J					0.57	1.0	ug/l	UB	3.4	1.0	ug/l	J
	Tetrachloroethene	127-18-4					ND	1.0	ug/l	UJ									ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5					ND	1.0	ug/l	UJ									0.85	1.0	ug/l	J
	Trichloroethene	79-01-6					ND	1.0	ug/l	UJ	57	1.0	ug/l	J					ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4					ND	1.0	ug/l	UJ									22	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195409-1

		Sample Name:	TRIP BLANK_86				MW-48R_111023				MW-67_111023				MW-58_111023				MW-68_111023			
		Lab Sample ID:	2401954091				2401954092				2401954093				2401954094				2401954095			
		Sample Date:	11/10/2023				11/10/2023				11/10/2023				11/10/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	0.52	1.0	ug/l	UB	0.87	1.0	ug/l	J	3.0	1.0	ug/l	---	0.57	1.0	ug/l	UB	3.4	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.85	1.0	ug/l	J
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	57	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	0.48	1.0	ug/l	J	22	1.0	ug/l	J
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					10	2.0	ug/l	---	ND	2.0	ug/l	---	2.0	2.0	ug/l	---	4.1	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2023 4:48:14 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195673-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195673-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195673-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195673-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195673-1	TRIP BLANK_80	Water	11/14/23 00:00	11/17/23 09:40
240-195673-2	MW-211S_111423	Water	11/14/23 12:01	11/17/23 09:40
240-195673-3	MW-235_111423	Water	11/14/23 13:33	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195673-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_80 — Lab Sample ID: 240-195673-1

No Detections.

Client Sample ID: MW-211S_111423 — Lab Sample ID: 240-195673-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.52	J	1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-235_111423 — Lab Sample ID: 240-195673-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.89	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	2.0		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	12		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Client Sample ID: TRIP BLANK_80
Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195673-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 14:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 14:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 14:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 14:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 14:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 14:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 14:31*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 14:31*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/23 14:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/22/23 14:31*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Client Sample ID: MW-211S_111423
Date Collected: 11/14/23 12:01
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195673-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/23 18:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 14:56	1
Trichloroethene	**0.52**	**J**	1.0	0.44	ug/L			11/22/23 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 14:56*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 14:56*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 14:56*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/22/23 14:56*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Client Sample ID: MW-235_111423
Date Collected: 11/14/23 13:33
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195673-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.89**	**J**	2.0	0.86	ug/L			11/27/23 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/27/23 18:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 15:21	1
cis-1,2-Dichloroethene	**2.0**		1.0	0.46	ug/L			11/22/23 15:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 15:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 15:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 15:21	1
Vinyl chloride	**12**		1.0	0.45	ug/L			11/22/23 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/22/23 15:21*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 15:21*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/23 15:21*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/22/23 15:21*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195673-1	TRIP BLANK_80	111	98	102	96
240-195673-2	MW-211S_111423	110	99	101	97
240-195673-3	MW-235_111423	109	100	102	95
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195673-2	MW-211S_111423	97
240-195673-3	MW-235_111423	99
240-195686-L-5 MS	Matrix Spike	94
240-195686-Q-5 MSD	Matrix Spike Duplicate	94
LCS 240-595844/4	Lab Control Sample	98
MB 240-595844/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	23.4		ug/L		94	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		100	77 - 123		
Tetrachloroethene			25.0	21.9		ug/L		88	76 - 123		
trans-1,2-Dichloroethene			25.0	25.4		ug/L		102	75 - 124		
Trichloroethene			25.0	24.6		ug/L		98	70 - 122		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.2		ug/L		102	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-L-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

GC/MS VOA

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195673-1	TRIP BLANK_80	Total/NA	Water	8260D	
240-195673-2	MW-211S_111423	Total/NA	Water	8260D	
240-195673-3	MW-235_111423	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195673-2	MW-211S_111423	Total/NA	Water	8260D SIM	
240-195673-3	MW-235_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-L-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195686-Q-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195673-1

Client Sample ID: TRIP BLANK_80

Lab Sample ID: 240-195673-1

Date Collected: 11/14/23 00:00

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 14:31

Client Sample ID: MW-211S_111423

Lab Sample ID: 240-195673-2

Date Collected: 11/14/23 12:01

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 14:56
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 18:11

Client Sample ID: MW-235_111423

Lab Sample ID: 240-195673-3

Date Collected: 11/14/23 13:33

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 15:21
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 18:35

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195673-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Nolan Schendel	TAT if different from below: 10 day; 3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03					
PO # 30146655.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_80		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-211S_111423	11/14/23	1201		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-235_111423	11/14/23	1333		6						6					N	G	X	X	X	X	X	X	X	

240-195673 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client / ✓ Disposal By Lab / Archive For / Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Nolan Schendel	Arcadis	11/15/23 0700	Novi Cold Storage	Arcadis	11/15/23 0700
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
	EEA	11/16/23 1012	Received in Laboratory by:	EC	11-17-23 940

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11/29/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195673

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) MJC 11-18-23
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195673

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(2) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 29, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195673-1
Sample date: 2023-11-14
Report received by CADENA: 2023-11-29
Initial Data Verification completed by CADENA: 2023-11-29
Number of Samples:3
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195673-1

		Sample Name:	TRIP BLANK_80				MW-211S_111423				MW-235_111423			
		Lab Sample ID:	2401956731				2401956732				2401956733			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.0	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	0.52	1.0	ug/l	J	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	12	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	0.89	2.0	ug/l	J

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2023 4:48:14 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195675-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2023 4:48:14 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195675-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195675-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195675-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195675-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195675-1	TRIP BLANK_124	Water	11/14/23 00:00	11/17/23 09:40
240-195675-2	MW-30_111423	Water	11/14/23 11:20	11/17/23 09:40
240-195675-3	MW-120_111423	Water	11/14/23 14:05	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195675-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_124 — Lab Sample ID: 240-195675-1

No Detections.

Client Sample ID: MW-30_111423 — Lab Sample ID: 240-195675-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	12		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-120_111423 — Lab Sample ID: 240-195675-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3.6		1.0	0.44	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Client Sample ID: TRIP BLANK_124
Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195675-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 15:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 15:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 15:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 15:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 15:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 15:45*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/23 15:45*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/23 15:45*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 15:45*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Client Sample ID: MW-30_111423
Date Collected: 11/14/23 11:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195675-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	12		2.0	0.86	ug/L			11/27/23 19:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/23 19:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 16:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 16:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 16:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 16:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 16:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/22/23 16:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/22/23 16:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/23 16:10*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 16:10*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Client Sample ID: MW-120_111423
Date Collected: 11/14/23 14:05
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195675-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 19:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 16:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 16:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 16:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 16:35	1
Trichloroethene	**3.6**		1.0	0.44	ug/L			11/22/23 16:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 16:35*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/22/23 16:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 16:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/22/23 16:35*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195675-1	TRIP BLANK_124	110	97	100	98
240-195675-2	MW-30_111423	112	98	102	98
240-195675-3	MW-120_111423	110	99	98	99
LCS 240-595559/4	Lab Control Sample	110	98	98	107
MB 240-595559/7	Method Blank	111	100	103	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195675-2	MW-30_111423	97
240-195675-3	MW-120_111423	98
240-195686-L-5 MS	Matrix Spike	94
240-195686-Q-5 MSD	Matrix Spike Duplicate	94
LCS 240-595844/4	Lab Control Sample	98
MB 240-595844/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	23.4		ug/L		94	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		100	77 - 123		
Tetrachloroethene			25.0	21.9		ug/L		88	76 - 123		
trans-1,2-Dichloroethene			25.0	25.4		ug/L		102	75 - 124		
Trichloroethene			25.0	24.6		ug/L		98	70 - 122		
Vinyl chloride			12.5	10.9		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128		
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136		
Trichloroethene	21		250	246		ug/L		90	61 - 124		
Vinyl chloride	30		125	133		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.2		ug/L		102	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-L-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

GC/MS VOA

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195675-1	TRIP BLANK_124	Total/NA	Water	8260D	
240-195675-2	MW-30_111423	Total/NA	Water	8260D	
240-195675-3	MW-120_111423	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195675-2	MW-30_111423	Total/NA	Water	8260D SIM	
240-195675-3	MW-120_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-L-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195686-Q-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195675-1

Client Sample ID: TRIP BLANK_124

Lab Sample ID: 240-195675-1

Date Collected: 11/14/23 00:00

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 15:45

Client Sample ID: MW-30_111423

Lab Sample ID: 240-195675-2

Date Collected: 11/14/23 11:20

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 16:10
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 19:23

Client Sample ID: MW-120_111423

Lab Sample ID: 240-195675-3

Date Collected: 11/14/23 14:05

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 16:35
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 19:47

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195675-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ○ DW ○ NPDES ○ RCRA ○ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ● 2 weeks ○ 3 weeks ○ 1 week ○ 2 days ○ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.401.03				
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_124	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-30_111423	11/14/23	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-120_111423	11/14/23	1405		6						6					N	G	X	X	X	X	X	X	X	

240-195675 Chain of Custody

Possible Hazard Identification
● Non-Hazard ○ Flammable ○ Skin Irritant ○ Poison B ○ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
○ Return to Client ● Disposal By Lab ○ Archive For ___ Months

MICHIGAN 190

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/15/23 1330	NOV Cold Storage	Arcadis	11/15/23 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 10:20		EC	11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195675

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) NA
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA) 11-18-23
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195675

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195675-1
Sample date: 2023-11-14
Report received by CADENA: 2023-11-29
Initial Data Verification completed by CADENA: 2023-11-29
Number of Samples:3
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195675-1

		Sample Name:	TRIP BLANK_124				MW-30_111423				MW-120_111423			
		Lab Sample ID:	2401956751				2401956752				2401956753			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.6	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					12	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/5/2023 7:45:42 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195677-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/5/2023 7:45:42 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195677-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195677-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195677-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: NO MS/MSD in batch 595698 due to a sample failure: MW-50_111523 (240-195677-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195677-1	TRIP BLANK_83	Water	11/15/23 00:00	11/17/23 09:40
240-195677-2	MW-50_111523	Water	11/15/23 11:40	11/17/23 09:40
240-195677-3	DUP-02	Water	11/15/23 00:00	11/17/23 09:40
240-195677-4	MW-71_111523	Water	11/15/23 13:10	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: TRIP BLANK_83 — Lab Sample ID: 240-195677-1

No Detections.

Client Sample ID: MW-50_111523 — Lab Sample ID: 240-195677-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	8.0		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	30		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-02 — Lab Sample ID: 240-195677-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	11		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	28		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-71_111523 — Lab Sample ID: 240-195677-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.0	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.92	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.59	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: TRIP BLANK_83

Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/22/23 17:00*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 17:00*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/22/23 17:00*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 17:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: MW-50_111523

Date Collected: 11/15/23 11:40
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 21:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/28/23 21:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 11:47	1
cis-1,2-Dichloroethene	**8.0**		1.0	0.46	ug/L			11/26/23 11:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 11:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:47	1
Vinyl chloride	**30**		1.0	0.45	ug/L			11/26/23 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/26/23 11:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/26/23 11:47*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/26/23 11:47*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/26/23 11:47*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: DUP-02
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 22:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:58	1
cis-1,2-Dichloroethene	**11**		1.0	0.46	ug/L			11/24/23 10:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:58	1
Vinyl chloride	**28**		1.0	0.45	ug/L			11/24/23 10:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/24/23 10:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 10:58*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/24/23 10:58*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/24/23 10:58*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: MW-71_111523
Date Collected: 11/15/23 13:10
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.0**	**J**	2.0	0.86	ug/L			11/28/23 22:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/28/23 22:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 11:23	1
cis-1,2-Dichloroethene	**0.92**	**J**	1.0	0.46	ug/L			11/24/23 11:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 11:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 11:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 11:23	1
Vinyl chloride	**0.59**	**J**	1.0	0.45	ug/L			11/24/23 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/24/23 11:23*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/24/23 11:23*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/24/23 11:23*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/24/23 11:23*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195499-C-1 MS	Matrix Spike	110	100	99	102
240-195499-C-1 MSD	Matrix Spike Duplicate	111	101	100	104
240-195677-1	TRIP BLANK_83	110	100	101	98
240-195677-2	MW-50_111523	93	97	106	83
240-195677-3	DUP-02	97	96	109	88
240-195677-4	MW-71_111523	90	94	106	91
240-195684-E-2 MS	Matrix Spike	90	101	110	88
240-195684-F-2 MSD	Matrix Spike Duplicate	93	104	107	89
LCS 240-595559/4	Lab Control Sample	110	98	98	107
LCS 240-595675/4	Lab Control Sample	89	98	110	92
LCS 240-595698/4	Lab Control Sample	92	98	102	84
MB 240-595559/7	Method Blank	111	100	103	98
MB 240-595675/7	Method Blank	87	96	104	81
MB 240-595698/7	Method Blank	90	95	104	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195542-G-2 MS	Matrix Spike	97
240-195542-J-2 MSD	Matrix Spike Duplicate	98
240-195677-2	MW-50_111523	97
240-195677-3	DUP-02	98
240-195677-4	MW-71_111523	99
LCS 240-595979/4	Lab Control Sample	98
MB 240-595979/6	Method Blank	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595559/7
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 12:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 12:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 12:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 12:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/22/23 12:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/23 12:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/22/23 12:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/22/23 12:02*	*1*

Lab Sample ID: LCS 240-595559/4
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		94	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	21.9		ug/L		88	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	10.9		ug/L		87	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	220		ug/L		88	56 - 135
cis-1,2-Dichloroethene	250		250	499		ug/L		98	66 - 128
Tetrachloroethene	10	U	250	208		ug/L		83	62 - 131
trans-1,2-Dichloroethene	20		250	245		ug/L		90	56 - 136
Trichloroethene	21		250	246		ug/L		90	61 - 124
Vinyl chloride	30		125	133		ug/L		83	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195499-C-1 MS
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	102		73 - 120

Lab Sample ID: 240-195499-C-1 MSD
Matrix: Water
Analysis Batch: 595559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	231		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	250		250	484		ug/L		92	66 - 128	3	14
Tetrachloroethene	10	U	250	226		ug/L		91	62 - 131	8	20
trans-1,2-Dichloroethene	20		250	258		ug/L		95	56 - 136	5	15
Trichloroethene	21		250	250		ug/L		92	61 - 124	2	15
Vinyl chloride	30		125	125		ug/L		77	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	104		73 - 120

Lab Sample ID: MB 240-595675/7
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 10:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 10:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		62 - 137		11/24/23 10:07	1
4-Bromofluorobenzene (Surr)	96		56 - 136		11/24/23 10:07	1
Toluene-d8 (Surr)	104		78 - 122		11/24/23 10:07	1
Dibromofluoromethane (Surr)	81		73 - 120		11/24/23 10:07	1

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.7		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	13.4		ug/L		107	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	25.6		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128		
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		101	56 - 136		
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124		
Vinyl chloride	0.93	J	12.5	13.8		ug/L		103	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-195684-F-2 MSD
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	27.0		ug/L		108	62 - 131	14	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124	2	15
Vinyl chloride	0.93	J	12.5	15.0		ug/L		113	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-595698/7
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 11:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 11:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 11:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 11:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/26/23 11:22*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/26/23 11:22*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 11:22*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/26/23 11:22*	*1*

Lab Sample ID: LCS 240-595698/4
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.9		ug/L		115	63 - 134
cis-1,2-Dichloroethene	25.0	29.0		ug/L		116	77 - 123
Tetrachloroethene	25.0	29.7		ug/L		119	76 - 123
trans-1,2-Dichloroethene	25.0	27.7		ug/L		111	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	12.5	14.4		ug/L		115	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595979/6
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 17:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/28/23 17:37*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-595979/4
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195542-G-2 MS
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.7		10.0	14.0		ug/L		112	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195542-J-2 MSD
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.7		10.0	14.8		ug/L		121	51 - 153	6	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

GC/MS VOA

Analysis Batch: 595559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195677-1	TRIP BLANK_83	Total/NA	Water	8260D	
MB 240-595559/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595559/4	Lab Control Sample	Total/NA	Water	8260D	
240-195499-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195499-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195677-3	DUP-02	Total/NA	Water	8260D	
240-195677-4	MW-71_111523	Total/NA	Water	8260D	
MB 240-595675/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595675/4	Lab Control Sample	Total/NA	Water	8260D	
240-195684-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195684-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195677-2	MW-50_111523	Total/NA	Water	8260D	
MB 240-595698/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595698/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195677-2	MW-50_111523	Total/NA	Water	8260D SIM	
240-195677-3	DUP-02	Total/NA	Water	8260D SIM	
240-195677-4	MW-71_111523	Total/NA	Water	8260D SIM	
MB 240-595979/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595979/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195542-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195542-J-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Client Sample ID: TRIP BLANK_83
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595559	LEE	EET CLE	11/22/23 17:00

Client Sample ID: MW-50_111523
Date Collected: 11/15/23 11:40
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595698	LEE	EET CLE	11/26/23 11:47
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 21:37

Client Sample ID: DUP-02
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 10:58
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 22:01

Client Sample ID: MW-71_111523
Date Collected: 11/15/23 13:10
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195677-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 11:23
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 22:25

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195677-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpanicher	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.401.03				
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_83		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-50_111523	11/15/23	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-02	11/15/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-71_111523	11/15/23	1310		6						6					N	G	X	X	X	X	X	X	X	

240-195677 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Onsite

MICHIGAN
LJ

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EETA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23			
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/23 1012		EC	11-17-23 940

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12/5/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195677

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

MM 11-18-23

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195677

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195677-1
Sample date: 2023-11-15
Report received by CADENA: 2023-12-05
Initial Data Verification completed by CADENA: 2023-12-05
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195677-1

		Sample Name:	TRIP BLANK_83				MW-50_111523				DUP-02				MW-71_111523			
		Lab Sample ID:	2401956771				2401956772				2401956773				2401956774			
		Sample Date:	11/15/2023				11/15/2023				11/15/2023				11/15/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	8.0	1.0	ug/l	---	11	1.0	ug/l	---	0.92	1.0	ug/l	J
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	30	1.0	ug/l	---	28	1.0	ug/l	---	0.59	1.0	ug/l	J
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.0	2.0	ug/l	J

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/5/2023 7:48:18 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195678-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/5/2023 7:48:18 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195678-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195678-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195678-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195678-1	TRIP BLANK_100	Water	11/14/23 00:00	11/17/23 09:40
240-195678-2	MW-208S_111423	Water	11/14/23 10:15	11/17/23 09:40
240-195678-3	MW-15-61D_111423	Water	11/14/23 12:45	11/17/23 09:40
240-195678-4	MW-15-60D_111423	Water	11/14/23 14:53	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: TRIP BLANK_100 — Lab Sample ID: 240-195678-1

No Detections.

Client Sample ID: MW-208S_111423 — Lab Sample ID: 240-195678-2

No Detections.

Client Sample ID: MW-15-61D_111423 — Lab Sample ID: 240-195678-3

No Detections.

Client Sample ID: MW-15-60D_111423 — Lab Sample ID: 240-195678-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: TRIP BLANK_100

Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195678-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 11:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/24/23 11:48*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/24/23 11:48*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/24/23 11:48*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/24/23 11:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: MW-208S_111423
Date Collected: 11/14/23 10:15
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195678-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/27/23 20:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 12:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 12:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 12:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 12:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 12:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/24/23 12:13*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 12:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/24/23 12:13*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/24/23 12:13*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: MW-15-61D_111423
Date Collected: 11/14/23 12:45
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195678-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/27/23 20:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 12:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 12:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 12:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 12:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 12:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/24/23 12:38*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/24/23 12:38*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 12:38*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/24/23 12:38*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: MW-15-60D_111423
Date Collected: 11/14/23 14:53
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195678-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/23 20:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/24/23 13:03*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 13:03*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/24/23 13:03*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/24/23 13:03*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195678-1	TRIP BLANK_100	93	94	108	90
240-195678-2	MW-208S_111423	93	91	101	86
240-195678-3	MW-15-61D_111423	97	87	104	91
240-195678-4	MW-15-60D_111423	94	96	107	85
240-195684-E-2 MS	Matrix Spike	90	101	110	88
240-195684-F-2 MSD	Matrix Spike Duplicate	93	104	107	89
LCS 240-595675/4	Lab Control Sample	89	98	110	92
MB 240-595675/7	Method Blank	87	96	104	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195678-2	MW-208S_111423	99
240-195678-3	MW-15-61D_111423	99
240-195678-4	MW-15-60D_111423	97
240-195686-L-5 MS	Matrix Spike	94
240-195686-Q-5 MSD	Matrix Spike Duplicate	94
LCS 240-595844/4	Lab Control Sample	98
MB 240-595844/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595675/7
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 10:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 10:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/24/23 10:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 10:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 10:07*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/24/23 10:07*	*1*

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.7		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	25.6		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		101	56 - 136
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124
Vinyl chloride	0.93	J	12.5	13.8		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-195684-F-2 MSD
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	27.0		ug/L		108	62 - 131	14	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124	2	15
Vinyl chloride	0.93	J	12.5	15.0		ug/L		113	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.2		ug/L		102	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-L-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

GC/MS VOA

Analysis Batch: 595675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195678-1	TRIP BLANK_100	Total/NA	Water	8260D	
240-195678-2	MW-208S_111423	Total/NA	Water	8260D	
240-195678-3	MW-15-61D_111423	Total/NA	Water	8260D	
240-195678-4	MW-15-60D_111423	Total/NA	Water	8260D	
MB 240-595675/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595675/4	Lab Control Sample	Total/NA	Water	8260D	
240-195684-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195684-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195678-2	MW-208S_111423	Total/NA	Water	8260D SIM	
240-195678-3	MW-15-61D_111423	Total/NA	Water	8260D SIM	
240-195678-4	MW-15-60D_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-L-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195686-Q-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Client Sample ID: TRIP BLANK_100
Lab Sample ID: 240-195678-1
Date Collected: 11/14/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 11:48

Client Sample ID: MW-208S_111423
Lab Sample ID: 240-195678-2
Date Collected: 11/14/23 10:15
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 12:13
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 20:11

Client Sample ID: MW-15-61D_111423
Lab Sample ID: 240-195678-3
Date Collected: 11/14/23 12:45
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 12:38
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 20:35

Client Sample ID: MW-15-60D_111423
Lab Sample ID: 240-195678-4
Date Collected: 11/14/23 14:53
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 13:03
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 20:59

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195678-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.401.03				
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_ 1008		---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-208s_111423	11/14/23	1015		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260B 3 VOAs for 8260B SIM
~~MW-15-61d_111423~~																												GC
MW-15-61D_111423	11/14/23	1245		6						6					N	G	X	X	X	X	X	X	X	X	X	GC		
MW-15-600D_111423	11/14/23	1453		6						6					N	G	X	X	X	X	X	X	X					

240-195678 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/23 1600	Novi Cold Storage	ARCADIS	11/14/23 1600
	Arcadis	11/16/23 0845		EEA	11/16/23 1011
	EEA	11/16/23 1020	Received in Laboratory by:	EC	11-17-23 940

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12/5/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195678

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) MJC 11-18-23
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195678

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195678-1
Sample date: 2023-11-14
Report received by CADENA: 2023-12-05
Initial Data Verification completed by CADENA: 2023-12-05
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195678-1

		Sample Name:	TRIP BLANK_100				MW-208S_111423				MW-15-61D_111423				MW-15-60D_111423			
		Lab Sample ID:	2401956781				2401956782				2401956783				2401956784			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023				11/14/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/5/2023 5:39:04 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195679-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195679-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195679-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195679-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195679-1	TRIP BLANK_77	Water	11/14/23 00:00	11/17/23 09:40
240-195679-2	MW-35_111423	Water	11/14/23 10:20	11/17/23 09:40
240-195679-3	MW-43_111423	Water	11/14/23 11:20	11/17/23 09:40
240-195679-4	MW-52_111423	Water	11/14/23 12:40	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195679-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_77 — Lab Sample ID: 240-195679-1

No Detections.

Client Sample ID: MW-35_111423 — Lab Sample ID: 240-195679-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-43_111423 — Lab Sample ID: 240-195679-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.4		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-52_111423 — Lab Sample ID: 240-195679-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.6		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Client Sample ID: TRIP BLANK_77
Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195679-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 13:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 13:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 13:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/24/23 13:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/24/23 13:28*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/24/23 13:28*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/24/23 13:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Client Sample ID: MW-35_111423
Date Collected: 11/14/23 10:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195679-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.0**		2.0	0.86	ug/L			11/27/23 21:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/27/23 21:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 13:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 13:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 13:53	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/24/23 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/24/23 13:53*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/24/23 13:53*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/24/23 13:53*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*11/24/23 13:53*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Client Sample ID: MW-43_111423
Date Collected: 11/14/23 11:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195679-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.4		2.0	0.86	ug/L			11/27/23 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/27/23 21:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 14:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 14:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 14:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 14:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 14:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/24/23 14:18*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 14:18*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/24/23 14:18*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/24/23 14:18*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Client Sample ID: MW-52_111423
Date Collected: 11/14/23 12:40
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195679-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.6		2.0	0.86	ug/L			11/27/23 22:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/27/23 22:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 14:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 14:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 14:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 14:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 14:43	1
Vinyl chloride	1.5		1.0	0.45	ug/L			11/24/23 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/24/23 14:43*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 14:43*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/24/23 14:43*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/24/23 14:43*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195679-1	TRIP BLANK_77	94	92	102	88
240-195679-2	MW-35_111423	94	95	103	84
240-195679-3	MW-43_111423	95	91	105	89
240-195679-4	MW-52_111423	93	91	110	86
240-195684-E-2 MS	Matrix Spike	90	101	110	88
240-195684-F-2 MSD	Matrix Spike Duplicate	93	104	107	89
LCS 240-595675/4	Lab Control Sample	89	98	110	92
MB 240-595675/7	Method Blank	87	96	104	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195679-2	MW-35_111423	93
240-195679-3	MW-43_111423	95
240-195679-4	MW-52_111423	95
240-195686-L-5 MS	Matrix Spike	94
240-195686-Q-5 MSD	Matrix Spike Duplicate	94
LCS 240-595844/4	Lab Control Sample	98
MB 240-595844/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595675/7
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 10:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 10:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/24/23 10:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 10:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 10:07*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/24/23 10:07*	*1*

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.7		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	25.0		ug/L		100	77 - 123		
Tetrachloroethene			25.0	28.9		ug/L		116	76 - 123		
trans-1,2-Dichloroethene			25.0	26.2		ug/L		105	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	13.4		ug/L		107	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	25.6		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128		
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		101	56 - 136		
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124		
Vinyl chloride	0.93	J	12.5	13.8		ug/L		103	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-195684-F-2 MSD
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	27.0		ug/L		108	62 - 131	14	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124	2	15
Vinyl chloride	0.93	J	12.5	15.0		ug/L		113	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-L-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

GC/MS VOA

Analysis Batch: 595675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195679-1	TRIP BLANK_77	Total/NA	Water	8260D	
240-195679-2	MW-35_111423	Total/NA	Water	8260D	
240-195679-3	MW-43_111423	Total/NA	Water	8260D	
240-195679-4	MW-52_111423	Total/NA	Water	8260D	
MB 240-595675/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595675/4	Lab Control Sample	Total/NA	Water	8260D	
240-195684-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195684-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195679-2	MW-35_111423	Total/NA	Water	8260D SIM	
240-195679-3	MW-43_111423	Total/NA	Water	8260D SIM	
240-195679-4	MW-52_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-L-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195686-Q-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195679-1

Client Sample ID: TRIP BLANK_77

Lab Sample ID: 240-195679-1

Date Collected: 11/14/23 00:00

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 13:28

Client Sample ID: MW-35_111423

Lab Sample ID: 240-195679-2

Date Collected: 11/14/23 10:20

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 13:53
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 21:23

Client Sample ID: MW-43_111423

Lab Sample ID: 240-195679-3

Date Collected: 11/14/23 11:20

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 14:18
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 21:47

Client Sample ID: MW-52_111423

Lab Sample ID: 240-195679-4

Date Collected: 11/14/23 12:40

Matrix: Water

Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 14:43
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 22:11

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195679-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.401.03				
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_77		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-35_111423	11/14/2023	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-43_111423	11/14/2023	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-52_111423	11/14/2023	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195679 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

MICHIGAN 190

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/14/2023 1320	~~Non Cold Storage~~ Sam Spaichler	Arcadis	11/14/2023 1320
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1020		EC	11-17-23 9:10

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195679

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	Yes	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195679

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) IC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) IC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(3) IC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

December 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195679-1
Sample date: 2023-11-14
Report received by CADENA: 2023-12-05
Initial Data Verification completed by CADENA: 2023-12-05
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195679-1

		Sample Name:	TRIP BLANK_77				MW-35_111423				MW-43_111423				MW-52_111423			
		Lab Sample ID:	2401956791				2401956792				2401956793				2401956794			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023				11/14/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.5	1.0	ug/l	---	ND	1.0	ug/l	---	1.5	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					4.0	2.0	ug/l	---	3.4	2.0	ug/l	---	2.6	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/5/2023 7:52:55 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195680-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195680-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195680-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195680-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: NO MS/MSD in batch 595698 due to a sample failure: MW-45_111523 (240-195680-6).

Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-57_111523 (240-195680-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195680-1	TRIP BLANK_105	Water	11/15/23 00:00	11/17/23 09:40
240-195680-2	MW-54_111523	Water	11/15/23 10:42	11/17/23 09:40
240-195680-3	MW-122_111523	Water	11/15/23 11:45	11/17/23 09:40
240-195680-4	MW-54S_111523	Water	11/15/23 12:08	11/17/23 09:40
240-195680-5	MW-57_111523	Water	11/15/23 13:15	11/17/23 09:40
240-195680-6	MW-45_111523	Water	11/15/23 14:40	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: TRIP BLANK_105 — Lab Sample ID: 240-195680-1

No Detections.

Client Sample ID: MW-54_111523 — Lab Sample ID: 240-195680-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.9	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-122_111523 — Lab Sample ID: 240-195680-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.0	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-54S_111523 — Lab Sample ID: 240-195680-4

No Detections.

Client Sample ID: MW-57_111523 — Lab Sample ID: 240-195680-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.6		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.64	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-45_111523 — Lab Sample ID: 240-195680-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	53		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	310		10	4.5	ug/L	10		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: TRIP BLANK_105

Date Collected: 11/15/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 15:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 15:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 15:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 15:08*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/24/23 15:08*	*1*
Toluene-d8 (Surr)	*114*		*78 - 122*		*11/24/23 15:08*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*11/24/23 15:08*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: MW-54_111523
Date Collected: 11/15/23 10:42
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.9	J	2.0	0.86	ug/L			11/28/23 22:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/28/23 22:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 15:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 15:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 15:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:33	1
Vinyl chloride	1.2		1.0	0.45	ug/L			11/24/23 15:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 15:33*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 15:33*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/24/23 15:33*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*11/24/23 15:33*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: MW-122_111523

Date Collected: 11/15/23 11:45
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.0**	**J**	2.0	0.86	ug/L			11/28/23 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 23:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 15:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 15:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 15:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 15:58	1
Vinyl chloride	**2.7**		1.0	0.45	ug/L			11/24/23 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 15:58*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/24/23 15:58*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/24/23 15:58*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/24/23 15:58*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: MW-54S_111523

Date Collected: 11/15/23 12:08
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-4

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 23:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 23:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 16:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 16:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 16:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 16:23*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 16:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/24/23 16:23*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/24/23 16:23*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: MW-57_111523
Date Collected: 11/15/23 13:15
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.6		2.0	0.86	ug/L			11/29/23 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/29/23 00:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 16:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 16:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 16:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 16:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 16:48	1
Vinyl chloride	0.64	J	1.0	0.45	ug/L			11/24/23 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/24/23 16:48*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/24/23 16:48*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/24/23 16:48*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/24/23 16:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: MW-45_111523
Date Collected: 11/15/23 14:40
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195680-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/29/23 00:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 17:14	1
cis-1,2-Dichloroethene	**53**		1.0	0.46	ug/L			11/24/23 17:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 17:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 17:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 17:14	1
Vinyl chloride	**310**		10	4.5	ug/L			11/26/23 12:13	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 17:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/26/23 12:13*	*10*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/24/23 17:14*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/26/23 12:13*	*10*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 17:14*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/26/23 12:13*	*10*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/24/23 17:14*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/26/23 12:13*	*10*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195680-1	TRIP BLANK_105	92	93	114	84
240-195680-2	MW-54_111523	92	91	107	80
240-195680-3	MW-122_111523	92	90	99	86
240-195680-4	MW-54S_111523	92	91	103	82
240-195680-5	MW-57_111523	88	91	103	85
240-195680-6	MW-45_111523	92	94	104	83
240-195680-6	MW-45_111523	93	95	103	89
240-195684-E-2 MS	Matrix Spike	90	101	110	88
240-195684-F-2 MSD	Matrix Spike Duplicate	93	104	107	89
LCS 240-595675/4	Lab Control Sample	89	98	110	92
LCS 240-595698/4	Lab Control Sample	92	98	102	84
MB 240-595675/7	Method Blank	87	96	104	81
MB 240-595698/7	Method Blank	90	95	104	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195542-G-2 MS	Matrix Spike	97
240-195542-J-2 MSD	Matrix Spike Duplicate	98
240-195680-2	MW-54_111523	97
240-195680-3	MW-122_111523	98
240-195680-4	MW-54S_111523	98
240-195680-5	MW-57_111523	97
240-195680-6	MW-45_111523	96
LCS 240-595979/4	Lab Control Sample	98
MB 240-595979/6	Method Blank	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595675/7
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 10:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 10:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/24/23 10:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 10:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 10:07*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/24/23 10:07*	*1*

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.7		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	25.6		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		101	56 - 136
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124
Vinyl chloride	0.93	J	12.5	13.8		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195684-E-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-195684-F-2 MSD
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	27.0		ug/L		108	62 - 131	14	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124	2	15
Vinyl chloride	0.93	J	12.5	15.0		ug/L		113	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-595698/7
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 11:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 11:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 11:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 11:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/26/23 11:22*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/26/23 11:22*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 11:22*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/26/23 11:22*	*1*

Lab Sample ID: LCS 240-595698/4
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.9		ug/L		115	63 - 134
cis-1,2-Dichloroethene	25.0	29.0		ug/L		116	77 - 123
Tetrachloroethene	25.0	29.7		ug/L		119	76 - 123
trans-1,2-Dichloroethene	25.0	27.7		ug/L		111	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595698/4
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	14.4		ug/L		115	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595979/6
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 17:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/28/23 17:37*	*1*

Lab Sample ID: LCS 240-595979/4
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195542-G-2 MS
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.7		10.0	14.0		ug/L		112	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195542-J-2 MSD
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.7		10.0	14.8		ug/L		121	51 - 153	6	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195542-J-2 MSD
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

GC/MS VOA

Analysis Batch: 595675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195680-1	TRIP BLANK_105	Total/NA	Water	8260D	
240-195680-2	MW-54_111523	Total/NA	Water	8260D	
240-195680-3	MW-122_111523	Total/NA	Water	8260D	
240-195680-4	MW-54S_111523	Total/NA	Water	8260D	
240-195680-5	MW-57_111523	Total/NA	Water	8260D	
240-195680-6	MW-45_111523	Total/NA	Water	8260D	
MB 240-595675/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595675/4	Lab Control Sample	Total/NA	Water	8260D	
240-195684-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195684-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195680-6	MW-45_111523	Total/NA	Water	8260D	
MB 240-595698/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595698/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195680-2	MW-54_111523	Total/NA	Water	8260D SIM	
240-195680-3	MW-122_111523	Total/NA	Water	8260D SIM	
240-195680-4	MW-54S_111523	Total/NA	Water	8260D SIM	
240-195680-5	MW-57_111523	Total/NA	Water	8260D SIM	
240-195680-6	MW-45_111523	Total/NA	Water	8260D SIM	
MB 240-595979/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595979/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195542-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195542-J-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Client Sample ID: TRIP BLANK_105
Lab Sample ID: 240-195680-1
Date Collected: 11/15/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 15:08

Client Sample ID: MW-54_111523
Lab Sample ID: 240-195680-2
Date Collected: 11/15/23 10:42
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 15:33
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 22:49

Client Sample ID: MW-122_111523
Lab Sample ID: 240-195680-3
Date Collected: 11/15/23 11:45
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 15:58
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 23:13

Client Sample ID: MW-54S_111523
Lab Sample ID: 240-195680-4
Date Collected: 11/15/23 12:08
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 16:23
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/28/23 23:37

Client Sample ID: MW-57_111523
Lab Sample ID: 240-195680-5
Date Collected: 11/15/23 13:15
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 16:48
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/29/23 00:01

Client Sample ID: MW-45_111523
Lab Sample ID: 240-195680-6
Date Collected: 11/15/23 14:40
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 17:14
Total/NA	Analysis	8260D		10	595698	LEE	EET CLE	11/26/23 12:13
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/29/23 00:25

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195680-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP On-Site	Shipping/Tracking No:			
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 1105	11/15/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-54-111523	11/15/23	1042		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-122-111523	11/15/23	1145		6						6					N	G	X	X	X	X	X	X	X	
MW-54s-111523	11/15/23	1208		6						6					N	G	X	X	X	X	X	X	X	
MW-57-111523	11/15/23	1315		5						5					N	G	X	X	X	X	X	X	Y	missing 1 HCL vial
MW-45-111523	11/15/23	1440		6						6					N	G	X	X	X	X	X	X	X	

240-195680 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/15/23 15:20	Novi Cold Storage	ARCADIS	11/15/23 15:20
	Arcadis	11/16/23 0845		EFTA	11/16/23 10:15
	EFTA	11/16/23 10:20	Received in Laboratory by:	EC	11-17-23 9:40

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12/5/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195680

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes) No	
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	MJC 11-18-23
-Were tamper/custody seals intact and uncompromised?	(Yes) No (NA)	
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195680

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(2) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(3) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195680-1
Sample date: 2023-11-15
Report received by CADENA: 2023-12-05
Initial Data Verification completed by CADENA: 2023-12-05
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -005 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195680-1

Sample Name: MW-57_111523
Lab Sample ID: 2401956805
Sample Date: 11/15/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	0.64	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195680-1

		Sample Name:	TRIP BLANK_105				MW-54_111523				MW-122_111523				MW-54S_111523				MW-57_111523				MW-45_111523			
		Lab Sample ID:	2401956801				2401956802				2401956803				2401956804				2401956805				2401956806			
		Sample Date:	11/15/2023				11/15/2023				11/15/2023				11/15/2023				11/15/2023				11/15/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	53	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.2	1.0	ug/l	---	2.7	1.0	ug/l	---	ND	1.0	ug/l	---	0.64	1.0	ug/l	J	310	10	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						1.9	2.0	ug/l	J	1.0	2.0	ug/l	J	ND	2.0	ug/l	---	2.6	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:22:45 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195683-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 4:22:45 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195683-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195683-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-40_111323 (240-195683-5) and MW-31_111323 (240-195683-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195683-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195683-1	TRIP BLANK_92	Water	11/13/23 00:00	11/17/23 09:40
240-195683-2	MW-47_111323	Water	11/13/23 09:15	11/17/23 09:40
240-195683-3	MW-46_111323	Water	11/13/23 10:26	11/17/23 09:40
240-195683-4	MW-70_111323	Water	11/13/23 11:37	11/17/23 09:40
240-195683-5	MW-40_111323	Water	11/13/23 13:05	11/17/23 09:40
240-195683-6	MW-31_111323	Water	11/13/23 14:14	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195683-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_92 — Lab Sample ID: 240-195683-1

No Detections.

Client Sample ID: MW-47_111323 — Lab Sample ID: 240-195683-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	8.0		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.6		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	23		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-46_111323 — Lab Sample ID: 240-195683-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.7		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	2.8		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.54	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	9.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-70_111323 — Lab Sample ID: 240-195683-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	140		13	5.8	ug/L	12.5		8260D	Total/NA
Vinyl chloride	380		13	5.6	ug/L	12.5		8260D	Total/NA

Client Sample ID: MW-40_111323 — Lab Sample ID: 240-195683-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.2		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.93	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-31_111323 — Lab Sample ID: 240-195683-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: TRIP BLANK_92
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195683-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/23 14:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/21/23 14:29*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/21/23 14:29*	*1*
Toluene-d8 (Surr)	*86*		*78 - 122*		*11/21/23 14:29*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/21/23 14:29*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: MW-47_111323
Date Collected: 11/13/23 09:15
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195683-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.2**	**J**	2.0	0.86	ug/L			11/25/23 07:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 07:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 17:49	1
cis-1,2-Dichloroethene	**8.0**		1.0	0.46	ug/L			11/21/23 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 17:49	1
trans-1,2-Dichloroethene	**1.6**		1.0	0.51	ug/L			11/21/23 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 17:49	1
Vinyl chloride	**23**		1.0	0.45	ug/L			11/21/23 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/21/23 17:49*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/21/23 17:49*	*1*
Toluene-d8 (Surr)	*84*		*78 - 122*		*11/21/23 17:49*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/21/23 17:49*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: MW-46_111323
Date Collected: 11/13/23 10:26
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195683-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**5.7**		2.0	0.86	ug/L			11/25/23 07:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 07:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 18:14	1
cis-1,2-Dichloroethene	**2.8**		1.0	0.46	ug/L			11/21/23 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 18:14	1
trans-1,2-Dichloroethene	**0.54**	**J**	1.0	0.51	ug/L			11/21/23 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 18:14	1
Vinyl chloride	**9.0**		1.0	0.45	ug/L			11/21/23 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/21/23 18:14*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/21/23 18:14*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/21/23 18:14*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/21/23 18:14*	*1*

Client: ARCADIS US Inc
Job ID: 240-195683-1
Project/Site: Ford LTP - On Site

Client Sample ID: MW-70_111323
Lab Sample ID: 240-195683-4
Date Collected: 11/13/23 11:37
Matrix: Water
Date Received: 11/17/23 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.1**		2.0	0.86	ug/L			11/25/23 08:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 08:18*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			11/21/23 21:34	12.5
cis-1,2-Dichloroethene	**140**		13	5.8	ug/L			11/21/23 21:34	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			11/21/23 21:34	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			11/21/23 21:34	12.5
Trichloroethene	13	U	13	5.5	ug/L			11/21/23 21:34	12.5
Vinyl chloride	**380**		13	5.6	ug/L			11/21/23 21:34	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*126*		*62 - 137*		*11/21/23 21:34*	*12.5*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/21/23 21:34*	*12.5*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/21/23 21:34*	*12.5*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/21/23 21:34*	*12.5*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: MW-40_111323
Date Collected: 11/13/23 13:05
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195683-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 08:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/25/23 08:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 18:39	1
cis-1,2-Dichloroethene	**2.2**		1.0	0.46	ug/L			11/21/23 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 18:39	1
Vinyl chloride	**0.93**	**J**	1.0	0.45	ug/L			11/21/23 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/21/23 18:39*	*1*
4-Bromofluorobenzene (Surr)	*71*		*56 - 136*		*11/21/23 18:39*	*1*
Toluene-d8 (Surr)	*83*		*78 - 122*		*11/21/23 18:39*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/21/23 18:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: MW-31_111323
Date Collected: 11/13/23 14:14
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195683-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 09:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 09:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 19:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 19:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 19:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 19:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 19:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/23 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/21/23 19:04*	*1*
4-Bromofluorobenzene (Surr)	*70*		*56 - 136*		*11/21/23 19:04*	*1*
Toluene-d8 (Surr)	*85*		*78 - 122*		*11/21/23 19:04*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/21/23 19:04*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195683-1	TRIP BLANK_92	100	72	86	89
240-195683-2	MW-47_111323	104	72	84	93
240-195683-3	MW-46_111323	118	83	99	104
240-195683-4	MW-70_111323	126	94	91	109
240-195683-5	MW-40_111323	106	71	83	93
240-195683-6	MW-31_111323	103	70	85	92
240-195686-C-5 MS	Matrix Spike	100	82	87	96
240-195686-E-5 MSD	Matrix Spike Duplicate	108	90	96	103
LCS 240-595424/5	Lab Control Sample	93	78	84	89
MB 240-595424/8	Method Blank	102	76	88	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195683-2	MW-47_111323	97
240-195683-3	MW-46_111323	97
240-195683-4	MW-70_111323	97
240-195683-5	MW-40_111323	96
240-195683-6	MW-31_111323	97
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
MB 240-595687/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595424/8
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/23 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/21/23 13:39*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/21/23 13:39*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/21/23 13:39*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/21/23 13:39*	*1*

Lab Sample ID: LCS 240-595424/5
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.3		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	22.5		ug/L		90	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	23.6		ug/L		94	75 - 124		
Trichloroethene			25.0	24.4		ug/L		97	70 - 122		
Vinyl chloride			12.5	11.5		ug/L		92	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*
Toluene-d8 (Surr)	*84*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-195686-C-5 MS
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	1.0		25.0	22.9		ug/L		87	66 - 128		
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	23.8		ug/L		95	61 - 124		
Vinyl chloride	1.1		12.5	10.7		ug/L		77	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*87*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195686-C-5 MS
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195686-E-5 MSD
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		107	56 - 135	9	26
cis-1,2-Dichloroethene	1.0		25.0	23.7		ug/L		91	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	26.2		ug/L		105	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	7	15
Trichloroethene	1.0	U	25.0	25.3		ug/L		101	61 - 124	6	15
Vinyl chloride	1.1		12.5	12.3		ug/L		90	43 - 157	14	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195683-1
Project/Site: Ford LTP - On Site

GC/MS VOA

Analysis Batch: 595424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195683-1	TRIP BLANK_92	Total/NA	Water	8260D	
240-195683-2	MW-47_111323	Total/NA	Water	8260D	
240-195683-3	MW-46_111323	Total/NA	Water	8260D	
240-195683-4	MW-70_111323	Total/NA	Water	8260D	
240-195683-5	MW-40_111323	Total/NA	Water	8260D	
240-195683-6	MW-31_111323	Total/NA	Water	8260D	
MB 240-595424/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595424/5	Lab Control Sample	Total/NA	Water	8260D	
240-195686-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195686-E-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195683-2	MW-47_111323	Total/NA	Water	8260D SIM	
240-195683-3	MW-46_111323	Total/NA	Water	8260D SIM	
240-195683-4	MW-70_111323	Total/NA	Water	8260D SIM	
240-195683-5	MW-40_111323	Total/NA	Water	8260D SIM	
240-195683-6	MW-31_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195683-1

Client Sample ID: TRIP BLANK_92
Lab Sample ID: 240-195683-1
Date Collected: 11/13/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 14:29

Client Sample ID: MW-47_111323
Lab Sample ID: 240-195683-2
Date Collected: 11/13/23 09:15
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 17:49
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 07:30

Client Sample ID: MW-46_111323
Lab Sample ID: 240-195683-3
Date Collected: 11/13/23 10:26
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 18:14
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 07:54

Client Sample ID: MW-70_111323
Lab Sample ID: 240-195683-4
Date Collected: 11/13/23 11:37
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		12.5	595424	MRL	EET CLE	11/21/23 21:34
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 08:18

Client Sample ID: MW-40_111323
Lab Sample ID: 240-195683-5
Date Collected: 11/13/23 13:05
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 18:39
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 08:42

Client Sample ID: MW-31_111323
Lab Sample ID: 240-195683-6
Date Collected: 11/13/23 14:14
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 19:04
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 09:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195683-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.401.03	Shipping/Tracking No:			
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_92	11/13/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-47_111323	11/13/23	915		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-46_111323	11/13/23	1026		6						6					N	G	X	X	X	X	X	X	X	
MW-70_111323	11/13/23	1137		6						6					N	G	X	X	X	X	X	X	X	
MW-40_111323	11/13/23	1325		6						6					N	G	X	X	X	X	X	X	X	
MW-31_111323	11/13/23	1414		6						6					N	G	X	X	X	X	X	X	X	

240-195683 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/13/23 1500	Novi Cold Storage	ARCADIS	11/13/23 1500
	Arcadis	11/16/23 0845		EEA	11/16/23 1015
	EEA	11/16/23 1020	Received in Laboratory by:	EC	11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195683

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195683

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 28, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195683-1
Sample date: 2023-11-13
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-28
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HSP - GCMS VOC container was received with headspace according to the laboratory submittal case narrative and sample receipt documents. Client sample GCMS VOC results noted should be considered estimated and qualified with J flags if detected and UJ flags if non-detect. GCMS VOC samples -005, -006 - J/UJ flags.

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 595687.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

Qualifiers added during verification have been added to the electronic data which is available for download from the CADENA CLMS. Refer to the attached table of analytical results that have been qualified during verification.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195683-1

		Sample Name:	MW-40_111323				MW-31_111323			
		Lab Sample ID:	2401956835				2401956836			
		Sample Date:	11/13/2023				11/13/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	2.2	1.0	ug/l	J	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	0.93	1.0	ug/l	J	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195683-1

		Sample Name:	TRIP BLANK_92				MW-47_111323				MW-46_111323				MW-70_111323				MW-40_111323				MW-31_111323			
		Lab Sample ID:	2401956831				2401956832				2401956833				2401956834				2401956835				2401956836			
		Sample Date:	11/13/2023				11/13/2023				11/13/2023				11/13/2023				11/13/2023				11/13/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
	OSW-8260D																									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	8.0	1.0	ug/l	---	2.8	1.0	ug/l	---	140	13	ug/l	---	2.2	1.0	ug/l	J	ND	1.0	ug/l	UJ
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	1.6	1.0	ug/l	---	0.54	1.0	ug/l	J	ND	13	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	23	1.0	ug/l	---	9.0	1.0	ug/l	---	380	13	ug/l	---	0.93	1.0	ug/l	J	ND	1.0	ug/l	UJ
	OSW-8260DSIM																									
	1,4-Dioxane	123-91-1					1.2	2.0	ug/l	J	5.7	2.0	ug/l	---	4.1	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/5/2023 7:55:41 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195684-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/5/2023 7:55:41 AM

Authorized for release by
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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195684-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195684-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: NO MS/MSD in batch 595698 due to a sample failure: MW-41_111423 (240-195684-4), MW-209S_111423 (240-195684-5) and MW-210S_111423 (240-195684-6).

Method 8260D_SIM: The following sample was analyzed outside of analytical holding time due to clerical error by the analyst: MW-42_111423 (240-195684-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195684-1	TRIP BLANK_123	Water	11/14/23 00:00	11/17/23 09:40
240-195684-2	MW-42_111423	Water	11/14/23 14:15	11/17/23 09:40
240-195684-3	MW-34_111423	Water	11/14/23 11:50	11/17/23 09:40
240-195684-4	MW-41_111423	Water	11/14/23 09:40	11/17/23 09:40
240-195684-5	MW-209S_111423	Water	11/14/23 13:05	11/17/23 09:40
240-195684-6	MW-210S_111423	Water	11/14/23 10:45	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: TRIP BLANK_123 — Lab Sample ID: 240-195684-1

No Detections.

Client Sample ID: MW-42_111423 — Lab Sample ID: 240-195684-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.93	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-34_111423 — Lab Sample ID: 240-195684-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.6		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-41_111423 — Lab Sample ID: 240-195684-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	11		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.73	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-209S_111423 — Lab Sample ID: 240-195684-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.50	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-210S_111423 — Lab Sample ID: 240-195684-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	19		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.5		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	6.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: TRIP BLANK_123

Date Collected: 11/14/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 17:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/24/23 17:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/24/23 17:39*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/24/23 17:39*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/24/23 17:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: MW-42_111423
Date Collected: 11/14/23 14:15
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			11/30/23 23:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 23:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 18:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 18:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 18:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 18:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 18:04	1
Vinyl chloride	**0.93**	**J**	1.0	0.45	ug/L			11/24/23 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/24/23 18:04*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/24/23 18:04*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/24/23 18:04*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/24/23 18:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: MW-34_111423
Date Collected: 11/14/23 11:50
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**6.6**		2.0	0.86	ug/L			11/27/23 22:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/23 22:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 18:29	1
Vinyl chloride	**1.9**		1.0	0.45	ug/L			11/24/23 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/24/23 18:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/24/23 18:29*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/24/23 18:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/24/23 18:29*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: MW-41_111423
Date Collected: 11/14/23 09:40
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	11		2.0	0.86	ug/L			11/27/23 22:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/27/23 22:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 12:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 12:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 12:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 12:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 12:38	1
Vinyl chloride	0.73	J	1.0	0.45	ug/L			11/26/23 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/26/23 12:38*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/26/23 12:38*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 12:38*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/26/23 12:38*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: MW-209S_111423
Date Collected: 11/14/23 13:05
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 23:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/27/23 23:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 13:04	1
cis-1,2-Dichloroethene	**0.50**	**J**	1.0	0.46	ug/L			11/26/23 13:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 13:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 13:04	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/26/23 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*11/26/23 13:04*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/26/23 13:04*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/26/23 13:04*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*11/26/23 13:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: MW-210S_111423

Date Collected: 11/14/23 10:45
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195684-6

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.4**	**J**	2.0	0.86	ug/L			11/27/23 23:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/27/23 23:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 13:31	1
cis-1,2-Dichloroethene	**19**		1.0	0.46	ug/L			11/26/23 13:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 13:31	1
trans-1,2-Dichloroethene	**2.5**		1.0	0.51	ug/L			11/26/23 13:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 13:31	1
Vinyl chloride	**6.4**		1.0	0.45	ug/L			11/26/23 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/26/23 13:31*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/26/23 13:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/26/23 13:31*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/26/23 13:31*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195684-1	TRIP BLANK_123	97	97	110	83
240-195684-2	MW-42_111423	92	95	106	91
240-195684-2 MS	MW-42_111423	90	101	110	88
240-195684-2 MSD	MW-42_111423	93	104	107	89
240-195684-3	MW-34_111423	100	95	112	86
240-195684-4	MW-41_111423	96	92	104	92
240-195684-5	MW-209S_111423	86	97	103	84
240-195684-6	MW-210S_111423	90	97	101	90
LCS 240-595675/4	Lab Control Sample	89	98	110	92
LCS 240-595698/4	Lab Control Sample	92	98	102	84
MB 240-595675/7	Method Blank	87	96	104	81
MB 240-595698/7	Method Blank	90	95	104	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195684-2	MW-42_111423	100
240-195684-3	MW-34_111423	97
240-195684-4	MW-41_111423	95
240-195684-5	MW-209S_111423	96
240-195684-6	MW-210S_111423	94
240-195686-L-5 MS	Matrix Spike	94
240-195686-Q-5 MSD	Matrix Spike Duplicate	94
500-243000-A-1 MS	Matrix Spike	99
500-243000-A-1 MSD	Matrix Spike Duplicate	98
LCS 240-595844/4	Lab Control Sample	98
LCS 240-596235/4	Lab Control Sample	94
MB 240-595844/6	Method Blank	98
MB 240-596235/6	Method Blank	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595675/7
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/24/23 10:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/24/23 10:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/24/23 10:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/24/23 10:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/24/23 10:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/24/23 10:07*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/24/23 10:07*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/24/23 10:07*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/24/23 10:07*	*1*

Lab Sample ID: LCS 240-595675/4
Matrix: Water
Analysis Batch: 595675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.7		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-195684-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: MW-42_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	25.6		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		101	56 - 136
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124
Vinyl chloride	0.93	J	12.5	13.8		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195684-2 MS
Matrix: Water
Analysis Batch: 595675

Client Sample ID: MW-42_111423
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	88		73 - 120

Lab Sample ID: 240-195684-2 MSD
Matrix: Water
Analysis Batch: 595675

Client Sample ID: MW-42_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.5		ug/L		110	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	27.0		ug/L		108	62 - 131	14	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124	2	15
Vinyl chloride	0.93	J	12.5	15.0		ug/L		113	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	104		56 - 136
Toluene-d8 (Surr)	107		78 - 122
Dibromofluoromethane (Surr)	89		73 - 120

Lab Sample ID: MB 240-595698/7
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 11:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 11:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 11:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 11:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 11:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137		11/26/23 11:22	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/26/23 11:22	1
Toluene-d8 (Surr)	104		78 - 122		11/26/23 11:22	1
Dibromofluoromethane (Surr)	89		73 - 120		11/26/23 11:22	1

Lab Sample ID: LCS 240-595698/4
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.9		ug/L		115	63 - 134
cis-1,2-Dichloroethene	25.0	29.0		ug/L		116	77 - 123
Tetrachloroethene	25.0	29.7		ug/L		119	76 - 123
trans-1,2-Dichloroethene	25.0	27.7		ug/L		111	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595698/4
Matrix: Water
Analysis Batch: 595698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	14.4		ug/L		115	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-L-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195686-Q-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: MB 240-596235/6
Matrix: Water
Analysis Batch: 596235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 20:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/30/23 20:47*	*1*

Lab Sample ID: LCS 240-596235/4
Matrix: Water
Analysis Batch: 596235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 500-243000-A-1 MS
Matrix: Water
Analysis Batch: 596235

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	1.4	J	10.0	11.7		ug/L		103	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-243000-A-1 MSD
Matrix: Water
Analysis Batch: 596235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.4	J	10.0	12.0		ug/L		106	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

GC/MS VOA

Analysis Batch: 595675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195684-1	TRIP BLANK_123	Total/NA	Water	8260D	
240-195684-2	MW-42_111423	Total/NA	Water	8260D	
240-195684-3	MW-34_111423	Total/NA	Water	8260D	
MB 240-595675/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595675/4	Lab Control Sample	Total/NA	Water	8260D	
240-195684-2 MS	MW-42_111423	Total/NA	Water	8260D	
240-195684-2 MSD	MW-42_111423	Total/NA	Water	8260D	

Analysis Batch: 595698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195684-4	MW-41_111423	Total/NA	Water	8260D	
240-195684-5	MW-209S_111423	Total/NA	Water	8260D	
240-195684-6	MW-210S_111423	Total/NA	Water	8260D	
MB 240-595698/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595698/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195684-3	MW-34_111423	Total/NA	Water	8260D SIM	
240-195684-4	MW-41_111423	Total/NA	Water	8260D SIM	
240-195684-5	MW-209S_111423	Total/NA	Water	8260D SIM	
240-195684-6	MW-210S_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-L-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195686-Q-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 596235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195684-2	MW-42_111423	Total/NA	Water	8260D SIM	
MB 240-596235/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596235/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-243000-A-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-243000-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Client Sample ID: TRIP BLANK_123
Lab Sample ID: 240-195684-1
Date Collected: 11/14/23 00:00
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 17:39

Client Sample ID: MW-42_111423
Lab Sample ID: 240-195684-2
Date Collected: 11/14/23 14:15
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 18:04
Total/NA	Analysis	8260D SIM		1	596235	CS	EET CLE	11/30/23 23:35

Client Sample ID: MW-34_111423
Lab Sample ID: 240-195684-3
Date Collected: 11/14/23 11:50
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595675	LEE	EET CLE	11/24/23 18:29
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 22:35

Client Sample ID: MW-41_111423
Lab Sample ID: 240-195684-4
Date Collected: 11/14/23 09:40
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595698	LEE	EET CLE	11/26/23 12:38
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 22:59

Client Sample ID: MW-209S_111423
Lab Sample ID: 240-195684-5
Date Collected: 11/14/23 13:05
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595698	LEE	EET CLE	11/26/23 13:04
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 23:23

Client Sample ID: MW-210S_111423
Lab Sample ID: 240-195684-6
Date Collected: 11/14/23 10:45
Matrix: Water
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595698	LEE	EET CLE	11/26/23 13:31
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/27/23 23:47

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195684-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.401.03	Shipping/Tracking No:			
PO # 30167538.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_123	----	-----		1						1							X	X	X	X	X	X		1 Trip Blank
MW-42_111423	11/14/23	1415		6						6							X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-34_111423	11/14/23	1150		6						6							X	X	X	X	X	X	X	
MW-41_111423	11/14/23	0940		6						6							X	X	X	X	X	X	X	
MW-209S_111423	11/14/23	1305		6						6							X	X	X	X	X	X	X	
MW-210S_111423	11/14/23	1045		6						6							X	X	X	X	X	X	X	

240-195684 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/14/23 1550	Novi Cold Storage	Arcadis	11/14/23 1550
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Amanda Sapp	Arcadis	11/16/23 0845		EEA	11/16/23 10:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/16/23 1120		EC	11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195684
Barberton Facility

Client Arcadis Site Name Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) NA
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA 11-18-23
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195684

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	2.4	3.5	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

December 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195684-1
Sample date: 2023-11-14
Report received by CADENA: 2023-12-05
Initial Data Verification completed by CADENA: 2023-12-05
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HTQ - GCMS VOC SIM sample -002 analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with UJ flags if non-detect.

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195684-1

		Sample Name:	MW-42_111423			
		Lab Sample ID:	2401956842			
		Sample Date:	11/14/2023			
	Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC						
OSW-8260DSIM						
	1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195684-1

		Sample Name:	TRIP BLANK_123				MW-42_111423				MW-34_111423				MW-41_111423				MW-209S_111423				MW-210S_111423			
		Lab Sample ID:	2401956841				2401956842				2401956843				2401956844				2401956845				2401956846			
		Sample Date:	11/14/2023				11/14/2023				11/14/2023				11/14/2023				11/14/2023				11/14/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
	OSW-8260D																									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.50	1.0	ug/l	J	19	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.5	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.93	1.0	ug/l	J	1.9	1.0	ug/l	---	0.73	1.0	ug/l	J	1.1	1.0	ug/l	---	6.4	1.0	ug/l	---
	OSW-8260DSIM																									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	UJ	6.6	2.0	ug/l	---	11	2.0	ug/l	---	ND	2.0	ug/l	---	1.4	2.0	ug/l	J

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2023 4:49:23 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195686-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2023 4:49:23 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Job ID: 240-195686-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195686-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7°C, 2.9°C and 3.5°C

GC/MS VOA
Method 8260D: The MS/MSD for batch 240-595614 was not analyzed due to an instrument malfunction. The following sample was affected: MW-234_111423 (240-195686-6)

Method 8260D_SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-234_111423 (240-195686-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195686-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195686-1	TRIP BLANK_139	Water	11/13/23 00:00	11/17/23 09:40
240-195686-2	MW-53_111323	Water	11/13/23 11:45	11/17/23 09:40
240-195686-3	MW-62_111323	Water	11/13/23 13:25	11/17/23 09:40
240-195686-4	MW-212S_111423	Water	11/14/23 10:35	11/17/23 09:40
240-195686-5	MW-213S_111423	Water	11/14/23 14:20	11/17/23 09:40
240-195686-6	MW-234_111423	Water	11/14/23 15:45	11/17/23 09:40

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195686-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_139 — Lab Sample ID: 240-195686-1

No Detections.

Client Sample ID: MW-53_111323 — Lab Sample ID: 240-195686-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.0	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.66	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-62_111323 — Lab Sample ID: 240-195686-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.4		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.3		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-212S_111423 — Lab Sample ID: 240-195686-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.8		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.53	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	1.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-213S_111423 — Lab Sample ID: 240-195686-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-234_111423 — Lab Sample ID: 240-195686-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: TRIP BLANK_139
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 14:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 14:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 14:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 14:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 14:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/23 14:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/21/23 14:04*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/21/23 14:04*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/21/23 14:04*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/21/23 14:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: MW-53_111323
Date Collected: 11/13/23 11:45
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.0	J	2.0	0.86	ug/L			11/25/23 09:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 09:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:09	1
Vinyl chloride	0.66	J	1.0	0.45	ug/L			11/21/23 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/21/23 16:09*	*1*
4-Bromofluorobenzene (Surr)	*71*		*56 - 136*		*11/21/23 16:09*	*1*
Toluene-d8 (Surr)	*86*		*78 - 122*		*11/21/23 16:09*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/21/23 16:09*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: MW-62_111323
Date Collected: 11/13/23 13:25
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.4		2.0	0.86	ug/L			11/25/23 09:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 09:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 16:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 16:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 16:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:34	1
Vinyl chloride	1.3		1.0	0.45	ug/L			11/21/23 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/21/23 16:34*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/21/23 16:34*	*1*
Toluene-d8 (Surr)	*85*		*78 - 122*		*11/21/23 16:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/21/23 16:34*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: MW-212S_111423
Date Collected: 11/14/23 10:35
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 00:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*11/28/23 00:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 16:59	1
cis-1,2-Dichloroethene	**2.8**		1.0	0.46	ug/L			11/21/23 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:59	1
trans-1,2-Dichloroethene	**0.53**	**J**	1.0	0.51	ug/L			11/21/23 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 16:59	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			11/21/23 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/21/23 16:59*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/21/23 16:59*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/21/23 16:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/21/23 16:59*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: MW-213S_111423
Date Collected: 11/14/23 14:20
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 00:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/23 00:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 17:24	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.46	ug/L			11/21/23 17:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 17:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 17:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 17:24	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/21/23 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*134*		*62 - 137*		*11/21/23 17:24*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/21/23 17:24*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/21/23 17:24*	*1*
Dibromofluoromethane (Surr)	*120*		*73 - 120*		*11/21/23 17:24*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: MW-234_111423
Date Collected: 11/14/23 15:45
Date Received: 11/17/23 09:40

Lab Sample ID: 240-195686-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/28/23 01:47	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/28/23 01:47*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 17:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 17:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 17:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*124*		*62 - 137*		*11/22/23 17:42*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/22/23 17:42*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/23 17:42*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/22/23 17:42*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195686-1	TRIP BLANK_139	104	76	89	92
240-195686-2	MW-53_111323	103	71	86	91
240-195686-3	MW-62_111323	106	74	85	94
240-195686-4	MW-212S_111423	108	73	90	96
240-195686-5	MW-213S_111423	134	94	90	120
240-195686-5 MS	MW-213S-MS_111423	100	82	87	96
240-195686-5 MSD	MW-213S-MSD_111423	108	90	96	103
240-195686-6	MW-234_111423	124	84	98	106
LCS 240-595424/5	Lab Control Sample	93	78	84	89
LCS 240-595614/5	Lab Control Sample	100	82	87	86
MB 240-595424/8	Method Blank	102	76	88	92
MB 240-595614/8	Method Blank	100	75	87	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195686-2	MW-53_111323	97
240-195686-3	MW-62_111323	97
240-195686-4	MW-212S_111423	91
240-195686-5	MW-213S_111423	95
240-195686-5 MS	MW-213S-MS_111423	94
240-195686-5 MSD	MW-213S-MSD_111423	94
240-195686-6	MW-234_111423	92
500-242543-C-3 MS	Matrix Spike	99
500-242543-C-3 MSD	Matrix Spike Duplicate	100
LCS 240-595687/4	Lab Control Sample	97
LCS 240-595844/4	Lab Control Sample	98
MB 240-595687/6	Method Blank	97
MB 240-595844/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595424/8
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/23 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/23 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/23 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/21/23 13:39*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/21/23 13:39*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/21/23 13:39*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/21/23 13:39*	*1*

Lab Sample ID: LCS 240-595424/5
Matrix: Water
Analysis Batch: 595424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.3		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	22.5		ug/L		90	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	23.6		ug/L		94	75 - 124		
Trichloroethene			25.0	24.4		ug/L		97	70 - 122		
Vinyl chloride			12.5	11.5		ug/L		92	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*
Toluene-d8 (Surr)	*84*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-195686-5 MS
Matrix: Water
Analysis Batch: 595424

Client Sample ID: MW-213S-MS_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	1.0		25.0	22.9		ug/L		87	66 - 128		
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	23.8		ug/L		95	61 - 124		
Vinyl chloride	1.1		12.5	10.7		ug/L		77	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*87*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195686-5 MS
Matrix: Water
Analysis Batch: 595424

Client Sample ID: MW-213S-MS_111423
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-195686-5 MSD
Matrix: Water
Analysis Batch: 595424

Client Sample ID: MW-213S-MSD_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		107	56 - 135	9	26
cis-1,2-Dichloroethene	1.0		25.0	23.7		ug/L		91	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	26.2		ug/L		105	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	7	15
Trichloroethene	1.0	U	25.0	25.3		ug/L		101	61 - 124	6	15
Vinyl chloride	1.1		12.5	12.3		ug/L		90	43 - 157	14	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: MB 240-595614/8
Matrix: Water
Analysis Batch: 595614

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/23 14:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/23 14:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 14:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/23 14:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/23 14:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/23 14:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		11/22/23 14:22	1
4-Bromofluorobenzene (Surr)	75		56 - 136		11/22/23 14:22	1
Toluene-d8 (Surr)	87		78 - 122		11/22/23 14:22	1
Dibromofluoromethane (Surr)	91		73 - 120		11/22/23 14:22	1

Lab Sample ID: LCS 240-595614/5
Matrix: Water
Analysis Batch: 595614

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.8		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.1		ug/L		97	77 - 123
Tetrachloroethene	25.0	22.1		ug/L		89	76 - 123
trans-1,2-Dichloroethene	25.0	23.3		ug/L		93	75 - 124
Trichloroethene	25.0	26.1		ug/L		104	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595614/5
Matrix: Water
Analysis Batch: 595614

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.9		ug/L		95	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*87*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595687/6
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/25/23 02:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/25/23 02:18*	*1*

Lab Sample ID: LCS 240-595687/4
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MS
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.90	J F1	30.0	11.7	F1	ug/L		36	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.90	J F1	30.0	11.1	F1	ug/L		34	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-242543-C-3 MSD
Matrix: Water
Analysis Batch: 595687

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Lab Sample ID: MB 240-595844/6
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/23 17:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/27/23 17:47*	*1*

Lab Sample ID: LCS 240-595844/4
Matrix: Water
Analysis Batch: 595844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195686-5 MS
Matrix: Water
Analysis Batch: 595844

Client Sample ID: MW-213S-MS_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

Lab Sample ID: 240-195686-5 MSD
Matrix: Water
Analysis Batch: 595844

Client Sample ID: MW-213S-MSD_111423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

GC/MS VOA

Analysis Batch: 595424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195686-1	TRIP BLANK_139	Total/NA	Water	8260D	
240-195686-2	MW-53_111323	Total/NA	Water	8260D	
240-195686-3	MW-62_111323	Total/NA	Water	8260D	
240-195686-4	MW-212S_111423	Total/NA	Water	8260D	
240-195686-5	MW-213S_111423	Total/NA	Water	8260D	
MB 240-595424/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595424/5	Lab Control Sample	Total/NA	Water	8260D	
240-195686-5 MS	MW-213S-MS_111423	Total/NA	Water	8260D	
240-195686-5 MSD	MW-213S-MSD_111423	Total/NA	Water	8260D	

Analysis Batch: 595614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195686-6	MW-234_111423	Total/NA	Water	8260D	
MB 240-595614/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595614/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195686-2	MW-53_111323	Total/NA	Water	8260D SIM	
240-195686-3	MW-62_111323	Total/NA	Water	8260D SIM	
MB 240-595687/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595687/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242543-C-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242543-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195686-4	MW-212S_111423	Total/NA	Water	8260D SIM	
240-195686-5	MW-213S_111423	Total/NA	Water	8260D SIM	
240-195686-6	MW-234_111423	Total/NA	Water	8260D SIM	
MB 240-595844/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595844/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195686-5 MS	MW-213S-MS_111423	Total/NA	Water	8260D SIM	
240-195686-5 MSD	MW-213S-MSD_111423	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195686-1

Client Sample ID: TRIP BLANK_139

Lab Sample ID: 240-195686-1
Matrix: Water
Date Collected: 11/13/23 00:00
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 14:04

Client Sample ID: MW-53_111323

Lab Sample ID: 240-195686-2
Matrix: Water
Date Collected: 11/13/23 11:45
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 16:09
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 09:30

Client Sample ID: MW-62_111323

Lab Sample ID: 240-195686-3
Matrix: Water
Date Collected: 11/13/23 13:25
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 16:34
Total/NA	Analysis	8260D SIM		1	595687	CS	EET CLE	11/25/23 09:54

Client Sample ID: MW-212S_111423

Lab Sample ID: 240-195686-4
Matrix: Water
Date Collected: 11/14/23 10:35
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 16:59
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/28/23 00:11

Client Sample ID: MW-213S_111423

Lab Sample ID: 240-195686-5
Matrix: Water
Date Collected: 11/14/23 14:20
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595424	MRL	EET CLE	11/21/23 17:24
Total/NA	Analysis	8260D SIM		1	595844	CS	EET CLE	11/28/23 00:35

Client Sample ID: MW-234_111423

Lab Sample ID: 240-195686-6
Matrix: Water
Date Collected: 11/14/23 15:45
Date Received: 11/17/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595614	MRL	EET CLE	11/22/23 17:42
Total/NA	Analysis	8260D SIM		2	595844	CS	EET CLE	11/28/23 01:47

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195686-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: / of COCs
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:		
Project Number: 30167538.401.03	Shipping/Tracking No:		
PO # 30167538.401.03			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_139		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-53_111323	11/13/23	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
MW-62_111323	11/13/23	1325		6						6					N	G	X	X	X	X	X	X	X	
~~MW-71_111323~~	~~11/13/23~~			6						6					N	G	X	X	X	X	X	X	X	
MW-2125_111423	11/14/23	1035		6						6					N	G	X	X	X	X	X	X	X	
MW-2135_111423	11/14/23	1420		6						6					N	G	X	X	X	X	X	X	X	(Run MS/MSD)
MW-2135-MS_111423	11/14/23	1420		6						6					N	G	X	X	X	X	X	X	X	(Run MS/MSD)
MW-2135-MSD_111423	11/14/23	1420		6						6					N	G	X	X	X	X	X	X	X	(Run MS/MSD)
MW-234_111423	11/14/23	1545		6						6					N	G	X	X	X	X	X	X	X	SS

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be a.
Return to Client ✓ Di

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

onsite

240-195686 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/15/23 1450	NOVI cold storage	Arcadis	11/15/23 1435
	Arcadis	11/16/23 0845		EETA	11/16/23 10:15
	EETA	11/16/23 10:20	Received in Laboratory by:	EC	11-17-23 940

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195686

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-17-23 Opened on 11-17-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) NA
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA 11-18-23
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195686

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 29, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195686-1
Sample date: 2023-11-14 2023-11-13
Report received by CADENA: 2023-11-29
Initial Data Verification completed by CADENA: 2023-11-29
Number of Samples:6
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC-SIM QC batch 595687.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195686-1

		Sample Name:	TRIP BLANK_139				MW-53_111323				MW-62_111323				MW-212S_111423				MW-213S_111423				MW-234_111423			
		Lab Sample ID:	2401956861				2401956862				2401956863				2401956864				2401956865				2401956866			
		Sample Date:	11/13/2023				11/13/2023				11/13/2023				11/14/2023				11/14/2023				11/14/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
	OSW-8260D																									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.8	1.0	ug/l	---	1.0	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.53	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.66	1.0	ug/l	J	1.3	1.0	ug/l	---	1.0	1.0	ug/l	---	1.1	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																									
	1,4-Dioxane	123-91-1					1.0	2.0	ug/l	J	3.4	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	4.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:35:10 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195749-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195749-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195749-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195749-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/18/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.7°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195749-1	TRIP BLANK_20	Water	11/16/23 00:00	11/18/23 08:00
240-195749-2	PW-16-01_111623	Water	11/16/23 15:04	11/18/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Client Sample ID: TRIP BLANK_20 — Lab Sample ID: 240-195749-1

No Detections.

Client Sample ID: PW-16-01_111623 — Lab Sample ID: 240-195749-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.95	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	60		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	5.8		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	690		20	9.0	ug/L	20		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Client Sample ID: TRIP BLANK_20
Date Collected: 11/16/23 00:00
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195749-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 18:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 18:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 18:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 18:42*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/26/23 18:42*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 18:42*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/26/23 18:42*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Client Sample ID: PW-16-01_111623
Date Collected: 11/16/23 15:04
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195749-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.95**	**J**	2.0	0.86	ug/L			11/29/23 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/29/23 14:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 22:28	1
cis-1,2-Dichloroethene	**60**		1.0	0.46	ug/L			11/26/23 22:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:28	1
trans-1,2-Dichloroethene	**5.8**		1.0	0.51	ug/L			11/26/23 22:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:28	1
Vinyl chloride	**690**		20	9.0	ug/L			11/27/23 21:52	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 22:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 21:52*	*20*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/26/23 22:28*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/27/23 21:52*	*20*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/26/23 22:28*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 21:52*	*20*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 22:28*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/27/23 21:52*	*20*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195749-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195660-B-33 MS	Matrix Spike	106	97	109	105
240-195660-B-33 MSD	Matrix Spike Duplicate	107	99	107	105
240-195749-1	TRIP BLANK_20	111	84	104	104
240-195749-2	PW-16-01_111623	111	83	105	102
240-195749-2	PW-16-01_111623	110	81	104	100
240-195749-2 MS	PW-16-01_111623	102	98	109	99
240-195749-2 MSD	PW-16-01_111623	101	97	108	99
LCS 240-595705/5	Lab Control Sample	106	97	106	105
LCS 240-595841/5	Lab Control Sample	103	97	108	99
MB 240-595705/8	Method Blank	111	86	104	102
MB 240-595841/8	Method Blank	107	84	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195749-2	PW-16-01_111623	100
LCS 240-595985/4	Lab Control Sample	93
MB 240-595985/6	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595705/8
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 17:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 17:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 17:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 17:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 17:26*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 17:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 17:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 17:26*	*1*

Lab Sample ID: LCS 240-595705/5
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.1		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	23.7		ug/L		95	77 - 123		
Tetrachloroethene			25.0	26.8		ug/L		107	76 - 123		
trans-1,2-Dichloroethene			25.0	24.2		ug/L		97	75 - 124		
Trichloroethene			25.0	24.9		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	506		ug/L		101	56 - 135		
cis-1,2-Dichloroethene	20	U	500	470		ug/L		94	66 - 128		
Tetrachloroethene	20	U	500	498		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	20	U	500	467		ug/L		93	56 - 136		
Trichloroethene	32		500	501		ug/L		94	61 - 124		
Vinyl chloride	20	U	250	236		ug/L		94	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MSD
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	511		ug/L		102	56 - 135	1	26
cis-1,2-Dichloroethene	20	U	500	471		ug/L		94	66 - 128	0	14
Tetrachloroethene	20	U	500	507		ug/L		101	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	476		ug/L		95	56 - 136	2	15
Trichloroethene	32		500	508		ug/L		95	61 - 124	1	15
Vinyl chloride	20	U	250	225		ug/L		90	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/27/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 18:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/27/23 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/27/23 18:31*	*1*

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.5		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: PW-16-01_111623
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128		
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136		
Trichloroethene	20	U	500	435		ug/L		87	61 - 124		
Vinyl chloride	690		250	900		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: PW-16-01_111623
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595985/6
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/29/23 05:13*	*1*

Lab Sample ID: LCS 240-595985/4
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*

Lab Sample ID: 240-195693-D-6 MS
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195693-I-6 MSD
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195749-1
Project/Site: Ford LTP - On Site

GC/MS VOA

Analysis Batch: 595705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195749-1	TRIP BLANK_20	Total/NA	Water	8260D	
240-195749-2	PW-16-01_111623	Total/NA	Water	8260D	
MB 240-595705/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595705/5	Lab Control Sample	Total/NA	Water	8260D	
240-195660-B-33 MS	Matrix Spike	Total/NA	Water	8260D	
240-195660-B-33 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195749-2	PW-16-01_111623	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-2 MS	PW-16-01_111623	Total/NA	Water	8260D	
240-195749-2 MSD	PW-16-01_111623	Total/NA	Water	8260D	

Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195749-2	PW-16-01_111623	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195749-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_20
Lab Sample ID: 240-195749-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 18:42

Client Sample ID: PW-16-01_111623
Lab Sample ID: 240-195749-2
Date Collected: 11/16/23 15:04
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 22:28
Total/NA	Analysis	8260D		20	595841	CDG	EET CLE	11/27/23 21:52
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 14:02

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195749-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

3.6 14.7

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_20	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
PW-16-01_111623	11/16/23	1504		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195749 Chain of Custody

Page 19 of 20

Possible Hazard Identification
[✓] Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client | [✓] Disposal By Lab | Archive For | Months

MICHIGAN
190

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	Novi Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/17/23 1150	[signature]	EEA	11/17/23 1150
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEA	11/17/23 11:50	Alissa Atkinson	ETC	11-18-23 0800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195749

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkeson

Cooler Received on 11-18-23 Opened on 11-18-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 4.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No	**Tests that are not checked for pH by Receiving:** VOAs, Oil and Grease, TOC
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195749-1
Sample date: 2023-11-16
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195749-1

		Sample Name:	TRIP BLANK_20				PW-16-01_111623			
		Lab Sample ID:	2401957491				2401957492			
		Sample Date:	11/16/2023				11/16/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	60	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	5.8	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	690	20	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					0.95	2.0	ug/l	J

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:42:48 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195834-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:42:48 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Sample Summary 7
Detection Summary 8
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195834-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195834-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195834-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/21/2023 10:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2°C and 3.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-39_111723 (240-195834-3) and MW-218S_111723 (240-195834-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195834-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195834-1	TRIP BLANK_104	Water	11/17/23 00:00	11/21/23 10:35
240-195834-2	MW-15-59D_111723	Water	11/17/23 11:50	11/21/23 10:35
240-195834-3	MW-39_111723	Water	11/17/23 13:58	11/21/23 10:35
240-195834-4	MW-218S_111723	Water	11/17/23 15:00	11/21/23 10:35

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195834-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_104 **Lab Sample ID: 240-195834-1**

No Detections.

Client Sample ID: MW-15-59D_111723 **Lab Sample ID: 240-195834-2**

No Detections.

Client Sample ID: MW-39_111723 **Lab Sample ID: 240-195834-3**

No Detections.

Client Sample ID: MW-218S_111723 **Lab Sample ID: 240-195834-4**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Client Sample ID: TRIP BLANK_104
Date Collected: 11/17/23 00:00
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195834-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 21:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 21:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 21:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 21:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 21:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/27/23 21:27*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/27/23 21:27*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 21:27*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/27/23 21:27*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Client Sample ID: MW-15-59D_111723
Date Collected: 11/17/23 11:50
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195834-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 00:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 02:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 02:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 02:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 02:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 02:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 02:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/28/23 02:54*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/28/23 02:54*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 02:54*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 02:54*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Client Sample ID: MW-39_111723
Date Collected: 11/17/23 13:58
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195834-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 00:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/30/23 00:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 23:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 23:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 23:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 23:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 23:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/27/23 23:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/27/23 23:17*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 23:17*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 23:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Client Sample ID: MW-218S_111723
Date Collected: 11/17/23 15:00
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195834-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 01:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 01:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 23:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 23:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 23:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 23:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 23:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/27/23 23:41*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/27/23 23:41*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 23:41*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 23:41*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195749-C-2 MS	Matrix Spike	102	98	109	99
240-195749-C-2 MSD	Matrix Spike Duplicate	101	97	108	99
240-195834-1	TRIP BLANK_104	111	82	104	101
240-195834-2	MW-15-59D_111723	110	78	103	101
240-195834-3	MW-39_111723	114	102	104	104
240-195834-4	MW-218S_111723	113	101	103	104
240-195835-F-3 MS	Matrix Spike	107	106	105	102
240-195835-I-3 MSD	Matrix Spike Duplicate	107	106	105	102
LCS 240-595833/5	Lab Control Sample	119	115	114	112
LCS 240-595841/5	Lab Control Sample	103	97	108	99
MB 240-595833/8	Method Blank	116	106	109	109
MB 240-595841/8	Method Blank	107	84	101	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195834-2	MW-15-59D_111723	100
240-195834-3	MW-39_111723	101
240-195834-4	MW-218S_111723	100
500-242755-B-10 MS	Matrix Spike	100
500-242755-C-10 MSD	Matrix Spike Duplicate	101
LCS 240-596115/4	Lab Control Sample	103
MB 240-596115/6	Method Blank	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595833/8
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 17:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 17:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 17:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/27/23 17:15*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/27/23 17:15*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/27/23 17:15*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/27/23 17:15*	*1*

Lab Sample ID: LCS 240-595833/5
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	23.3		ug/L		93	77 - 123		
Tetrachloroethene			25.0	23.3		ug/L		93	76 - 123		
trans-1,2-Dichloroethene			25.0	23.9		ug/L		96	75 - 124		
Trichloroethene			25.0	23.3		ug/L		93	70 - 122		
Vinyl chloride			12.5	10.1		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*114*		*78 - 122*
Dibromofluoromethane (Surr)	*112*		*73 - 120*

Lab Sample ID: 240-195835-F-3 MS
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	21.6		ug/L		86	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	56 - 136		
Trichloroethene	1.2		25.0	22.7		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.90		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195835-F-3 MS
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	102		73 - 120

Lab Sample ID: 240-195835-I-3 MSD
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	21.2		ug/L		85	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	3	15
Trichloroethene	1.2		25.0	22.5		ug/L		85	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	9.75		ug/L		78	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	107		62 - 137
4-Bromofluorobenzene (Surr)	106		56 - 136
Toluene-d8 (Surr)	105		78 - 122
Dibromofluoromethane (Surr)	102		73 - 120

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137		11/27/23 18:31	1
4-Bromofluorobenzene (Surr)	84		56 - 136		11/27/23 18:31	1
Toluene-d8 (Surr)	101		78 - 122		11/27/23 18:31	1
Dibromofluoromethane (Surr)	98		73 - 120		11/27/23 18:31	1

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.5		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128		
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136		
Trichloroethene	20	U	500	435		ug/L		87	61 - 124		
Vinyl chloride	690		250	900		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596115/6
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/23 19:45*	*1*

Lab Sample ID: LCS 240-596115/4
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.7		ug/L		107	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

Lab Sample ID: 500-242755-B-10 MS
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

Lab Sample ID: 500-242755-C-10 MSD
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195834-1
Project/Site: Ford LTP - On Site

GC/MS VOA

Analysis Batch: 595833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195834-3	MW-39_111723	Total/NA	Water	8260D	
240-195834-4	MW-218S_111723	Total/NA	Water	8260D	
MB 240-595833/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595833/5	Lab Control Sample	Total/NA	Water	8260D	
240-195835-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-195835-I-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195834-1	TRIP BLANK_104	Total/NA	Water	8260D	
240-195834-2	MW-15-59D_111723	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195749-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195834-2	MW-15-59D_111723	Total/NA	Water	8260D SIM	
240-195834-3	MW-39_111723	Total/NA	Water	8260D SIM	
240-195834-4	MW-218S_111723	Total/NA	Water	8260D SIM	
MB 240-596115/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596115/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242755-B-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242755-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195834-1

Client Sample ID: TRIP BLANK_104

Lab Sample ID: 240-195834-1

Date Collected: 11/17/23 00:00

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/27/23 21:27

Client Sample ID: MW-15-59D_111723

Lab Sample ID: 240-195834-2

Date Collected: 11/17/23 11:50

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/28/23 02:54
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 00:33

Client Sample ID: MW-39_111723

Lab Sample ID: 240-195834-3

Date Collected: 11/17/23 13:58

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/27/23 23:17
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 00:57

Client Sample ID: MW-218S_111723

Lab Sample ID: 240-195834-4

Date Collected: 11/17/23 15:00

Matrix: Water

Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/27/23 23:41
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 01:21

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195834-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_104	11/17/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15-59D_111723	11/17/23	1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-39_111723	11/17/23	1358		6						6					N	G	X	X	X	X	X	X	X	
MW-218S_111723	11/17/23	1500		6						6					N	G	X	X	X	X	X	X	X	

240-195834 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	ARCADIS	11/17/23 16:00	Received by: Novi Cold Storage	ARCADIS	11/17/23 16:00
Relinquished by:	Arcadis	11/20/23 1030	Received by:	EETA	11/20/23 1030
Relinquished by:	EETA	11/20/23 1030	Received in Laboratory by:	BETNE	11-21-23 ~~1032~~ 1035

TR-11-21-23

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195834

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-21-23 Opened on 11-21-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 21 (CF +2.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) MW-15-59A_111723-1004 were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.7	3.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.2	2.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195834-1
Sample date: 2023-11-17
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Samples -003, -004, results for GCMS VOC should be considered to be estimated and qualified with UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195834-1

		Sample Name:	MW-39_111723				MW-218S_111723			
		Lab Sample ID:	2401958343				2401958344			
		Sample Date:	11/17/2023				11/17/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195834-1

		Sample Name:	TRIP BLANK_104				MW-15-59D_111723				MW-39_111723				MW-218S_111723			
		Lab Sample ID:	2401958341				2401958342				2401958343				2401958344			
		Sample Date:	11/17/2023				11/17/2023				11/17/2023				11/17/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:45:03 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195835-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:45:03 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195835-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195835-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195835-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/21/2023 10:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2°C and 3.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-198_111623 (240-195835-2), MW-198S_111623 (240-195835-3), MW-198S-MS_111623 (240-195835-3[MS]), MW-198S-MSD_111623 (240-195835-3[MSD]), MW-18_111723 (240-195835-4) and MW-63_111723 (240-195835-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195835-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195835-1	TRIP BLANK_94	Water	11/16/23 00:00	11/21/23 10:35
240-195835-2	MW-198_111623	Water	11/16/23 12:50	11/21/23 10:35
240-195835-3	MW-198S_111623	Water	11/16/23 14:00	11/21/23 10:35
240-195835-4	MW-18_111723	Water	11/17/23 10:58	11/21/23 10:35
240-195835-5	MW-63_111723	Water	11/17/23 12:40	11/21/23 10:35

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195835-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_94 — Lab Sample ID: 240-195835-1

No Detections.

Client Sample ID: MW-198_111623 — Lab Sample ID: 240-195835-2

No Detections.

Client Sample ID: MW-198S_111623 — Lab Sample ID: 240-195835-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.2		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-18_111723 — Lab Sample ID: 240-195835-4

No Detections.

Client Sample ID: MW-63_111723 — Lab Sample ID: 240-195835-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Client Sample ID: TRIP BLANK_94
Date Collected: 11/16/23 00:00
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195835-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/27/23 17:39*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*11/27/23 17:39*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/27/23 17:39*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/27/23 17:39*	*1*

Client: ARCADIS US Inc
Job ID: 240-195835-1
Project/Site: Ford LTP - On Site

Client Sample ID: MW-198_111623
Lab Sample ID: 240-195835-2
Date Collected: 11/16/23 12:50
Matrix: Water
Date Received: 11/21/23 10:35

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/23 20:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 00:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 00:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 00:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 00:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 00:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 00:05*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/28/23 00:05*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/28/23 00:05*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/28/23 00:05*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Client Sample ID: MW-198S_111623

Lab Sample ID: 240-195835-3

Date Collected: 11/16/23 14:00

Matrix: Water

Date Received: 11/21/23 10:35

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/28/23 20:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 00:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 00:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 00:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 00:29	1
Trichloroethene	**1.2**		1.0	0.44	ug/L			11/28/23 00:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 00:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/28/23 00:29*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/28/23 00:29*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/23 00:29*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/23 00:29*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Client Sample ID: MW-18_111723
Date Collected: 11/17/23 10:58
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195835-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 01:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 01:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 00:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 00:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 00:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 00:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 00:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 00:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/28/23 00:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/28/23 00:52*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/28/23 00:52*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/28/23 00:52*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Client Sample ID: MW-63_111723
Date Collected: 11/17/23 12:40
Date Received: 11/21/23 10:35

Lab Sample ID: 240-195835-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 02:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/30/23 02:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 01:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 01:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 01:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 01:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 01:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 01:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/28/23 01:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/28/23 01:16*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/28/23 01:16*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/28/23 01:16*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195835-1	TRIP BLANK_94	121	111	112	111
240-195835-2	MW-198_111623	107	99	101	99
240-195835-3	MW-198S_111623	106	97	100	100
240-195835-3 MS	MW-198S-MS_111623	107	106	105	102
240-195835-3 MSD	MW-198S-MSD_111623	107	106	105	102
240-195835-4	MW-18_111723	105	95	97	96
240-195835-5	MW-63_111723	112	99	102	104
LCS 240-595833/5	Lab Control Sample	119	115	114	112
MB 240-595833/8	Method Blank	116	106	109	109

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195835-2	MW-198_111623	102
240-195835-3	MW-198S_111623	100
240-195835-3 MS	MW-198S-MS_111623	100
240-195835-3 MSD	MW-198S-MSD_111623	106
240-195835-4	MW-18_111723	100
240-195835-5	MW-63_111723	100
500-242755-B-10 MS	Matrix Spike	100
500-242755-C-10 MSD	Matrix Spike Duplicate	101
LCS 240-595988/4	Lab Control Sample	104
LCS 240-596115/4	Lab Control Sample	103
MB 240-595988/6	Method Blank	98
MB 240-596115/6	Method Blank	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595833/8
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 17:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 17:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 17:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 17:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/27/23 17:15*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/27/23 17:15*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/27/23 17:15*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/27/23 17:15*	*1*

Lab Sample ID: LCS 240-595833/5
Matrix: Water
Analysis Batch: 595833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		98	63 - 134		
cis-1,2-Dichloroethene			25.0	23.3		ug/L		93	77 - 123		
Tetrachloroethene			25.0	23.3		ug/L		93	76 - 123		
trans-1,2-Dichloroethene			25.0	23.9		ug/L		96	75 - 124		
Trichloroethene			25.0	23.3		ug/L		93	70 - 122		
Vinyl chloride			12.5	10.1		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*114*		*78 - 122*
Dibromofluoromethane (Surr)	*112*		*73 - 120*

Lab Sample ID: 240-195835-3 MS
Matrix: Water
Analysis Batch: 595833

Client Sample ID: MW-198S-MS_111623
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	21.6		ug/L		86	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	56 - 136		
Trichloroethene	1.2		25.0	22.7		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	12.5	9.90		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195835-3 MS
Matrix: Water
Analysis Batch: 595833

Client Sample ID: MW-198S-MS_111623
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195835-3 MSD
Matrix: Water
Analysis Batch: 595833

Client Sample ID: MW-198S-MSD_111623
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	21.2		ug/L		85	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	3	15
Trichloroethene	1.2		25.0	22.5		ug/L		85	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	9.75		ug/L		78	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595988/6
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 19:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/28/23 19:09*	*1*

Lab Sample ID: LCS 240-595988/4
Matrix: Water
Analysis Batch: 595988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.51		ug/L		95	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195835-3 MS
Matrix: Water
Analysis Batch: 595988

Client Sample ID: MW-198S-MS_111623
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 120

Lab Sample ID: 240-195835-3 MSD — **Client Sample ID: MW-198S-MSD_111623**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		66 - 120

Lab Sample ID: MB 240-596115/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 596115

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		66 - 120		11/29/23 19:45	1

Lab Sample ID: LCS 240-596115/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 596115

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.7		ug/L		107	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		66 - 120

Lab Sample ID: 500-242755-B-10 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 596115

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 120

Lab Sample ID: 500-242755-C-10 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 596115

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-242755-C-10 MSD
Matrix: Water
Analysis Batch: 596115

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

GC/MS VOA

Analysis Batch: 595833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195835-1	TRIP BLANK_94	Total/NA	Water	8260D	
240-195835-2	MW-198_111623	Total/NA	Water	8260D	
240-195835-3	MW-198S_111623	Total/NA	Water	8260D	
240-195835-4	MW-18_111723	Total/NA	Water	8260D	
240-195835-5	MW-63_111723	Total/NA	Water	8260D	
MB 240-595833/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595833/5	Lab Control Sample	Total/NA	Water	8260D	
240-195835-3 MS	MW-198S-MS_111623	Total/NA	Water	8260D	
240-195835-3 MSD	MW-198S-MSD_111623	Total/NA	Water	8260D	

Analysis Batch: 595988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195835-3	MW-198S_111623	Total/NA	Water	8260D SIM	
MB 240-595988/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595988/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195835-3 MS	MW-198S-MS_111623	Total/NA	Water	8260D SIM	
240-195835-3 MSD	MW-198S-MSD_111623	Total/NA	Water	8260D SIM	

Analysis Batch: 596115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195835-2	MW-198_111623	Total/NA	Water	8260D SIM	
240-195835-4	MW-18_111723	Total/NA	Water	8260D SIM	
240-195835-5	MW-63_111723	Total/NA	Water	8260D SIM	
MB 240-596115/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596115/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-242755-B-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-242755-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195835-1

Client Sample ID: TRIP BLANK_94

Lab Sample ID: 240-195835-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/27/23 17:39

Client Sample ID: MW-198_111623

Lab Sample ID: 240-195835-2
Date Collected: 11/16/23 12:50
Matrix: Water
Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/28/23 00:05
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/29/23 20:33

Client Sample ID: MW-198S_111623

Lab Sample ID: 240-195835-3
Date Collected: 11/16/23 14:00
Matrix: Water
Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/28/23 00:29
Total/NA	Analysis	8260D SIM		1	595988	CS	EET CLE	11/28/23 20:44

Client Sample ID: MW-18_111723

Lab Sample ID: 240-195835-4
Date Collected: 11/17/23 10:58
Matrix: Water
Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/28/23 00:52
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 01:45

Client Sample ID: MW-63_111723

Lab Sample ID: 240-195835-5
Date Collected: 11/17/23 12:40
Matrix: Water
Date Received: 11/21/23 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595833	CDG	EET CLE	11/28/23 01:16
Total/NA	Analysis	8260D SIM		1	596115	CS	EET CLE	11/30/23 02:09

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195835-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	/ of / COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_94	—	---		1						1					N	G	X	X	X	X	X	X					1 Trip Blank
MW-198_111623	11/16/23	1250		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-198S_111623	11/16/23	1400		6						6					N	G	X	X	X	X	X	X	X				~~Run SAS/MS/MSD~~ SG
MW-198S-MS_111623	11/16/23	1400		6						6					N	G	X	X	X	X	X	X	X				Run MS/MSD
MW-198S-MSD_111623	11/16/23	1400		6						6					N	G	X	X	X	X	X	X	X				Run MS/MSD
MW-18_111723	11/17/23	1058		6						6					N	G	X	X	X	X	X	X	X				
MW-63_111723	11/17/23	1240		6						6					N	G	X	X	X	X	X	X	X				
~~MW-124_111723~~	11/17/23																										

240-195835 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sam)
☐ Return to Client ☑ Disposal By Lab

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Onsite

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/17/23 1550	Novi cold storage	Arcadis	11/17/23 1550
[signature]	Arcadis	11/20/23 1030	[signature]	EETA	11/20/23 1030
[signature]	EETA	11/20/23 1030	[signature]	EETC	11-21-23 1035

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195835

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-21-23 Opened on 11-21-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — X See Multiple Cooler Form

IR GUN # 21 (CF +2.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.7	3.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.2	2.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 240-195835-1

Login Number: 195835

List Source: Eurofins Cleveland

List Number: 1

Creator: Royer, Tammy R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195835-1
Sample date: 2023-11-17 2023-11-16
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Samples -002, -003, -003MS/MSD, -004, -005 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195835-1

		Sample Name:	MW-198_111623				MW-198S_111623				MW-18_111723				MW-63_111723			
		Lab Sample ID:	2401958352				2401958353				2401958354				2401958355			
		Sample Date:	11/16/2023				11/16/2023				11/17/2023				11/17/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	1.2	1.0	ug/l	J	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195835-1

		Sample Name:	TRIP BLANK_94				MW-198_111623				MW-198S_111623				MW-18_111723				MW-63_111723			
		Lab Sample ID:	2401958351				2401958352				2401958353				2401958354				2401958355			
		Sample Date:	11/16/2023				11/16/2023				11/16/2023				11/17/2023				11/17/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	1.2	1.0	ug/l	J	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:48:30 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195921-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/1/2023 5:48:30 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195921-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195921-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195921-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-32_112023 (240-195921-2) and MW-33_112023 (240-195921-3).

Method 8260D: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-21_112023 (240-195921-4). Elevated reporting limits (RLs) are provided.

Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): (240-195980-B-4), (240-195980-C-4 MS) and (240-195980-D-4 MSD). The sample container was received with headspace.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195921-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195921-1	TRIP BLANK_121	Water	11/20/23 00:00	11/22/23 08:00
240-195921-2	MW-32_112023	Water	11/20/23 12:35	11/22/23 08:00
240-195921-3	MW-33_112023	Water	11/20/23 11:25	11/22/23 08:00
240-195921-4	MW-21_112023	Water	11/20/23 10:10	11/22/23 08:00
240-195921-5	MW-195S_112023	Water	11/20/23 14:00	11/22/23 08:00
240-195921-6	DUP-04	Water	11/20/23 00:00	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195921-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_121 — Lab Sample ID: 240-195921-1

No Detections.

Client Sample ID: MW-32_112023 — Lab Sample ID: 240-195921-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.48	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-33_112023 — Lab Sample ID: 240-195921-3

No Detections.

Client Sample ID: MW-21_112023 — Lab Sample ID: 240-195921-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.9		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	36		4.0	1.8	ug/L	4		8260D	Total/NA
Vinyl chloride	49		4.0	1.8	ug/L	4		8260D	Total/NA

Client Sample ID: MW-195S_112023 — Lab Sample ID: 240-195921-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	120		50	23	ug/L	50		8260D	Total/NA
trans-1,2-Dichloroethene	230		50	26	ug/L	50		8260D	Total/NA
Trichloroethene	2700		50	22	ug/L	50		8260D	Total/NA

Client Sample ID: DUP-04 — Lab Sample ID: 240-195921-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	1.3		1.0	0.49	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	110		50	23	ug/L	50		8260D	Total/NA
trans-1,2-Dichloroethene	230		50	26	ug/L	50		8260D	Total/NA
Trichloroethene	2800		50	22	ug/L	50		8260D	Total/NA
Vinyl chloride	3.0		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: TRIP BLANK_121
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/27/23 19:21*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 19:21*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/27/23 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/27/23 19:21*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: MW-32_112023
Date Collected: 11/20/23 12:35
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 10:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 10:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 11:41	1
cis-1,2-Dichloroethene	**0.48**	**J**	1.0	0.46	ug/L			11/28/23 11:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 11:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 11:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 11:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 11:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/28/23 11:41*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 11:41*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/28/23 11:41*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/28/23 11:41*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: MW-33_112023
Date Collected: 11/20/23 11:25
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 10:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 10:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 12:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 12:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 12:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 12:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 12:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 12:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/28/23 12:06*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/28/23 12:06*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/23 12:06*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 12:06*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: MW-21_112023
Date Collected: 11/20/23 10:10
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.9**		2.0	0.86	ug/L			11/30/23 10:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 10:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.0	U	4.0	2.0	ug/L			11/28/23 12:31	4
cis-1,2-Dichloroethene	**36**		4.0	1.8	ug/L			11/28/23 12:31	4
Tetrachloroethene	4.0	U	4.0	1.8	ug/L			11/28/23 12:31	4
trans-1,2-Dichloroethene	4.0	U	4.0	2.0	ug/L			11/28/23 12:31	4
Trichloroethene	4.0	U	4.0	1.8	ug/L			11/28/23 12:31	4
Vinyl chloride	**49**		4.0	1.8	ug/L			11/28/23 12:31	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/28/23 12:31*	*4*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 12:31*	*4*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 12:31*	*4*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 12:31*	*4*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: MW-195S_112023
Date Collected: 11/20/23 14:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 11:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 11:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	50	U	50	25	ug/L			11/28/23 12:56	50
cis-1,2-Dichloroethene	**120**		50	23	ug/L			11/28/23 12:56	50
Tetrachloroethene	50	U	50	22	ug/L			11/28/23 12:56	50
trans-1,2-Dichloroethene	**230**		50	26	ug/L			11/28/23 12:56	50
Trichloroethene	**2700**		50	22	ug/L			11/28/23 12:56	50
Vinyl chloride	50	U	50	23	ug/L			11/28/23 12:56	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/28/23 12:56*	*50*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 12:56*	*50*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 12:56*	*50*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/23 12:56*	*50*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: DUP-04

Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195921-6

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 11:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/30/23 11:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	**1.3**		1.0	0.49	ug/L			11/28/23 13:21	1
cis-1,2-Dichloroethene	**110**		50	23	ug/L			11/29/23 12:08	50
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 13:21	1
trans-1,2-Dichloroethene	**230**		50	26	ug/L			11/29/23 12:08	50
Trichloroethene	**2800**		50	22	ug/L			11/29/23 12:08	50
Vinyl chloride	**3.0**		1.0	0.45	ug/L			11/28/23 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 13:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/29/23 12:08*	*50*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 13:21*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/29/23 12:08*	*50*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 13:21*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/29/23 12:08*	*50*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/28/23 13:21*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/29/23 12:08*	*50*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195458-D-1 MS	Matrix Spike	101	98	108	98
240-195458-D-1 MSD	Matrix Spike Duplicate	100	98	107	98
240-195749-C-2 MS	Matrix Spike	102	98	109	99
240-195749-C-2 MSD	Matrix Spike Duplicate	101	97	108	99
240-195921-1	TRIP BLANK_121	110	84	103	100
240-195921-2	MW-32_112023	108	83	102	99
240-195921-3	MW-33_112023	108	82	104	101
240-195921-4	MW-21_112023	110	83	105	101
240-195921-5	MW-195S_112023	109	83	103	100
240-195921-6	DUP-04	107	83	105	99
240-195921-6	DUP-04	113	83	106	102
240-195929-F-2 MS	Matrix Spike	103	99	108	99
240-195929-I-2 MSD	Matrix Spike Duplicate	102	97	105	99
240-195980-C-4 MS	Matrix Spike	107	98	109	101
240-195980-D-4 MSD	Matrix Spike Duplicate	105	96	108	101
LCS 240-595841/5	Lab Control Sample	103	97	108	99
LCS 240-595856/4	Lab Control Sample	100	95	105	100
LCS 240-596010/5	Lab Control Sample	107	98	108	102
MB 240-595841/8	Method Blank	107	84	101	98
MB 240-595856/6	Method Blank	107	86	104	97
MB 240-596010/8	Method Blank	113	85	105	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195921-2	MW-32_112023	98
240-195921-3	MW-33_112023	98
240-195921-4	MW-21_112023	98
240-195921-5	MW-195S_112023	97
240-195921-6	DUP-04	96
240-195929-H-2 MS	Matrix Spike	96
240-195929-O-2 MSD	Matrix Spike Duplicate	96
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595841/8
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 18:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/27/23 18:31*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/27/23 18:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/27/23 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/27/23 18:31*	*1*

Lab Sample ID: LCS 240-595841/5
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.4		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			25.0	22.5		ug/L		90	77 - 123		
Tetrachloroethene			25.0	27.1		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			25.0	23.2		ug/L		93	75 - 124		
Trichloroethene			25.0	23.4		ug/L		94	70 - 122		
Vinyl chloride			12.5	10.5		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	473		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	49		500	496		ug/L		89	66 - 128		
Tetrachloroethene	20	U	500	494		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	20	U	500	447		ug/L		89	56 - 136		
Trichloroethene	20	U	500	435		ug/L		87	61 - 124		
Vinyl chloride	690		250	900		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195749-C-2 MS
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195749-C-2 MSD
Matrix: Water
Analysis Batch: 595841

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	470		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	49		500	482		ug/L		87	66 - 128	3	14
Tetrachloroethene	20	U	500	479		ug/L		96	62 - 131	3	20
trans-1,2-Dichloroethene	20	U	500	445		ug/L		89	56 - 136	0	15
Trichloroethene	20	U	500	431		ug/L		86	61 - 124	1	15
Vinyl chloride	690		250	893		ug/L		80	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: MB 240-595856/6
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 06:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 06:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 06:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 06:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 06:39*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/28/23 06:39*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/23 06:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/23 06:39*	*1*

Lab Sample ID: LCS 240-595856/4
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.6		ug/L		106	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	27.7		ug/L		111	76 - 123
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595856/4
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-195458-D-1 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	200	U	5000	4950		ug/L		99	56 - 135		
cis-1,2-Dichloroethene	4800		5000	9260		ug/L		88	66 - 128		
Tetrachloroethene	220		5000	5610		ug/L		108	62 - 131		
trans-1,2-Dichloroethene	200	U	5000	4620		ug/L		92	56 - 136		
Trichloroethene	1200		5000	5880		ug/L		94	61 - 124		
Vinyl chloride	310		2500	2680		ug/L		95	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195458-D-1 MSD
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	200	U	5000	4790		ug/L		96	56 - 135	3	26
cis-1,2-Dichloroethene	4800		5000	9010		ug/L		83	66 - 128	3	14
Tetrachloroethene	220		5000	5600		ug/L		108	62 - 131	0	20
trans-1,2-Dichloroethene	200	U	5000	4600		ug/L		92	56 - 136	1	15
Trichloroethene	1200		5000	5810		ug/L		93	61 - 124	1	15
Vinyl chloride	310		2500	2630		ug/L		93	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195929-F-2 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		84	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.2		ug/L		85	56 - 136
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124
Vinyl chloride	1.0	U	12.5	9.76		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195929-I-2 MSD
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.4		ug/L		81	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.0		ug/L		84	61 - 124	0	15
Vinyl chloride	1.0	U	12.5	11.0		ug/L		88	43 - 157	12	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: MB 240-596010/8
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 09:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 09:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 09:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 09:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 09:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 09:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/29/23 09:38*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/29/23 09:38*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 09:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-596010/8
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/29/23 09:38*	*1*

Lab Sample ID: LCS 240-596010/5
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.6		ug/L		102	63 - 134		
cis-1,2-Dichloroethene			25.0	23.1		ug/L		92	77 - 123		
Tetrachloroethene			25.0	27.6		ug/L		111	76 - 123		
trans-1,2-Dichloroethene			25.0	23.8		ug/L		95	75 - 124		
Trichloroethene			25.0	24.4		ug/L		98	70 - 122		
Vinyl chloride			12.5	11.3		ug/L		90	60 - 144		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-195980-C-4 MS
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	66 - 128		
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136		
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	10.3		ug/L		83	43 - 157		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195980-D-4 MSD
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		101	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	5	15
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124	3	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195980-D-4 MSD
Matrix: Water
Analysis Batch: 596010

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	1.0	U	12.5	11.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195929-H-2 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-195929-O-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195929-O-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

GC/MS VOA

Analysis Batch: 595841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195921-1	TRIP BLANK_121	Total/NA	Water	8260D	
MB 240-595841/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595841/5	Lab Control Sample	Total/NA	Water	8260D	
240-195749-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195749-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195921-2	MW-32_112023	Total/NA	Water	8260D	
240-195921-3	MW-33_112023	Total/NA	Water	8260D	
240-195921-4	MW-21_112023	Total/NA	Water	8260D	
240-195921-5	MW-195S_112023	Total/NA	Water	8260D	
240-195921-6	DUP-04	Total/NA	Water	8260D	
MB 240-595856/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595856/4	Lab Control Sample	Total/NA	Water	8260D	
240-195458-D-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-195458-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-195929-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195929-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195921-6	DUP-04	Total/NA	Water	8260D	
MB 240-596010/8	Method Blank	Total/NA	Water	8260D	
LCS 240-596010/5	Lab Control Sample	Total/NA	Water	8260D	
240-195980-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195980-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195921-2	MW-32_112023	Total/NA	Water	8260D SIM	
240-195921-3	MW-33_112023	Total/NA	Water	8260D SIM	
240-195921-4	MW-21_112023	Total/NA	Water	8260D SIM	
240-195921-5	MW-195S_112023	Total/NA	Water	8260D SIM	
240-195921-6	DUP-04	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195929-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195929-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195921-1

Client Sample ID: TRIP BLANK_121

Lab Sample ID: 240-195921-1

Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595841	CDG	EET CLE	11/27/23 19:21

Client Sample ID: MW-32_112023

Lab Sample ID: 240-195921-2

Date Collected: 11/20/23 12:35
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 11:41
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 10:09

Client Sample ID: MW-33_112023

Lab Sample ID: 240-195921-3

Date Collected: 11/20/23 11:25
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 12:06
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 10:33

Client Sample ID: MW-21_112023

Lab Sample ID: 240-195921-4

Date Collected: 11/20/23 10:10
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		4	595856	TJL2	EET CLE	11/28/23 12:31
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 10:57

Client Sample ID: MW-195S_112023

Lab Sample ID: 240-195921-5

Date Collected: 11/20/23 14:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		50	595856	TJL2	EET CLE	11/28/23 12:56
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 11:21

Client Sample ID: DUP-04

Lab Sample ID: 240-195921-6

Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 13:21
Total/NA	Analysis	8260D		50	596010	TJL2	EET CLE	11/29/23 12:08
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 11:45

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195921-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_121		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-32-112023	11/20/23	1235		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-33-112023	11/20/23	1125		6						6					N	G	X	X	X	X	X	X	X	
MW-21-112023	11/20/23	1010		6						6					N	G	X	X	X	X	X	X	X	
MW-1955-112023	11/20/23	1400		6						6					N	G	X	X	X	X	X	X	X	
DUP-04	11/20/23	—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Kent Kasper	Arcadis	11/20/23 1650	Received by: Novi Cold Storage	Arcadis	11/20/23 1650
Relinquished by: Sommer Shy	Arcadis	11/21/23 0935	Received by: Lilly M	EEA	11/21/23
Relinquished by: Lilly M	EEA	11/21/23	Received in Laboratory by: Alissa Hallatt	EETMC 0800	11-22-23

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240-195921 Chain of Custody

12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-22-23 Opened on 11-22-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y) (Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195921-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Samples -002, -003, -004, -004MS/MSD results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195921-1

		Sample Name:	MW-32_112023				MW-33_112023				MW-21_112023			
		Lab Sample ID:	2401959212				2401959213				2401959214			
		Sample Date:	11/20/2023				11/20/2023				11/20/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	0.48	1.0	ug/l	J	ND	1.0	ug/l	UJ	36	4.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	49	4.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195921-1

		Sample Name:	TRIP BLANK_121				MW-32_112023				MW-33_112023				MW-21_112023				MW-195S_112023				DUP-04			
		Lab Sample ID:	2401959211				2401959212				2401959213				2401959214				2401959215				2401959216			
		Sample Date:	11/20/2023				11/20/2023				11/20/2023				11/20/2023				11/20/2023				11/20/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ	ND	50	ug/l	---	1.3	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	0.48	1.0	ug/l	J	ND	1.0	ug/l	UJ	36	4.0	ug/l	J	120	50	ug/l	---	110	50	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ	ND	50	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ	230	50	ug/l	---	230	50	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	ND	4.0	ug/l	UJ	2700	50	ug/l	---	2800	50	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ	49	4.0	ug/l	J	ND	50	ug/l	---	3.0	1.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	4.9	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:22:35 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195931-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/1/2023 5:22:35 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195931-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195931-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195931-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The MSD for batch 240-595975 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195931-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195931-1	TRIP BLANK_117	Water	11/20/23 00:00	11/22/23 08:00
240-195931-2	MW-38_112023	Water	11/20/23 09:36	11/22/23 08:00
240-195931-3	MW-37_112023	Water	11/20/23 14:38	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Client Sample ID: TRIP BLANK_117 — Lab Sample ID: 240-195931-1

No Detections.

Client Sample ID: MW-38_112023 — Lab Sample ID: 240-195931-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.8		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-37_112023 — Lab Sample ID: 240-195931-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Client Sample ID: TRIP BLANK_117
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195931-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 21:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 21:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 21:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 21:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 21:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/28/23 21:16*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/28/23 21:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/23 21:16*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 21:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Client Sample ID: MW-38_112023
Date Collected: 11/20/23 09:36
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195931-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 16:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 14:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 14:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 14:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 14:36	1
Trichloroethene	**1.8**		1.0	0.44	ug/L			11/28/23 14:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 14:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/28/23 14:36*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/28/23 14:36*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 14:36*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/28/23 14:36*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Client Sample ID: MW-37_112023
Date Collected: 11/20/23 14:38
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195931-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/30/23 15:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 11:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 11:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 11:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 11:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 11:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 11:16*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/28/23 11:16*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/28/23 11:16*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/28/23 11:16*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195840-C-2 MS	Matrix Spike	103	114	109	108
240-195840-C-2 MSD	Matrix Spike Duplicate	106	109	109	104
240-195931-1	TRIP BLANK_117	114	82	104	102
240-195931-2	MW-38_112023	108	81	103	99
240-195931-3	MW-37_112023	107	83	102	99
240-195931-3 MS	MW-37-MS_112023	101	96	105	97
240-195931-3 MSD	MW-37-MSD_112023	100	98	106	98
LCS 240-595856/4	Lab Control Sample	100	95	105	100
LCS 240-595975/4	Lab Control Sample	107	98	109	103
MB 240-595856/6	Method Blank	107	86	104	97
MB 240-595975/6	Method Blank	112	84	105	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195931-2	MW-38_112023	97
240-195931-3	MW-37_112023	96
240-195931-3 MS	MW-37-MS_112023	98
240-195931-3 MSD	MW-37-MSD_112023	98
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595856/6
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 06:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 06:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 06:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 06:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 06:39*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/28/23 06:39*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/23 06:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/23 06:39*	*1*

Lab Sample ID: LCS 240-595856/4
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.6		ug/L		106	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	27.7		ug/L		111	76 - 123
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-195931-3 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-37-MS_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	21.3		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195931-3 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-37-MS_112023
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	97		73 - 120

Lab Sample ID: 240-195931-3 MSD
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-37-MSD_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	22.2		ug/L		89	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	2	15
Trichloroethene	1.0	U	25.0	22.1		ug/L		88	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	11.4		ug/L		91	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	106		78 - 122
Dibromofluoromethane (Surr)	98		73 - 120

Lab Sample ID: MB 240-595975/6
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		62 - 137		11/28/23 18:46	1
4-Bromofluorobenzene (Surr)	84		56 - 136		11/28/23 18:46	1
Toluene-d8 (Surr)	105		78 - 122		11/28/23 18:46	1
Dibromofluoromethane (Surr)	101		73 - 120		11/28/23 18:46	1

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.3		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.2		ug/L		93	77 - 123
Tetrachloroethene	25.0	26.3		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	23.5		ug/L		94	75 - 124
Trichloroethene	25.0	24.8		ug/L		99	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	510		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	170		500	662		ug/L		99	66 - 128		
Tetrachloroethene	20	U	500	454		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	61		500	561		ug/L		100	56 - 136		
Trichloroethene	510		500	885		ug/L		75	61 - 124		
Vinyl chloride	20	U	250	207		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MSD
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	508		ug/L		102	56 - 135	0	26
cis-1,2-Dichloroethene	170		500	632		ug/L		93	66 - 128	5	14
Tetrachloroethene	20	U	500	484		ug/L		97	62 - 131	6	20
trans-1,2-Dichloroethene	61		500	550		ug/L		98	56 - 136	2	15
Trichloroethene	510		500	925		ug/L		83	61 - 124	4	15
Vinyl chloride	20	U	250	233		ug/L		93	43 - 157	12	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195931-3 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: MW-37-MS_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195931-3 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: MW-37-MSD_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195931-1
Project/Site: Ford LTP - On Site

GC/MS VOA

Analysis Batch: 595856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195931-2	MW-38_112023	Total/NA	Water	8260D	
240-195931-3	MW-37_112023	Total/NA	Water	8260D	
MB 240-595856/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595856/4	Lab Control Sample	Total/NA	Water	8260D	
240-195931-3 MS	MW-37-MS_112023	Total/NA	Water	8260D	
240-195931-3 MSD	MW-37-MSD_112023	Total/NA	Water	8260D	

Analysis Batch: 595975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195931-1	TRIP BLANK_117	Total/NA	Water	8260D	
MB 240-595975/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595975/4	Lab Control Sample	Total/NA	Water	8260D	
240-195840-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195840-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195931-2	MW-38_112023	Total/NA	Water	8260D SIM	
240-195931-3	MW-37_112023	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195931-3 MS	MW-37-MS_112023	Total/NA	Water	8260D SIM	
240-195931-3 MSD	MW-37-MSD_112023	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195931-1

Client Sample ID: TRIP BLANK_117

Lab Sample ID: 240-195931-1

Date Collected: 11/20/23 00:00

Matrix: Water

Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/28/23 21:16

Client Sample ID: MW-38_112023

Lab Sample ID: 240-195931-2

Date Collected: 11/20/23 09:36

Matrix: Water

Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 14:36
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 16:33

Client Sample ID: MW-37_112023

Lab Sample ID: 240-195931-3

Date Collected: 11/20/23 14:38

Matrix: Water

Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 11:16
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 15:21

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195931-1
Project/Site: Ford LTP - On Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

38/4.9

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_117	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-38_112023	11/20/23	0936		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-37_112023	11/20/23	1438		6						6					N	G	X	X	X	X	X	X	X	~~Run MS/MSD~~
MW-37-MS_112023	11/20/23	1438		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-37-MSD_112023	11/20/23	1438		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-195931 Chain of Custody

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Ons-HC

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Nolan Schendel	Arcadis	11/21/23 0810	Novi warehouse	Arcadis	11/21/23 0810
Relinquished by	Company:	Date/Time:	Received by	Company	Date/Time
[signature]	Arcadis	11/21/23 0935	[signature]	EEN	11/21/23
Relinquished by	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEN	11/21/23	[signature]	EETNC	11-22-23 0800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler Received on 11-22-23 Opened on 11-22-23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No	**Tests that are not checked for pH by Receiving:**
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	**VOAs**
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	**Oil and Grease**
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)	**TOC**
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195931-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

CMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195931-1

		Sample Name:	TRIP BLANK_117				MW-38_112023				MW-37_112023			
		Lab Sample ID:	2401959311				2401959312				2401959313			
		Sample Date:	11/20/2023				11/20/2023				11/20/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	1.8	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/4/2023 8:55:14 AM Revision 1

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-195973-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/4/2023 8:55:14 AM
Revision 1

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195973-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195973-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195973-1

Report revised on 12/4/2023 to correct the data for 8260D.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/25/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C

GC/MS VOA
Method 8260D: The MS/MSD for batch 596033 is not reported because of incorrect spiking in the MS, the MS/MSD will be reported on another analytical batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195973-1	TRIP BLANK_101	Water	11/21/23 00:00	11/25/23 10:00
240-195973-2	MW-55_112123	Water	11/21/23 10:50	11/25/23 10:00
240-195973-3	MW-55D_112123	Water	11/21/23 12:00	11/25/23 10:00
240-195973-4	MW-219S_112123	Water	11/21/23 09:30	11/25/23 10:00
240-195973-5	MW-113_112123	Water	11/21/23 14:10	11/25/23 10:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: TRIP BLANK_101 — Lab Sample ID: 240-195973-1

No Detections.

Client Sample ID: MW-55_112123 — Lab Sample ID: 240-195973-2

No Detections.

Client Sample ID: MW-55D_112123 — Lab Sample ID: 240-195973-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-219S_112123 — Lab Sample ID: 240-195973-4

No Detections.

Client Sample ID: MW-113_112123 — Lab Sample ID: 240-195973-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: TRIP BLANK_101

Date Collected: 11/21/23 00:00
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195973-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 17:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 17:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 17:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*		*11/29/23 17:24*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/29/23 17:24*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/23 17:24*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/29/23 17:24*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: MW-55_112123
Date Collected: 11/21/23 10:50
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195973-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 22:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/29/23 22:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 19:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 19:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 19:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 19:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/23 19:57*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/29/23 19:57*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/23 19:57*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/29/23 19:57*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: MW-55D_112123
Date Collected: 11/21/23 12:00
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195973-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			11/29/23 23:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/23 23:07*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 20:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 20:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 20:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/29/23 20:22*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/29/23 20:22*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/23 20:22*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/29/23 20:22*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: MW-219S_112123
Date Collected: 11/21/23 09:30
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195973-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 23:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 20:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 20:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 20:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 20:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 20:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/23 20:48*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/29/23 20:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/23 20:48*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/29/23 20:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: MW-113_112123

Date Collected: 11/21/23 14:10
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195973-5

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 23:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/23 23:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 21:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 21:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 21:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 21:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 21:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/23 21:13*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/29/23 21:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/23 21:13*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/29/23 21:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195973-1	TRIP BLANK_101	82	83	101	88
240-195973-2	MW-55_112123	84	83	104	88
240-195973-3	MW-55D_112123	85	82	102	91
240-195973-4	MW-219S_112123	84	82	100	88
240-195973-5	MW-113_112123	84	83	101	89
LCS 240-596033/6	Lab Control Sample	81	92	106	89
MB 240-596033/10	Method Blank	84	87	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195972-I-4 MS	Matrix Spike	105
240-195972-M-4 MSD	Matrix Spike Duplicate	104
240-195973-2	MW-55_112123	105
240-195973-3	MW-55D_112123	103
240-195973-4	MW-219S_112123	106
240-195973-5	MW-113_112123	107
LCS 240-596116/4	Lab Control Sample	104
MB 240-596116/6	Method Blank	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-596033/10
Matrix: Water
Analysis Batch: 596033

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 13:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/23 13:34*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/29/23 13:34*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/23 13:34*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/29/23 13:34*	*1*

Lab Sample ID: LCS 240-596033/6
Matrix: Water
Analysis Batch: 596033

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.9		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	20.3		ug/L		102	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	16.6		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596116/6
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 19:46*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-596116/4
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.93		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195972-I-4 MS
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-195972-M-4 MSD
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.79		ug/L		98	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

GC/MS VOA

Analysis Batch: 596033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195973-1	TRIP BLANK_101	Total/NA	Water	8260D	
240-195973-2	MW-55_112123	Total/NA	Water	8260D	
240-195973-3	MW-55D_112123	Total/NA	Water	8260D	
240-195973-4	MW-219S_112123	Total/NA	Water	8260D	
240-195973-5	MW-113_112123	Total/NA	Water	8260D	
MB 240-596033/10	Method Blank	Total/NA	Water	8260D	
LCS 240-596033/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 596116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195973-2	MW-55_112123	Total/NA	Water	8260D SIM	
240-195973-3	MW-55D_112123	Total/NA	Water	8260D SIM	
240-195973-4	MW-219S_112123	Total/NA	Water	8260D SIM	
240-195973-5	MW-113_112123	Total/NA	Water	8260D SIM	
MB 240-596116/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596116/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195972-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195972-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Client Sample ID: TRIP BLANK_101
Lab Sample ID: 240-195973-1
Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596033	MRL	EET CLE	11/29/23 17:24

Client Sample ID: MW-55_112123
Lab Sample ID: 240-195973-2
Date Collected: 11/21/23 10:50
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596033	MRL	EET CLE	11/29/23 19:57
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 22:43

Client Sample ID: MW-55D_112123
Lab Sample ID: 240-195973-3
Date Collected: 11/21/23 12:00
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596033	MRL	EET CLE	11/29/23 20:22
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 23:07

Client Sample ID: MW-219S_112123
Lab Sample ID: 240-195973-4
Date Collected: 11/21/23 09:30
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596033	MRL	EET CLE	11/29/23 20:48
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 23:31

Client Sample ID: MW-113_112123
Lab Sample ID: 240-195973-5
Date Collected: 11/21/23 14:10
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596033	MRL	EET CLE	11/29/23 21:13
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 23:55

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - On Site

Job ID: 240-195973-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146555.401.03				
PO # 30146555.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite = C / Grab = G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_101	11/21/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-55_112123	11/21/23	1050		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-550_112123	11/21/23	1200		6						6					N	G	X	X	X	X	X	X	X	
MW-2195_112123	11/21/23	0930		6						6					N	G	X	X	X	X	X	X	X	
MW-113_112123	11/21/23	1410		6						6					N	G	X	X	X	X	X	X	X	

240-195973 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/21/23 1710	Nov. Cold Storage	Arcadis	11/21/23 1710
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/22/23 1406		EETA	11/22/23 1406
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/22/23 1406		EETNL	11-25-23 1000

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12/4/2023 (Rev. 1)

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler unpacked by: dme

Cooler Received on 11-25-23 Opened on 11-27-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 6 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	(Yes)	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) 3x40 for 55D, 1x40 for MW-219S were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 04, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30167538.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195973-1
Sample date: 2023-11-21
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

Revision: This report was corrected to eliminate trip blank detections.

There were no minor QC exceptions or missing information noted.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195973-1

		Sample Name:	TRIP BLANK_101				MW-55_112123				MW-55D_112123				MW-219S_112123				MW-113_112123			
		Lab Sample ID:	2401959731				2401959732				2401959733				2401959734				2401959735			
		Sample Date:	11/21/2023				11/21/2023				11/21/2023				11/21/2023				11/21/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	1.1	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:43:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194757-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194757-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194757-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194757-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194757-1	TRIP BLANK_62	Water	11/01/23 00:00	11/03/23 08:00
240-194757-2	MW-78_110123	Water	11/01/23 16:40	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_62 **Lab Sample ID: 240-194757-1**

No Detections.

Client Sample ID: MW-78_110123 **Lab Sample ID: 240-194757-2**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194757-1

Client Sample ID: TRIP BLANK_62
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194757-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 19:22*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 19:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 19:22*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 19:22*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194757-1

Client Sample ID: MW-78_110123
Date Collected: 11/01/23 16:40
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194757-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/09/23 16:19*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/10/23 01:13*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/10/23 01:13*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 01:13*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/10/23 01:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194757-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194757-1	TRIP BLANK_62	101	77	100	96
240-194757-2	MW-78_110123	105	80	102	98
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194757-2	MW-78_110123	96
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194757-2	MW-78_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194757-1	TRIP BLANK_62	Total/NA	Water	8260D	
240-194757-2	MW-78_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_62
Lab Sample ID: 240-194757-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 19:22

Client Sample ID: MW-78_110123
Lab Sample ID: 240-194757-2
Date Collected: 11/01/23 16:40
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 01:13
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 16:19

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194757-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE EA ENVIRONMENTA ESTN

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alana Ptera	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_62	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-78_110123	11/1/23	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194757 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address:
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.
Beacon POW

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Ptera	Arcadis	11/1/23 1736		Arcadis	11/1/23 1736
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023	Jei Hall	EETA	11/2/23 1023
Relinquished by: Jei Hall	Company: EETA	Date/Time: 11/2/23 1023	Received in Laboratory by:	Company: EETPC	Date/Time: 11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194757

Client Arcadis Site Name

Cooler unpacked by: Nancy Ryer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194757

Eurofins - Canton Sample Receipt Multiple Cooler Form					
Cooler Description (Circle)		IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other		IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other		IR GUN #: 22	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
(EC) Client Box Other		IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other		IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194757-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194757-1

		Sample Name:	TRIP BLANK_62				MW-78_110123			
		Lab Sample ID:	2401947571				2401947572			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194757-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52077R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194757-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_62	240-194757-1	Water	11/01/2023		X	
MW-78_110123	240-194757-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

...HIGAN
190

Chain of Custody Record

TestAmerica

THE EA ENVIRONMENTA TEST N

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alana Perez	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_62	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-78_110123	11/1/23	1640		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194757 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address:
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.
Beacon POW

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Perez	Arcadis	11/1/23 1736		Arcadis	11/1/23 1736
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023	Jeri Ford	EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Ford	EETA	11/2/23 1023	Tammy Rager	EETPC	11-3-23 800

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Client Sample ID: TRIP BLANK_62
Lab Sample ID: 240-194757-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/23 19:22*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/09/23 19:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 19:22*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 19:22*	*1*

Client Sample ID: MW-78_110123
Lab Sample ID: 240-194757-2
Date Collected: 11/01/23 16:40
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/09/23 16:19*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/10/23 01:13*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/10/23 01:13*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 01:13*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/10/23 01:13*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:49:57 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194772-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/13/2023 4:49:57 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194772-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194772-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194772-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194772-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194772-1	TRIP BLANK_16	Water	11/01/23 00:00	11/03/23 08:00
240-194772-2	MW-72S_110123	Water	11/01/23 14:51	11/03/23 08:00
240-194772-3	MW-72_110123	Water	11/01/23 15:51	11/03/23 08:00
240-194772-4	DUP-08	Water	11/01/23 00:00	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194772-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_16 **Lab Sample ID: 240-194772-1**

No Detections.

Client Sample ID: MW-72S_110123 **Lab Sample ID: 240-194772-2**

No Detections.

Client Sample ID: MW-72_110123 **Lab Sample ID: 240-194772-3**

No Detections.

Client Sample ID: DUP-08 **Lab Sample ID: 240-194772-4**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Client Sample ID: TRIP BLANK_16
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194772-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/09/23 20:49*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/09/23 20:49*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/09/23 20:49*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 20:49*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Client Sample ID: MW-72S_110123
Date Collected: 11/01/23 14:51
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194772-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/10/23 14:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/10/23 00:47*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/23 00:47*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 00:47*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/10/23 00:47*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Client Sample ID: MW-72_110123
Date Collected: 11/01/23 15:51
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194772-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/10/23 14:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/10/23 01:11*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/23 01:11*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 01:11*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/10/23 01:11*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Client Sample ID: DUP-08
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194772-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/10/23 15:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 01:35*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/10/23 01:35*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/10/23 01:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/10/23 01:35*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194769-H-1 MS	Matrix Spike	100	101	100	101
240-194769-I-1 MSD	Matrix Spike Duplicate	99	101	99	98
240-194772-1	TRIP BLANK_16	107	107	106	108
240-194772-2	MW-72S_110123	104	100	102	102
240-194772-3	MW-72_110123	100	99	100	101
240-194772-4	DUP-08	98	98	99	99
LCS 240-594104/5	Lab Control Sample	111	114	111	110
MB 240-594104/8	Method Blank	111	108	110	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194772-2	MW-72S_110123	96
240-194772-3	MW-72_110123	102
240-194772-4	DUP-08	115
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594104/8
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/09/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/09/23 18:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/09/23 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/09/23 18:02*	*1*

Lab Sample ID: LCS 240-594104/5
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	25.4		ug/L		102	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		108	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	25.9		ug/L		103	70 - 122
Vinyl chloride	12.5	12.1		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*111*		*78 - 122*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.5		25.0	25.5		ug/L		96	66 - 128
Tetrachloroethene	0.46	J	25.0	23.0		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	0.90	J	25.0	23.6		ug/L		91	61 - 124
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194769-H-1 MS
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-194769-I-1 MSD
Matrix: Water
Analysis Batch: 594104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 135	2	26
cis-1,2-Dichloroethene	1.5		25.0	26.4		ug/L		100	66 - 128	4	14
Tetrachloroethene	0.46	J	25.0	23.4		ug/L		92	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 136	0	15
Trichloroethene	0.90	J	25.0	24.0		ug/L		93	61 - 124	2	15
Vinyl chloride	0.78	J	12.5	12.3		ug/L		92	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.4		ug/L		114	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194772-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194772-1	TRIP BLANK_16	Total/NA	Water	8260D	
240-194772-2	MW-72S_110123	Total/NA	Water	8260D	
240-194772-3	MW-72_110123	Total/NA	Water	8260D	
240-194772-4	DUP-08	Total/NA	Water	8260D	
MB 240-594104/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594104/5	Lab Control Sample	Total/NA	Water	8260D	
240-194769-H-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194769-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194772-2	MW-72S_110123	Total/NA	Water	8260D SIM	
240-194772-3	MW-72_110123	Total/NA	Water	8260D SIM	
240-194772-4	DUP-08	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194772-1

Client Sample ID: TRIP BLANK_16

Lab Sample ID: 240-194772-1

Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/09/23 20:49

Client Sample ID: MW-72S_110123

Lab Sample ID: 240-194772-2

Date Collected: 11/01/23 14:51
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/10/23 00:47
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 14:30

Client Sample ID: MW-72_110123

Lab Sample ID: 240-194772-3

Date Collected: 11/01/23 15:51
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/10/23 01:11
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 14:53

Client Sample ID: DUP-08

Lab Sample ID: 240-194772-4

Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594104	CDG	EET CLE	11/10/23 01:35
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 15:17

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194772-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_16	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-725_110123	11/01/23	14:51		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-72_110123	11/01/23	15:51		6						6					N	6	X	X	X	X	X	X	X	
DUP-08	11/01/23	—		6						6					N	6	X	X	X	X	X	X	X	

240-194772 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beldon Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	Novi Cold Storage	Arcadis	11/01/23 17:15
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11-2-23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194772
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194772

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194772-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194772-1

		Sample Name:	TRIP BLANK_16				MW-72S_110123				MW-72_110123				DUP-08			
		Lab Sample ID:	2401947721				2401947722				2401947723				2401947724			
		Sample Date:	11/1/2023				11/1/2023				11/1/2023				11/1/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194772-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52113R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194772-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_16	240-194772-1	Water	11/01/2023		X	
MW-72S_110123	240-194772-2	Water	11/01/2023		X	X
MW-72_110123	240-194772-3	Water	11/01/2023		X	X
DUP-08	240-194772-4	Water	11/01/2023	MW-72_110123	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-72_110123 / DUP-08	All target compounds	U	U	AC

Notes:

AC	Acceptable
U	Not detected

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_16	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-725_110123	11/01/23	14:51		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-72_110123	11/01/23	15:51		6						6					N	G	X	X	X	X	X	X	X	
DUP-08	11/01/23	—		6						6					N	G	X	X	X	X	X	X	X	

240-194772 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beldon Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/01/23 17:15	NOVI Cold Storage	Arcadis	11/01/23 17:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023	Jen Hall	EETA	11/2/23 1023
Relinquished by: Jen Hall	Company: EETA	Date/Time: 11-2-23 1023	Received in Laboratory by:	Company: EETNC	Date/Time: 11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_16
Lab Sample ID: 240-194772-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 20:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 20:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 20:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 20:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/09/23 20:49*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/09/23 20:49*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/09/23 20:49*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/09/23 20:49*	*1*

Client Sample ID: MW-72S_110123
Lab Sample ID: 240-194772-2
Date Collected: 11/01/23 14:51
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/10/23 14:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/10/23 00:47*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/23 00:47*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 00:47*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/10/23 00:47*	*1*

Client Sample ID: MW-72_110123
Lab Sample ID: 240-194772-3
Date Collected: 11/01/23 15:51
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/10/23 14:53*	*1*

Client Sample ID: MW-72_110123
Lab Sample ID: 240-194772-3

Date Collected: 11/01/23 15:51
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/10/23 01:11*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/23 01:11*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 01:11*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/10/23 01:11*	*1*

Client Sample ID: DUP-08
Lab Sample ID: 240-194772-4

Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/10/23 15:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 01:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 01:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 01:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 01:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 01:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 01:35*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/10/23 01:35*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/10/23 01:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/10/23 01:35*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:50:33 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194773-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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11/13/2023 4:50:33 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194773-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194773-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194773-1	TRIP BLANK_1	Water	10/30/23 00:00	11/03/23 08:00
240-194773-2	MW-102_103023	Water	10/30/23 11:13	11/03/23 08:00
240-194773-3	MW-102S_103023	Water	10/30/23 12:36	11/03/23 08:00
240-194773-4	MW-105S_103023	Water	10/30/23 14:22	11/03/23 08:00
240-194773-5	DUP_14	Water	10/30/23 00:00	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_1 — Lab Sample ID: 240-194773-1

No Detections.

Client Sample ID: MW-102_103023 — Lab Sample ID: 240-194773-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.6		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-102S_103023 — Lab Sample ID: 240-194773-3

No Detections.

Client Sample ID: MW-105S_103023 — Lab Sample ID: 240-194773-4

No Detections.

Client Sample ID: DUP_14 — Lab Sample ID: 240-194773-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.6		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_1
Lab Sample ID: 240-194773-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/07/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/07/23 17:16*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/07/23 17:16*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 17:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Client Sample ID: MW-102_103023
Date Collected: 10/30/23 11:13
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194773-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/10/23 15:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:39	1
Vinyl chloride	**1.6**		1.0	0.45	ug/L			11/07/23 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/07/23 17:39*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 17:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 17:39*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/07/23 17:39*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Client Sample ID: MW-102S_103023
Date Collected: 10/30/23 12:36
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194773-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/10/23 16:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/07/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/07/23 18:02*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 18:02*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/07/23 18:02*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Client Sample ID: MW-105S_103023
Date Collected: 10/30/23 14:22
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194773-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/10/23 16:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 18:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/07/23 18:26*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/07/23 18:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/07/23 18:26*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 18:26*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Client Sample ID: DUP_14
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194773-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/10/23 16:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:49	1
Vinyl chloride	**2.6**		1.0	0.45	ug/L			11/07/23 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/07/23 18:49*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/07/23 18:49*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/07/23 18:49*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/07/23 18:49*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194531-F-1 MSD	Matrix Spike Duplicate	97	99	101	100
240-194531-I-1 MS	Matrix Spike	103	97	97	97
240-194773-1	TRIP BLANK_1	99	97	102	99
240-194773-2	MW-102_103023	106	89	99	107
240-194773-3	MW-102S_103023	99	101	99	97
240-194773-4	MW-105S_103023	108	81	93	99
240-194773-5	DUP_14	100	106	107	102
LCS 240-593723/4	Lab Control Sample	100	96	99	89
MB 240-593723/7	Method Blank	95	89	88	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194773-2	MW-102_103023	109
240-194773-3	MW-102S_103023	110
240-194773-4	MW-105S_103023	111
240-194773-5	DUP_14	112
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-593723/7
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 12:58*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 12:58*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/07/23 12:58*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/07/23 12:58*	*1*

Lab Sample ID: LCS 240-593723/4
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.8		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		92	77 - 123		
Tetrachloroethene			25.0	25.4		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	24.1		ug/L		96	75 - 124		
Trichloroethene			25.0	25.6		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.7		ug/L		111	56 - 135	16	26
cis-1,2-Dichloroethene	1.4		25.0	24.5		ug/L		92	66 - 128	12	14
Tetrachloroethene	15		25.0	42.6		ug/L		109	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 136	9	15
Trichloroethene	26		25.0	49.4		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.7		ug/L		86	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194531-I-1 MS
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	21.8		ug/L		81	66 - 128
Tetrachloroethene	15		25.0	42.7		ug/L		110	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136
Trichloroethene	26		25.0	49.8		ug/L		96	61 - 124
Vinyl chloride	1.0	U	12.5	9.56		ug/L		76	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 593723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194773-1	TRIP BLANK_1	Total/NA	Water	8260D	
240-194773-2	MW-102_103023	Total/NA	Water	8260D	
240-194773-3	MW-102S_103023	Total/NA	Water	8260D	
240-194773-4	MW-105S_103023	Total/NA	Water	8260D	
240-194773-5	DUP_14	Total/NA	Water	8260D	
MB 240-593723/7	Method Blank	Total/NA	Water	8260D	
LCS 240-593723/4	Lab Control Sample	Total/NA	Water	8260D	
240-194531-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194531-I-1 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194773-2	MW-102_103023	Total/NA	Water	8260D SIM	
240-194773-3	MW-102S_103023	Total/NA	Water	8260D SIM	
240-194773-4	MW-105S_103023	Total/NA	Water	8260D SIM	
240-194773-5	DUP_14	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194773-1

Client Sample ID: TRIP BLANK_1

Lab Sample ID: 240-194773-1

Date Collected: 10/30/23 00:00

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 17:16

Client Sample ID: MW-102_103023

Lab Sample ID: 240-194773-2

Date Collected: 10/30/23 11:13

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 17:39
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 15:41

Client Sample ID: MW-102S_103023

Lab Sample ID: 240-194773-3

Date Collected: 10/30/23 12:36

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 18:02
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 16:05

Client Sample ID: MW-105S_103023

Lab Sample ID: 240-194773-4

Date Collected: 10/30/23 14:22

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 18:26
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 16:29

Client Sample ID: DUP_14

Lab Sample ID: 240-194773-5

Date Collected: 10/30/23 00:00

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 18:49
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 16:52

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194773-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_1	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-102_103023	10/30/23	11 13		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-102S_103023	10/30/23	12 36		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-105S_103023	10/30/23	14 22		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ DUP_14	10/30/23 ~~N/A~~ SG	N/A		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194773 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Rosati Ave ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Sierra Sider	Arcadis	10/30/2023 1615	Novi Cold Storage	Arcadis	10/30/2023 1615
[signature]	Arcadis	11/2/23 1023	[signature]	EETA	11/2/23 1023
[signature]	EETA	11/2/23 1023	Received in Laboratory by: [signature]	EETMC	11-3-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194773
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 5 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194773

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: (22)	1.7	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: (22)	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194773-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194773-1

	Sample Name:	TRIP BLANK_1				MW-102_103023				MW-102S_103023				MW-105S_103023				DUP_14			
	Lab Sample ID:	2401947731				2401947732				2401947733				2401947734				2401947735			
	Sample Date:	10/30/2023				10/30/2023				10/30/2023				10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.6	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.6	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194773-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52116R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194773-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_1	240-194773-1	Water	10/30/2023		X	
MW-102_103023	240-194773-2	Water	10/30/2023		X	X
MW-102S_103023	240-194773-3	Water	10/30/2023		X	X
MW-105S_103023	240-194773-4	Water	10/30/2023		X	X
DUP_14	240-194773-5	Water	10/30/2023	MW-102_103023	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

DATA REVIEW

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-102_103023 / DUP_14	Vinyl chloride	1.6	2.6	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_1	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-102_103023	10/30/23	11:13		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-1025_103023	10/30/23	12:36		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-1055_103023	10/30/23	14:22		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ DUP_14	10/30/23 ~~N/A~~ SG	N/A		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194773 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Ave ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	10/30/2023 1615	Novi Cold Storage	Arcadis	10/30/2023 1615
	Arcadis	10/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETMC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_1
Lab Sample ID: 240-194773-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/07/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/07/23 17:16*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/07/23 17:16*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 17:16*	*1*

Client Sample ID: MW-102_103023
Lab Sample ID: 240-194773-2
Date Collected: 10/30/23 11:13
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/10/23 15:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 17:39	1
Vinyl chloride	**1.6**		1.0	0.45	ug/L			11/07/23 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/07/23 17:39*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 17:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 17:39*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/07/23 17:39*	*1*

Client Sample ID: MW-102S_103023
Lab Sample ID: 240-194773-3
Date Collected: 10/30/23 12:36
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/10/23 16:05*	*1*

Client Sample ID: MW-102S_103023
Lab Sample ID: 240-194773-3
Date Collected: 10/30/23 12:36
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/07/23 18:02*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/07/23 18:02*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/07/23 18:02*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/07/23 18:02*	*1*

Client Sample ID: MW-105S_103023
Lab Sample ID: 240-194773-4
Date Collected: 10/30/23 14:22
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/10/23 16:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 18:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/07/23 18:26*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/07/23 18:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/07/23 18:26*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 18:26*	*1*

Client Sample ID: DUP_14
Lab Sample ID: 240-194773-5
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/10/23 16:52*	*1*

Client Sample ID: DUP_14
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194773-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 18:49	1
Vinyl chloride	**2.6**		1.0	0.45	ug/L			11/07/23 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/07/23 18:49*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/07/23 18:49*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/07/23 18:49*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/07/23 18:49*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/13/2023 4:51:08 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194775-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194775-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194775-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194775-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194775-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194775-1	TRIP BLANK_4	Water	10/30/23 00:00	11/03/23 08:00
240-194775-2	MW-86_103023	Water	10/30/23 11:31	11/03/23 08:00
240-194775-3	MW-86S_103023	Water	10/30/23 13:23	11/03/23 08:00
240-194775-4	MW-137S_103023	Water	10/30/23 14:57	11/03/23 08:00
240-194775-5	DUP-10	Water	10/30/23 00:00	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194775-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_4 — Lab Sample ID: 240-194775-1

No Detections.

Client Sample ID: MW-86_103023 — Lab Sample ID: 240-194775-2

No Detections.

Client Sample ID: MW-86S_103023 — Lab Sample ID: 240-194775-3

No Detections.

Client Sample ID: MW-137S_103023 — Lab Sample ID: 240-194775-4

No Detections.

Client Sample ID: DUP-10 — Lab Sample ID: 240-194775-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.47	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: TRIP BLANK_4
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/07/23 19:12*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/07/23 19:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/07/23 19:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 19:12*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: MW-86_103023
Date Collected: 10/30/23 11:31
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/10/23 17:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/07/23 19:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/07/23 19:35*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/07/23 19:35*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 19:35*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: MW-86S_103023
Date Collected: 10/30/23 13:23
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/10/23 17:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 19:59*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/07/23 19:59*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/07/23 19:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 19:59*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: MW-137S_103023
Date Collected: 10/30/23 14:57
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/10/23 18:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 20:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 20:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/07/23 20:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/07/23 20:22*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/07/23 20:22*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 20:22*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: DUP-10
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*11/10/23 18:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:45	1
Vinyl chloride	**0.47**	**J**	1.0	0.45	ug/L			11/07/23 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/07/23 20:45*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/07/23 20:45*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/07/23 20:45*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 20:45*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194531-F-1 MSD	Matrix Spike Duplicate	97	99	101	100
240-194531-I-1 MS	Matrix Spike	103	97	97	97
240-194775-1	TRIP BLANK_4	101	87	94	99
240-194775-2	MW-86_103023	105	91	101	98
240-194775-3	MW-86S_103023	95	103	110	95
240-194775-4	MW-137S_103023	110	87	92	98
240-194775-5	DUP-10	104	98	109	98
LCS 240-593723/4	Lab Control Sample	100	96	99	89
MB 240-593723/7	Method Blank	95	89	88	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194709-B-1 MS	Matrix Spike	81
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+
240-194775-2	MW-86_103023	101
240-194775-3	MW-86S_103023	94
240-194775-4	MW-137S_103023	100
240-194775-5	DUP-10	88
LCS 240-594170/4	Lab Control Sample	101
MB 240-594170/6	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-593723/7
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 12:58*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 12:58*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/07/23 12:58*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/07/23 12:58*	*1*

Lab Sample ID: LCS 240-593723/4
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.8		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		92	77 - 123		
Tetrachloroethene			25.0	25.4		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	24.1		ug/L		96	75 - 124		
Trichloroethene			25.0	25.6		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.7		ug/L		111	56 - 135	16	26
cis-1,2-Dichloroethene	1.4		25.0	24.5		ug/L		92	66 - 128	12	14
Tetrachloroethene	15		25.0	42.6		ug/L		109	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 136	9	15
Trichloroethene	26		25.0	49.4		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.7		ug/L		86	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194531-I-1 MS
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	21.8		ug/L		81	66 - 128
Tetrachloroethene	15		25.0	42.7		ug/L		110	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136
Trichloroethene	26		25.0	49.8		ug/L		96	61 - 124
Vinyl chloride	1.0	U	12.5	9.56		ug/L		76	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594170/6
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/10/23 10:32*	*1*

Lab Sample ID: LCS 240-594170/4
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.4		ug/L		114	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MS
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	35	F1 F2	10.0	40.2	F1	ug/L		48	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-194709-B-1 MSD
Matrix: Water
Analysis Batch: 594170

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*153*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194775-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 593723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194775-1	TRIP BLANK_4	Total/NA	Water	8260D	
240-194775-2	MW-86_103023	Total/NA	Water	8260D	
240-194775-3	MW-86S_103023	Total/NA	Water	8260D	
240-194775-4	MW-137S_103023	Total/NA	Water	8260D	
240-194775-5	DUP-10	Total/NA	Water	8260D	
MB 240-593723/7	Method Blank	Total/NA	Water	8260D	
LCS 240-593723/4	Lab Control Sample	Total/NA	Water	8260D	
240-194531-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194531-I-1 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 594170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194775-2	MW-86_103023	Total/NA	Water	8260D SIM	
240-194775-3	MW-86S_103023	Total/NA	Water	8260D SIM	
240-194775-4	MW-137S_103023	Total/NA	Water	8260D SIM	
240-194775-5	DUP-10	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194709-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194775-1

Client Sample ID: TRIP BLANK_4

Lab Sample ID: 240-194775-1

Date Collected: 10/30/23 00:00

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 19:12

Client Sample ID: MW-86_103023

Lab Sample ID: 240-194775-2

Date Collected: 10/30/23 11:31

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 19:35
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 17:16

Client Sample ID: MW-86S_103023

Lab Sample ID: 240-194775-3

Date Collected: 10/30/23 13:23

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 19:59
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 17:40

Client Sample ID: MW-137S_103023

Lab Sample ID: 240-194775-4

Date Collected: 10/30/23 14:57

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 20:22
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 18:04

Client Sample ID: DUP-10

Lab Sample ID: 240-194775-5

Date Collected: 10/30/23 00:00

Matrix: Water

Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 20:45
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 18:28

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194775-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_4	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-86_103023	10/30/23	1131		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-86S_103023	10/30/23	1323		6						6					N	G	X	X	X	X	X	X	X	
MW-137S_103023	10/30/23	1457		6						6					N	G	X	X	X	X	X	X	X	
DUP-10	10/30/23	—		6						6					N	G	X	X	X	X	X	X	X	

240-194775 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Offsite Row Wadsworth + Brewster ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	103023 / 1725	NOVI warehouse	Arcadis	10-30-23 / 1725
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETMC	11-3-23 800

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11/13/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194175
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Dyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1C Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 194775

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.2	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 17, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194775-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-17
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194775-1

	Sample Name:	TRIP BLANK_4				MW-86_103023				MW-86S_103023				MW-137S_103023				DUP-10			
	Lab Sample ID:	2401947751				2401947752				2401947753				2401947754				2401947755			
	Sample Date:	10/30/2023				10/30/2023				10/30/2023				10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.47	1.0	ug/l	J
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194775-1

CADENA Verification Report: 2023-11-17

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52117R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194775-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_4	240-194775-1	Water	10/30/2023		X	
MW-86_103023	240-194775-2	Water	10/30/2023		X	X
MW-86S_103023	240-194775-3	Water	10/30/2023		X	X
MW-137S_103023	240-194775-4	Water	10/30/2023		X	X
DUP-10	240-194775-5	Water	10/30/2023	MW-137S_103023	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

DATA REVIEW

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-137S_103023 / DUP-10	Vinyl chloride	1.0 U	0.47 J	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 14, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: ☐ 3 weeks; 10 day ☑ 2 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_4	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-86_103023	10/30/23	1131		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-86S_103023	10/30/23	1323		6						6					N	G	X	X	X	X	X	X	X	
✓ MW-137S_103023	10/30/23	1457		6						6					N	G	X	X	X	X	X	X	X	
✓ DUP-10	10/30/23	—		6						6					N	G	X	X	X	X	X	X	X	

240-194775 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Offsite Row Wadsworth + Brewster ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	103023/1725	NOVI warehouse	Arcadis	10-30-23/1725
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023		EETNC	11-3-23 800

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11/13/2023

Client Sample ID: TRIP BLANK_4
Lab Sample ID: 240-194775-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/07/23 19:12*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/07/23 19:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/07/23 19:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/07/23 19:12*	*1*

Client Sample ID: MW-86_103023
Lab Sample ID: 240-194775-2
Date Collected: 10/30/23 11:31
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/10/23 17:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/07/23 19:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/07/23 19:35*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/07/23 19:35*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 19:35*	*1*

Client Sample ID: MW-86S_103023
Lab Sample ID: 240-194775-3
Date Collected: 10/30/23 13:23
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/10/23 17:40*	*1*

Client Sample ID: MW-86S_103023
Lab Sample ID: 240-194775-3
Date Collected: 10/30/23 13:23
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 19:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 19:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 19:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 19:59*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/07/23 19:59*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/07/23 19:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 19:59*	*1*

Client Sample ID: MW-137S_103023
Lab Sample ID: 240-194775-4
Date Collected: 10/30/23 14:57
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/10/23 18:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 20:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 20:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/07/23 20:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/07/23 20:22*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/07/23 20:22*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 20:22*	*1*

Client Sample ID: DUP-10
Lab Sample ID: 240-194775-5
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*11/10/23 18:28*	*1*

Client Sample ID: DUP-10
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194775-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 20:45	1
Vinyl chloride	**0.47**	**J**	1.0	0.45	ug/L			11/07/23 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/07/23 20:45*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/07/23 20:45*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/07/23 20:45*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/07/23 20:45*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/14/2023 7:30:59 AM Revision 1

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194756-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/14/2023 7:30:59 AM
Revision 1

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194756-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194756-1

Report revised on 11/14/2023 to include the corrected Chain of Custody.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-97S_110123 (240-194756-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194756-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194756-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194756-1	TRIP BLANK_71	Water	11/01/23 00:00	11/03/23 08:00
240-194756-2	MW-97S_110123	Water	11/01/23 12:50	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_71 — Lab Sample ID: 240-194756-1

No Detections.

Client Sample ID: MW-97S_110123 — Lab Sample ID: 240-194756-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194756-1

Client Sample ID: TRIP BLANK_71
Date Collected: 11/01/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194756-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 18:57*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:57*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:57*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 18:57*	*1*

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

Client Sample ID: MW-97S_110123
Lab Sample ID: 240-194756-2
Date Collected: 11/01/23 12:50
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*151*	*S1+*	*66 - 120*		*11/09/23 15:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/10/23 00:48*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 00:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 00:48*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 00:48*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194756-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194630-E-3 MS	Matrix Spike	94	91	102	95
240-194630-E-3 MSD	Matrix Spike Duplicate	95	94	105	96
240-194756-1	TRIP BLANK_71	106	78	100	100
240-194756-2	MW-97S_110123	103	78	100	96
LCS 240-594107/5	Lab Control Sample	97	90	104	96
MB 240-594107/8	Method Blank	104	78	100	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194630-D-4 MS	Matrix Spike	84
240-194630-D-4 MSD	Matrix Spike Duplicate	75
240-194756-2	MW-97S_110123	151 S1+
LCS 240-594018/4	Lab Control Sample	82
MB 240-594018/6	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594107/8
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/09/23 18:06*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:06*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:06*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/23 18:06*	*1*

Lab Sample ID: LCS 240-594107/5
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.2		ug/L		101	63 - 134		
cis-1,2-Dichloroethene			25.0	21.7		ug/L		87	77 - 123		
Tetrachloroethene			25.0	26.2		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	22.7		ug/L		91	75 - 124		
Trichloroethene			25.0	22.9		ug/L		92	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		86	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	450	J	15600	14000		ug/L		87	56 - 135		
cis-1,2-Dichloroethene	53000	E F1	15600	60400	E F1	ug/L		49	66 - 128		
Tetrachloroethene	630	U	15600	14300		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	630	U	15600	12600		ug/L		80	56 - 136		
Trichloroethene	630	U	15600	13300		ug/L		85	61 - 124		
Vinyl chloride	410	J	7810	6700		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194630-E-3 MS
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-194630-E-3 MSD
Matrix: Water
Analysis Batch: 594107

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	450	J	15600	13900		ug/L		86	56 - 135	1	26
cis-1,2-Dichloroethene	53000	E F1	15600	59000	E F1	ug/L		40	66 - 128	2	14
Tetrachloroethene	630	U	15600	15000		ug/L		96	62 - 131	5	20
trans-1,2-Dichloroethene	630	U	15600	13000		ug/L		83	56 - 136	3	15
Trichloroethene	630	U	15600	13900		ug/L		89	61 - 124	5	15
Vinyl chloride	410	J	7810	5990		ug/L		71	43 - 157	11	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594018/6
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 11:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/09/23 11:33*	*1*

Lab Sample ID: LCS 240-594018/4
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.8		ug/L		108	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MS
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194630-D-4 MSD
Matrix: Water
Analysis Batch: 594018

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194756-2	MW-97S_110123	Total/NA	Water	8260D SIM	
MB 240-594018/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594018/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194630-D-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194630-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194756-1	TRIP BLANK_71	Total/NA	Water	8260D	
240-194756-2	MW-97S_110123	Total/NA	Water	8260D	
MB 240-594107/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594107/5	Lab Control Sample	Total/NA	Water	8260D	
240-194630-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194630-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_71
Lab Sample ID: 240-194756-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/09/23 18:57

Client Sample ID: MW-97S_110123
Lab Sample ID: 240-194756-2
Date Collected: 11/01/23 12:50
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594107	CDG	EET CLE	11/10/23 00:48
Total/NA	Analysis	8260D SIM		1	594018	MRL	EET CLE	11/09/23 15:55

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194756-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	TAT if different from below		Walk-in client
Phone: 248-994-2240	Sampler Name: Kent Kasper	10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_71	---	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-97S-110123	11/1/23	1250		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194756 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

SG 11/13/23

Sample Address: ~~11680 Boston Post~~ Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/2/23 1023		EETNC	11-3-23 800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194456
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Nancy Pyer

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194756

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194756-1
Sample date: 2023-11-01
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:2
Sample Matrices: Water and trip blank
Test Categories: VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 594107.

SURROGATE recoveries were outside of laboratory control limits biased HIGH for 1 of 1 surrogates in the tests/samples noted. Associated results were non-detect so were not affected by the high bias and qualification of results was not required. GCMS-SIM VOC sample -002.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Sincerely,

Jim Tomalia, Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194756-1

		Sample Name:	TRIP BLANK_71				MW-97S_110123			
		Lab Sample ID:	2401947561				2401947562			
		Sample Date:	11/1/2023				11/1/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194756-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52076R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194756-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_71	240-194756-1	Water	11/01/2023		X	
MW-97S_110123	240-194756-2	Water	11/01/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP Off-Site

Project Number: 30167538.402.04

PO # 30167538.402.04

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey

Telephone: 248-994-2240

Email: kristoffer.hinskey@arcadis.com

Sampler Name: Kent Kasper

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2240

Lab Contact: Mike DelMonico

Telephone: 330-497-9396

Analysis Turnaround Time

TAT if different from below

10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day

COC No: 1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite—C / Grab—G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_71	---	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-97S-110123	11/1/23	1250		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194756 Chain of Custody

Possible Hazard Identification

✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments: SG 11/13/23

Sample Address: ~~11650 Boston Post~~ Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/1/23 1700	Novi Cold Storage	Arcadis	11/1/23 1700
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETNC	11-3-23 800

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11/14/2023 7:33 AM

Client Sample ID: TRIP BLANK_71
Lab Sample ID: 240-194756-1
Date Collected: 11/01/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/09/23 18:57*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/23 18:57*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/09/23 18:57*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/09/23 18:57*	*1*

Client Sample ID: MW-97S_110123
Lab Sample ID: 240-194756-2
Date Collected: 11/01/23 12:50
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/09/23 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*151*	*S1+*	*66 - 120*		*11/09/23 15:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 00:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 00:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 00:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 00:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/10/23 00:48*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/10/23 00:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 00:48*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 00:48*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/15/2023 4:30:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194776-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/15/2023 4:30:20 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194776-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194776-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194776-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-194776-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194776-1	TRIP BLANK_7	Water	10/30/23 00:00	11/03/23 08:00
240-194776-2	MW-87_103023	Water	10/30/23 11:45	11/03/23 08:00
240-194776-3	MW-87S_103023	Water	10/30/23 13:00	11/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194776-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_7 — Lab Sample ID: 240-194776-1

No Detections.

Client Sample ID: MW-87_103023 — Lab Sample ID: 240-194776-2

No Detections.

Client Sample ID: MW-87S_103023 — Lab Sample ID: 240-194776-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

Client Sample ID: TRIP BLANK_7
Date Collected: 10/30/23 00:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194776-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 21:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 21:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 21:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 21:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 21:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/07/23 21:08*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/07/23 21:08*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/07/23 21:08*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 21:08*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

Client Sample ID: MW-87_103023
Date Collected: 10/30/23 11:45
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194776-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/13/23 21:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/23 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/23 19:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/23 19:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/23 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/08/23 19:32*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/08/23 19:32*	*1*
Toluene-d8 (Surr)	*82*		*78 - 122*		*11/08/23 19:32*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/08/23 19:32*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

Client Sample ID: MW-87S_103023
Date Collected: 10/30/23 13:00
Date Received: 11/03/23 08:00

Lab Sample ID: 240-194776-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 22:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 22:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/23 19:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/23 19:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/23 19:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/23 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/08/23 19:56*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/08/23 19:56*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/08/23 19:56*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/08/23 19:56*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194531-F-1 MSD	Matrix Spike Duplicate	97	99	101	100
240-194531-I-1 MS	Matrix Spike	103	97	97	97
240-194776-1	TRIP BLANK_7	101	93	90	95
240-194776-2	MW-87_103023	99	77	82	89
240-194776-2 MS	MW-87-MS_103023	92	90	89	90
240-194776-2 MSD	MW-87-MSD_103023	95	85	86	92
240-194776-3	MW-87S_103023	115	94	102	105
LCS 240-593723/4	Lab Control Sample	100	96	99	89
LCS 240-593917/5	Lab Control Sample	92	89	89	91
MB 240-593723/7	Method Blank	95	89	88	103
MB 240-593917/8	Method Blank	93	80	86	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-2	MW-87_103023	89
240-194776-2 MS	MW-87-MS_103023	85
240-194776-2 MSD	MW-87-MSD_103023	83
240-194776-3	MW-87S_103023	82
LCS 240-594455/3	Lab Control Sample	84
MB 240-594455/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-593723/7
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/07/23 12:58*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/07/23 12:58*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/07/23 12:58*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/07/23 12:58*	*1*

Lab Sample ID: LCS 240-593723/4
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.8		ug/L		107	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		92	77 - 123		
Tetrachloroethene			25.0	25.4		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	24.1		ug/L		96	75 - 124		
Trichloroethene			25.0	25.6		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.7		ug/L		111	56 - 135	16	26
cis-1,2-Dichloroethene	1.4		25.0	24.5		ug/L		92	66 - 128	12	14
Tetrachloroethene	15		25.0	42.6		ug/L		109	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	56 - 136	9	15
Trichloroethene	26		25.0	49.4		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.7		ug/L		86	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194531-F-1 MSD
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-194531-I-1 MS
Matrix: Water
Analysis Batch: 593723

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	21.8		ug/L		81	66 - 128
Tetrachloroethene	15		25.0	42.7		ug/L		110	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136
Trichloroethene	26		25.0	49.8		ug/L		96	61 - 124
Vinyl chloride	1.0	U	12.5	9.56		ug/L		76	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-593917/8
Matrix: Water
Analysis Batch: 593917

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/23 15:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/23 15:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 15:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/23 15:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 15:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/23 15:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/08/23 15:20*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/08/23 15:20*	*1*
Toluene-d8 (Surr)	*86*		*78 - 122*		*11/08/23 15:20*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/08/23 15:20*	*1*

Lab Sample ID: LCS 240-593917/5
Matrix: Water
Analysis Batch: 593917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.5		ug/L		106	63 - 134
cis-1,2-Dichloroethene	25.0	23.9		ug/L		96	77 - 123
Tetrachloroethene	25.0	25.3		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	24.9		ug/L		100	75 - 124
Trichloroethene	25.0	24.5		ug/L		98	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-593917/5
Matrix: Water
Analysis Batch: 593917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	12.1		ug/L		97	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-194776-2 MS
Matrix: Water
Analysis Batch: 593917

Client Sample ID: MW-87-MS_103023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128		
Tetrachloroethene	1.0	U	25.0	22.8		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 136		
Trichloroethene	1.0	U	25.0	24.3		ug/L		97	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-194776-2 MSD
Matrix: Water
Analysis Batch: 593917

Client Sample ID: MW-87-MSD_103023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	66 - 128	11	14
Tetrachloroethene	1.0	U	25.0	22.8		ug/L		91	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136	8	15
Trichloroethene	1.0	U	25.0	26.2		ug/L		105	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	11.4		ug/L		91	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*86*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: MW-87-MS_103023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: MW-87-MSD_103023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194776-1

GC/MS VOA

Analysis Batch: 593723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194776-1	TRIP BLANK_7	Total/NA	Water	8260D	
MB 240-593723/7	Method Blank	Total/NA	Water	8260D	
LCS 240-593723/4	Lab Control Sample	Total/NA	Water	8260D	
240-194531-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-194531-I-1 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 593917

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194776-2	MW-87_103023	Total/NA	Water	8260D	
240-194776-3	MW-87S_103023	Total/NA	Water	8260D	
MB 240-593917/8	Method Blank	Total/NA	Water	8260D	
LCS 240-593917/5	Lab Control Sample	Total/NA	Water	8260D	
240-194776-2 MS	MW-87-MS_103023	Total/NA	Water	8260D	
240-194776-2 MSD	MW-87-MSD_103023	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194776-2	MW-87_103023	Total/NA	Water	8260D SIM	
240-194776-3	MW-87S_103023	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-2 MS	MW-87-MS_103023	Total/NA	Water	8260D SIM	
240-194776-2 MSD	MW-87-MSD_103023	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194776-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_7
Lab Sample ID: 240-194776-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593723	LEE	EET CLE	11/07/23 21:08

Client Sample ID: MW-87_103023
Lab Sample ID: 240-194776-2
Date Collected: 10/30/23 11:45
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593917	MRL	EET CLE	11/08/23 19:32
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/13/23 21:29

Client Sample ID: MW-87S_103023
Lab Sample ID: 240-194776-3
Date Collected: 10/30/23 13:00
Matrix: Water
Date Received: 11/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	593917	MRL	EET CLE	11/08/23 19:56
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/13/23 22:41

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194776-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Samantha Szychulec	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04					
PO # 30167538.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_7	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-87_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-87-MS_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-87-MSD_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-87S_103023	10/30/23	1300		6						6					N	G	X	X	X	X	X	X	X	
~~MW-182S_103023~~	~~10/30/23~~			~~6~~						~~6~~					N	G	X	X	X	X	X	X	X	

240-194776 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples ar...): Return to Client / Disposal By Lab / Archive For ... Months

Special Instructions/QC Requirements & Comments:

Sample Address: Standish ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
[signature]	Arcadis	10/30/23 1751	NOVI cold storage	Arcadis	10/31/23 1751
[signature]	Arcadis	11/2/23 1023	[signature]	TESTA	11/2/23 1023
[signature]	TESTA	11/2/23 1023	Received in Laboratory by: [signature]	TESTAC	11-3-23 800

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11/15/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194476
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Nancy Pyle

Cooler Received on 11-3-23 Opened on 11-3-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1C Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194776

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.1	2.2	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	0.7	1.8	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 15, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194776-1
Sample date: 2023-10-30
Report received by CADENA: 2023-11-15
Initial Data Verification completed by CADENA: 2023-11-15
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194776-1

		Sample Name:	TRIP BLANK_7				MW-87_103023				MW-87S_103023			
		Lab Sample ID:	2401947761				2401947762				2401947763			
		Sample Date:	10/30/2023				10/30/2023				10/30/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194776-1

CADENA Verification Report: 2023-11-15

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52092R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194776-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_7	240-194776-1	Water	10/30/2023		X	
MW-87_103023	240-194776-2	Water	10/30/2023		X	X
MW-87S_103023	240-194776-3	Water	10/30/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_7	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-87_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-87-MS_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
✓ MW-87-MSD_103023	10/30/23	1145		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
✓ MW-87S_103023	10/30/23	1300		6						6					N	G	X	X	X	X	X	X	X	
~~MW-182S_103023~~	~~10/30/23~~			~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	

240-194776 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples ar... longer than ... month): Return to Client; ✓ Disposal By Lab; Archive For ... Months

Special Instructions/QC Requirements & Comments:

Sample Address: Standish ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	10/30/23 1751	Novi cold storage	Arcadis	10/31/23 1751
	Arcadis	11/2/23 1023		EETA	11/2/23 1023
	EETA	11/2/23 1023	Received in Laboratory by:	EETMC	11-3-23 800

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11/15/2023

Client Sample ID: TRIP BLANK_7
Lab Sample ID: 240-194776-1
Date Collected: 10/30/23 00:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/07/23 21:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/07/23 21:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 21:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/07/23 21:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/07/23 21:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/07/23 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/07/23 21:08*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/07/23 21:08*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/07/23 21:08*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/07/23 21:08*	*1*

Client Sample ID: MW-87_103023
Lab Sample ID: 240-194776-2
Date Collected: 10/30/23 11:45
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/13/23 21:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/23 19:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/23 19:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/23 19:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/23 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/08/23 19:32*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/08/23 19:32*	*1*
Toluene-d8 (Surr)	*82*		*78 - 122*		*11/08/23 19:32*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/08/23 19:32*	*1*

Client Sample ID: MW-87S_103023
Lab Sample ID: 240-194776-3
Date Collected: 10/30/23 13:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 22:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 22:41*	*1*

Client Sample ID: MW-87S_103023
Lab Sample ID: 240-194776-3

Date Collected: 10/30/23 13:00
Matrix: Water
Date Received: 11/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/08/23 19:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/08/23 19:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/08/23 19:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/08/23 19:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/08/23 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/08/23 19:56*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/08/23 19:56*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/08/23 19:56*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/08/23 19:56*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 5:28:23 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194827-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/16/2023 5:28:23 AM

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194827-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194827-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194827-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194827-1	TRIP BLANK_58	Water	11/02/23 00:00	11/04/23 08:00
240-194827-2	MW-79D_110223	Water	11/02/23 11:30	11/04/23 08:00
240-194827-3	DUP-12	Water	11/02/23 00:00	11/04/23 08:00
240-194827-4	MW-140S_110223	Water	11/02/23 13:55	11/04/23 08:00
240-194827-5	MW-141S_110223	Water	11/02/23 09:40	11/04/23 08:00
240-194827-6	MW-139S_110223	Water	11/02/23 15:05	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-194827-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_58 — Lab Sample ID: 240-194827-1

No Detections.

Client Sample ID: MW-79D_110223 — Lab Sample ID: 240-194827-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-12 — Lab Sample ID: 240-194827-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-140S_110223 — Lab Sample ID: 240-194827-4

No Detections.

Client Sample ID: MW-141S_110223 — Lab Sample ID: 240-194827-5

No Detections.

Client Sample ID: MW-139S_110223 — Lab Sample ID: 240-194827-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: TRIP BLANK_58
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194827-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/11/23 18:47*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/23 18:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/11/23 18:47*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:47*	*1*

Client: ARCADIS US Inc
Job ID: 240-194827-1
Project/Site: Ford LTP - Off Site

Client Sample ID: MW-79D_110223
Lab Sample ID: 240-194827-2
Date Collected: 11/02/23 11:30
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*11/14/23 01:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 23:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 23:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 23:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:21	1
Vinyl chloride	**2.0**		1.0	0.45	ug/L			11/11/23 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 23:21*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 23:21*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 23:21*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 23:21*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: DUP-12
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194827-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 02:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 23:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 23:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 23:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:46	1
Vinyl chloride	**2.0**		1.0	0.45	ug/L			11/11/23 23:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/11/23 23:46*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/11/23 23:46*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 23:46*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 23:46*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: MW-140S_110223
Date Collected: 11/02/23 13:55
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194827-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*11/14/23 21:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 20:05*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 20:05*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 20:05*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 20:05*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: MW-141S_110223
Date Collected: 11/02/23 09:40
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194827-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 02:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/14/23 02:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 15:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 15:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 15:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 15:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 15:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 15:48*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: MW-139S_110223
Date Collected: 11/02/23 15:05
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194827-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/14/23 03:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 16:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 16:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 16:13*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 16:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 16:13*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 16:13*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194809-C-1 MS	Matrix Spike	116	97	102	108
240-194809-D-1 MSD	Matrix Spike Duplicate	104	83	92	100
240-194827-1	TRIP BLANK_58	116	83	94	99
240-194827-2	MW-79D_110223	108	76	90	93
240-194827-3	DUP-12	111	74	89	95
240-194827-4	MW-140S_110223	105	78	100	97
240-194827-4 MS	MW-140S-MS_110223	96	91	104	98
240-194827-4 MSD	MW-140S-MSD_110223	97	91	104	97
240-194827-5	MW-141S_110223	101	80	100	97
240-194827-6	MW-139S_110223	101	79	101	96
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594284/5	Lab Control Sample	100	86	95	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594284/8	Method Blank	108	77	91	94
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194827-2	MW-79D_110223	86
240-194827-3	DUP-12	94
240-194827-4	MW-140S_110223	87
240-194827-4 MS	MW-140S-MS_110223	97
240-194827-4 MSD	MW-140S-MSD_110223	97
240-194827-5	MW-141S_110223	93
240-194827-6	MW-139S_110223	90
LCS 240-594455/3	Lab Control Sample	84
LCS 240-594613/3	Lab Control Sample	98
MB 240-594455/5	Method Blank	82
MB 240-594613/5	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594284/8
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 15:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 15:04*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/11/23 15:04*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/23 15:04*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 15:04*	*1*

Lab Sample ID: LCS 240-594284/5
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	30.3		ug/L		121	63 - 134		
cis-1,2-Dichloroethene			25.0	25.2		ug/L		101	77 - 123		
Tetrachloroethene			25.0	26.9		ug/L		108	76 - 123		
trans-1,2-Dichloroethene			25.0	26.8		ug/L		107	75 - 124		
Trichloroethene			25.0	25.9		ug/L		103	70 - 122		
Vinyl chloride			12.5	12.3		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	32.1		ug/L		128	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	25.7		ug/L		103	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	26.8		ug/L		107	56 - 136		
Trichloroethene	1.0	U	25.0	26.4		ug/L		106	61 - 124		
Vinyl chloride	1.0	U	12.5	10.2		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194809-C-1 MS
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-194809-D-1 MSD
Matrix: Water
Analysis Batch: 594284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	30.3		ug/L		121	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	66 - 128	8	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.1		ug/L		104	56 - 136	3	15
Trichloroethene	1.0	U	25.0	24.7		ug/L		99	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	12.6		ug/L		101	43 - 157	21	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	23.0		ug/L		92	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	10.7		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: MW-140S-MS_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136		
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: MW-140S-MSD_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.0		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			25.0	22.4		ug/L		90	77 - 123		
Tetrachloroethene			25.0	26.5		ug/L		106	76 - 123		
trans-1,2-Dichloroethene			25.0	23.4		ug/L		94	75 - 124		
Trichloroethene			25.0	24.0		ug/L		96	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		66 - 120

Lab Sample ID: 240-194776-N-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594455

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		66 - 120

Lab Sample ID: MB 240-594613/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594613

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		66 - 120		11/14/23 20:49	1

Lab Sample ID: LCS 240-594613/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594613

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: 240-194827-4 MS — **Client Sample ID: MW-140S-MS_110223**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594613

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 120

Lab Sample ID: 240-194827-4 MSD — **Client Sample ID: MW-140S-MSD_110223**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 594613

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-194827-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: MW-140S-MSD_110223
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

GC/MS VOA

Analysis Batch: 594284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194827-1	TRIP BLANK_58	Total/NA	Water	8260D	
240-194827-2	MW-79D_110223	Total/NA	Water	8260D	
240-194827-3	DUP-12	Total/NA	Water	8260D	
MB 240-594284/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594284/5	Lab Control Sample	Total/NA	Water	8260D	
240-194809-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-194809-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194827-4	MW-140S_110223	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-4 MS	MW-140S-MS_110223	Total/NA	Water	8260D	
240-194827-4 MSD	MW-140S-MSD_110223	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194827-5	MW-141S_110223	Total/NA	Water	8260D	
240-194827-6	MW-139S_110223	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194827-2	MW-79D_110223	Total/NA	Water	8260D SIM	
240-194827-3	DUP-12	Total/NA	Water	8260D SIM	
240-194827-5	MW-141S_110223	Total/NA	Water	8260D SIM	
240-194827-6	MW-139S_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194827-4	MW-140S_110223	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-4 MS	MW-140S-MS_110223	Total/NA	Water	8260D SIM	
240-194827-4 MSD	MW-140S-MSD_110223	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194827-1

Client Sample ID: TRIP BLANK_58
Lab Sample ID: 240-194827-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 18:47

Client Sample ID: MW-79D_110223
Lab Sample ID: 240-194827-2
Date Collected: 11/02/23 11:30
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 23:21
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 01:52

Client Sample ID: DUP-12
Lab Sample ID: 240-194827-3
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594284	TJL2	EET CLE	11/11/23 23:46
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 02:15

Client Sample ID: MW-140S_110223
Lab Sample ID: 240-194827-4
Date Collected: 11/02/23 13:55
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 20:05
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/14/23 21:13

Client Sample ID: MW-141S_110223
Lab Sample ID: 240-194827-5
Date Collected: 11/02/23 09:40
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 15:48
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 02:39

Client Sample ID: MW-139S_110223
Lab Sample ID: 240-194827-6
Date Collected: 11/02/23 15:05
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 16:13
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 03:03

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194827-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE EASTERN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_58	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79D-110223	11/2/23	1130 ~~1150~~		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-12	11/2/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-140S-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	
MW-140S-MS-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-140S-MSD-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-141S-110223	11/2/23	0940		6						6					N	G	X	X	X	X	X	X	X	
MW-139S-110223	11/2/23	1505		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may b
Return to Client ✓

Special Instructions/QC Requirements & Comments:
Sample Address: Boston Post ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

240-194827 Chain of Custody

MICHIGAN 190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/2/23 1800	Novi Cold Storage	Arcadis	11/02/23 1800
Sommer Hay	Arcadis	11/3/23 1245		EETA	11/3/23 1240
	EETA	11/3/23 12:45	Received in Laboratory by:	ET	11-4-23 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194827
Barberton Facility

Client Arcadis Site Name Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No	
-Were the seals on the outside of the cooler(s) signed & dated?	~~Yes~~ No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes ~~No~~	
-Were tamper/custody seals intact and uncompromised?	Yes No ~~NA~~	
3. Shippers' packing slip attached to the cooler(s)?	Yes ~~No~~	
4. Did custody papers accompany the sample(s)?	Yes No	
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No	
7. Did all bottles arrive in good condition (Unbroken)?	Yes No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes No	
11. Sufficient quantity received to perform indicated analyses?	Yes No	
12. Are these work share samples and all listed on the COC?	Yes No	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA	pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No	
17. Was a LL Hg or Me Hg trip blank present?	Yes No	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194827

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194827-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194827-1

		Sample Name:	TRIP BLANK_58				MW-79D_110223				DUP-12				MW-140S_110223				MW-141S_110223				MW-139S_110223			
		Lab Sample ID:	2401948271				2401948272				2401948273				2401948274				2401948275				2401948276			
		Sample Date:	11/2/2023				11/2/2023				11/2/2023				11/2/2023				11/2/2023				11/2/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	2.0	1.0	ug/l	---	2.0	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194827-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52100R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194827-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_58	240-194827-1	Water	11/02/2023		X	
MW-79D_110223	240-194827-2	Water	11/02/2023		X	X
DUP-12	240-194827-3	Water	11/02/2023	MW-79D_110223	X	X
MW-140S_110223	240-194827-4	Water	11/02/2023		X	X
MW-141S_110223	240-194827-5	Water	11/02/2023		X	X
MW-139S_110223	240-194827-6	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-79D_110223 / DUP-12	Vinyl chloride	2.0	2.0	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE EA R N NVIRONMENTA TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Kent Kasper	TAT if different from below: 10 day ✓ 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 58	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79D-110223	11/2/23	1130 ~~1150~~		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-12	11/2/23	—		6						6					N	G	X	X	X	X	X	X	X	
MW-140S-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	
MW-140S-MS-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-140S-MSD-110223	11/2/23	1355		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-141S-110223	11/2/23	0940		6						6					N	G	X	X	X	X	X	X	X	
MW-139S-110223	11/2/23	1505		6						6					N	G	X	X	X	X	X	X	X	

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Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may b
Return to Client ✓

Special Instructions/QC Requirements & Comments:
Sample Address: Boston Post ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

240-194827 Chain of Custody

MICHIGAN 190

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/2/23 1800	Novi Cold Storage	Arcadis	11/02/23 1800
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sammel Ley	Arcadis	11/3/23 1245		EEA	11/3/23 1240
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/3/23 1245		ET	11-4-23 800

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11/16/2023

Client Sample ID: TRIP BLANK_58
Lab Sample ID: 240-194827-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/11/23 18:47*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/23 18:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/11/23 18:47*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:47*	*1*

Client Sample ID: MW-79D_110223
Lab Sample ID: 240-194827-2
Date Collected: 11/02/23 11:30
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*11/14/23 01:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 23:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 23:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 23:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:21	1
Vinyl chloride	**2.0**		1.0	0.45	ug/L			11/11/23 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/11/23 23:21*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 23:21*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/23 23:21*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/23 23:21*	*1*

Client Sample ID: DUP-12
Lab Sample ID: 240-194827-3
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 02:15*	*1*

Client Sample ID: DUP-12
Lab Sample ID: 240-194827-3
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 23:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 23:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 23:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 23:46	1
Vinyl chloride	**2.0**		1.0	0.45	ug/L			11/11/23 23:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/11/23 23:46*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/11/23 23:46*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*11/11/23 23:46*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/23 23:46*	*1*

Client Sample ID: MW-140S_110223
Lab Sample ID: 240-194827-4
Date Collected: 11/02/23 13:55
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*11/14/23 21:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 20:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 20:05*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 20:05*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 20:05*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 20:05*	*1*

Client Sample ID: MW-141S_110223
Lab Sample ID: 240-194827-5
Date Collected: 11/02/23 09:40
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 02:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/14/23 02:39*	*1*

Client Sample ID: MW-141S_110223
Lab Sample ID: 240-194827-5

Date Collected: 11/02/23 09:40
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 15:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 15:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 15:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 15:48*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 15:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 15:48*	*1*

Client Sample ID: MW-139S_110223
Lab Sample ID: 240-194827-6

Date Collected: 11/02/23 15:05
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*11/14/23 03:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 16:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 16:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 16:13*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 16:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 16:13*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/13/23 16:13*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 2:26:18 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194828-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194828-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194828-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194828-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/4/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6°C and 2.9°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-594278 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194828-1	TRIP BLANK_22	Water	11/02/23 00:00	11/04/23 08:00
240-194828-2	MW-84S_110223	Water	11/02/23 09:44	11/04/23 08:00
240-194828-3	MW-84_110223	Water	11/02/23 10:33	11/04/23 08:00
240-194828-4	MW-132S_110223	Water	11/02/23 12:11	11/04/23 08:00
240-194828-5	MW-131S_110223	Water	11/02/23 13:10	11/04/23 08:00
240-194828-6	MW-75SR_110223	Water	11/02/23 14:48	11/04/23 08:00
240-194828-7	DUP-15	Water	11/02/23 00:00	11/04/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: TRIP BLANK_22 — Lab Sample ID: 240-194828-1

No Detections.

Client Sample ID: MW-84S_110223 — Lab Sample ID: 240-194828-2

No Detections.

Client Sample ID: MW-84_110223 — Lab Sample ID: 240-194828-3

No Detections.

Client Sample ID: MW-132S_110223 — Lab Sample ID: 240-194828-4

No Detections.

Client Sample ID: MW-131S_110223 — Lab Sample ID: 240-194828-5

No Detections.

Client Sample ID: MW-75SR_110223 — Lab Sample ID: 240-194828-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.83	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-15 — Lab Sample ID: 240-194828-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.46	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: TRIP BLANK_22

Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 17:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 17:46*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/23 17:46*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 17:46*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 17:46*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: MW-84S_110223
Date Collected: 11/02/23 09:44
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 03:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 18:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 18:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 18:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 18:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 18:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/10/23 18:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/10/23 18:37*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 18:37*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 18:37*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: MW-84_110223
Date Collected: 11/02/23 10:33
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/16/23 01:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/11/23 17:30*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/11/23 17:30*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 17:30*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 17:30*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: MW-132S_110223
Date Collected: 11/02/23 12:11
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 03:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/10/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/23 19:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 19:28*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/23 19:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: MW-131S_110223
Date Collected: 11/02/23 13:10
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 04:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/14/23 04:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/10/23 19:53*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/23 19:53*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 19:53*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 19:53*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: MW-75SR_110223
Date Collected: 11/02/23 14:48
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/14/23 04:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 20:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 20:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 20:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:18	1
Vinyl chloride	**0.83**	**J**	1.0	0.45	ug/L			11/10/23 20:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/10/23 20:18*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/23 20:18*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 20:18*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 20:18*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: DUP-15
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-7
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/14/23 22:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 20:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 20:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 20:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:44	1
Vinyl chloride	**0.46**	**J**	1.0	0.45	ug/L			11/10/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 20:44*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/10/23 20:44*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 20:44*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 20:44*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194828-1	TRIP BLANK_22	98	102	102	96
240-194828-2	MW-84S_110223	95	98	100	94
240-194828-3	MW-84_110223	94	95	101	94
240-194828-3 MS	MW-84-MS_110223	91	100	103	93
240-194828-3 MSD	MW-84-MSD_110223	92	100	102	93
240-194828-4	MW-132S_110223	97	99	101	95
240-194828-5	MW-131S_110223	97	101	102	96
240-194828-6	MW-75SR_110223	100	102	100	96
240-194828-7	DUP-15	98	97	100	96
LCS 240-594227/5	Lab Control Sample	96	103	106	97
LCS 240-594278/5	Lab Control Sample	92	99	102	94
MB 240-594227/9	Method Blank	96	101	101	94
MB 240-594278/9	Method Blank	93	92	101	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194776-H-2 MS	Matrix Spike	85
240-194776-N-2 MSD	Matrix Spike Duplicate	83
240-194827-L-4 MS	Matrix Spike	97
240-194827-R-4 MSD	Matrix Spike Duplicate	97
240-194828-2	MW-84S_110223	94
240-194828-3	MW-84_110223	89
240-194828-3 MS	MW-84-MS_110223	96
240-194828-3 MSD	MW-84-MSD_110223	97
240-194828-4	MW-132S_110223	94
240-194828-5	MW-131S_110223	93
240-194828-6	MW-75SR_110223	97
240-194828-7	DUP-15	100
LCS 240-594455/3	Lab Control Sample	84
LCS 240-594613/3	Lab Control Sample	98
LCS 240-594782/13	Lab Control Sample	85
MB 240-594455/5	Method Blank	82
MB 240-594613/5	Method Blank	102
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594227/9
Matrix: Water
Analysis Batch: 594227

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 15:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 15:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 15:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 15:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/10/23 15:13*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/23 15:13*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 15:13*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 15:13*	*1*

Lab Sample ID: LCS 240-594227/5
Matrix: Water
Analysis Batch: 594227

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	23.3		ug/L		116	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	21.5		ug/L		107	76 - 123
trans-1,2-Dichloroethene	20.0	21.1		ug/L		105	75 - 124
Trichloroethene	20.0	19.7		ug/L		99	70 - 122
Vinyl chloride	20.0	21.8		ug/L		109	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594278/9
Matrix: Water
Analysis Batch: 594278

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 12:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 12:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 12:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 12:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 12:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/11/23 12:50*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/11/23 12:50*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 12:50*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-594278/9
Matrix: Water
Analysis Batch: 594278

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	92		73 - 120		11/11/23 12:50	1

Lab Sample ID: LCS 240-594278/5
Matrix: Water
Analysis Batch: 594278

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	20.3		ug/L		101	76 - 123
trans-1,2-Dichloroethene	20.0	20.1		ug/L		100	75 - 124
Trichloroethene	20.0	18.5		ug/L		93	70 - 122
Vinyl chloride	20.0	21.5		ug/L		107	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	102		78 - 122
Dibromofluoromethane (Surr)	94		73 - 120

Lab Sample ID: 240-194828-3 MS
Matrix: Water
Analysis Batch: 594278

Client Sample ID: MW-84-MS_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	20.8		ug/L		104	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124
Vinyl chloride	1.0	U	20.0	20.3		ug/L		102	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-194828-3 MSD
Matrix: Water
Analysis Batch: 594278

Client Sample ID: MW-84-MSD_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.5		ug/L		103	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		89	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		94	56 - 136	0	15
Trichloroethene	1.0	U	20.0	17.3		ug/L		87	61 - 124	1	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194828-3 MSD
Matrix: Water
Analysis Batch: 594278

Client Sample ID: MW-84-MSD_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	1.0	U	20.0	20.2		ug/L		101	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594455/5
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/23 21:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/13/23 21:06*	*1*

Lab Sample ID: LCS 240-594455/3
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-194776-H-2 MS
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.77		ug/L		98	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-194776-N-2 MSD
Matrix: Water
Analysis Batch: 594455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		66 - 120

Lab Sample ID: MB 240-594613/5
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		66 - 120		11/14/23 20:49	1

Lab Sample ID: LCS 240-594613/3
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: 240-194827-L-4 MS
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 120

Lab Sample ID: 240-194827-R-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: MW-84-MS_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: MW-84-MSD_110223
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

GC/MS VOA

Analysis Batch: 594227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194828-1	TRIP BLANK_22	Total/NA	Water	8260D	
240-194828-2	MW-84S_110223	Total/NA	Water	8260D	
240-194828-4	MW-132S_110223	Total/NA	Water	8260D	
240-194828-5	MW-131S_110223	Total/NA	Water	8260D	
240-194828-6	MW-75SR_110223	Total/NA	Water	8260D	
240-194828-7	DUP-15	Total/NA	Water	8260D	
MB 240-594227/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594227/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 594278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194828-3	MW-84_110223	Total/NA	Water	8260D	
MB 240-594278/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594278/5	Lab Control Sample	Total/NA	Water	8260D	
240-194828-3 MS	MW-84-MS_110223	Total/NA	Water	8260D	
240-194828-3 MSD	MW-84-MSD_110223	Total/NA	Water	8260D	

Analysis Batch: 594455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194828-2	MW-84S_110223	Total/NA	Water	8260D SIM	
240-194828-4	MW-132S_110223	Total/NA	Water	8260D SIM	
240-194828-5	MW-131S_110223	Total/NA	Water	8260D SIM	
240-194828-6	MW-75SR_110223	Total/NA	Water	8260D SIM	
MB 240-594455/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594455/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194776-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194776-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194828-7	DUP-15	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-L-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194827-R-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194828-3	MW-84_110223	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-3 MS	MW-84-MS_110223	Total/NA	Water	8260D SIM	
240-194828-3 MSD	MW-84-MSD_110223	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: TRIP BLANK_22
Lab Sample ID: 240-194828-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 17:46

Client Sample ID: MW-84S_110223
Lab Sample ID: 240-194828-2
Date Collected: 11/02/23 09:44
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 18:37
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 03:27

Client Sample ID: MW-84_110223
Lab Sample ID: 240-194828-3
Date Collected: 11/02/23 10:33
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594278	AJS	EET CLE	11/11/23 17:30
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 01:29

Client Sample ID: MW-132S_110223
Lab Sample ID: 240-194828-4
Date Collected: 11/02/23 12:11
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 19:28
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 03:51

Client Sample ID: MW-131S_110223
Lab Sample ID: 240-194828-5
Date Collected: 11/02/23 13:10
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 19:53
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 04:15

Client Sample ID: MW-75SR_110223
Lab Sample ID: 240-194828-6
Date Collected: 11/02/23 14:48
Matrix: Water
Date Received: 11/04/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 20:18
Total/NA	Analysis	8260D SIM		1	594455	CS	EET CLE	11/14/23 04:39

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194828-1

Client Sample ID: DUP-15

Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594227	AJS	EET CLE	11/10/23 20:44
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/14/23 22:24

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194828-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_22	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84S_110223	11/2/23	0944		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-84_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	
MW-84-MS_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-84-MSD_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-132S_110223	11/2/23	1211		6						6					N	G	X	X	X	X	X	X	X	
MW-131S_110223	11/2/23	1310		6						6					N	G	X	X	X	X	X	X	X	
MW-75SR_110223	11/2/23	1448		6						6					N	G	X	X	X	X	X	X	X	
DUP-15	11/2/23	—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Beacon ROW + Rosati Ave ROW + Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

240-194828 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/3/23 1245		EEH	11/3/23 12:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	EEA	11/3/23 12:45		ET	11-4-23 800
Relinquished by	Company:	Date/Time	Received in Laboratory by:	Company:	Date/Time:

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 194828

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-4-23 Opened on 11-4-23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	Yes No	Tests that are not checked for pH by Receiving: VOAs Oil and Grease TOC
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No	
-Were tamper/custody seals intact and uncompromised?	Yes No NA	
3. Shippers' packing slip attached to the cooler(s)?	Yes No	
4. Did custody papers accompany the sample(s)?	Yes No	
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No	
7. Did all bottles arrive in good condition (Unbroken)?	Yes No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes No	
11. Sufficient quantity received to perform indicated analyses?	Yes No	
12. Are these work share samples and all listed on the COC?	Yes No	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA	pH Strip Lot# HC316719
14. Were VOAs on the COC?	Yes No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No	
17. Was a LL Hg or Me Hg trip blank present?	Yes No	

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 194828

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
2 EC Client Box Other	IR GUN #: 22	1.5	2.6	Wet Ice Blue Ice Dry Ice Water None
2 EC Client Box Other	IR GUN #:	1.8	2.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:	

DATA VERIFICATION REPORT

November 20, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194828-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-20
Initial Data Verification completed by CADENA: 2023-11-20
Number of Samples:7
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194828-1

		Sample Name:	TRIP BLANK_22				MW-84S_110223				MW-84_110223				MW-132S_110223				MW-131S_110223				MW-75SR_110223				DUP-15			
		Lab Sample ID:	2401948281				2401948282				2401948283				2401948284				2401948285				2401948286				2401948287			
		Sample Date:	11/2/2023				11/2/2023				11/2/2023				11/2/2023				11/2/2023				11/2/2023				11/2/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
OSW-8260D																														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.83	1.0	ug/l	J	0.46	1.0	ug/l	J
OSW-8260DSIM																														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194828-1

CADENA Verification Report: 2023-11-20

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52122R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194828-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_22	240-194828-1	Water	11/02/2023		X	
MW-84S_110223	240-194828-2	Water	11/02/2023		X	X
MW-84_110223	240-194828-3	Water	11/02/2023		X	X
MW-132S_110223	240-194828-4	Water	11/02/2023		X	X
MW-131S_110223	240-194828-5	Water	11/02/2023		X	X
MW-75SR_110223	240-194828-6	Water	11/02/2023		X	X
DUP-15	240-194828-7	Water	11/02/2023	MW-131S_110223	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
MW-84_110223	Continuing Calibration Verification %D	Vinyl chloride	+26.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-131S_110223 / DUP-15	Vinyl chloride	1.0 U	0.46 J	AC

Notes:

AC	Acceptable
U	Not detected

The results between the parent sample and field duplicate were acceptable.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis			
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Project Name: Ford LTP Off-Site	Sampler Name: Sommer Guy	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day	For lab use only: Walk-in client; Lab sampling
Project Number: 30167538.402.04	Method of Shipment/Carrier:		Job/SDG No:
PO # 30167538.402.04	Shipping/Tracking No:		

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_22	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84S_110223	11/2/23	0944		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-84_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	
MW-84-MS_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-84-MSD_110223	11/2/23	1033		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-132S_110223	11/2/23	1211		6						6					N	G	X	X	X	X	X	X	X	
MW-131S_110223	11/2/23	1310		6						6					N	G	X	X	X	X	X	X	X	
MW-75SR_110223	11/2/23	1448		6						6					N	G	X	X	X	X	X	X	X	
DUP-15	11/2/23	—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than): Return to Client / ✓ Disposal By Lab / Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon ROW + Rosati Ave ROW + Belden Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

240-194828 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/3/23 1245		EETH	11/3/23 12:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	EETA	11/3/23 12:45		ET	11-4-23 800
Relinquished by	Company:	Date/Time	Received in Laboratory by:	Company:	Date/Time:

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MICHIGAN

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11/20/2023

Client Sample ID: TRIP BLANK_22
Lab Sample ID: 240-194828-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 17:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 17:46*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/23 17:46*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 17:46*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 17:46*	*1*

Client Sample ID: MW-84S_110223
Lab Sample ID: 240-194828-2
Date Collected: 11/02/23 09:44
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 03:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 18:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 18:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 18:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 18:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 18:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/10/23 18:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/10/23 18:37*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 18:37*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/23 18:37*	*1*

Client Sample ID: MW-84_110223
Lab Sample ID: 240-194828-3
Date Collected: 11/02/23 10:33
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*11/16/23 01:29*	*1*

Client Sample ID: MW-84_110223
Lab Sample ID: 240-194828-3
Date Collected: 11/02/23 10:33
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:30	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/11/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/11/23 17:30*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/11/23 17:30*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 17:30*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/23 17:30*	*1*

Client Sample ID: MW-132S_110223
Lab Sample ID: 240-194828-4
Date Collected: 11/02/23 12:11
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 03:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/14/23 03:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/10/23 19:28*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/23 19:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 19:28*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/23 19:28*	*1*

Client Sample ID: MW-131S_110223
Lab Sample ID: 240-194828-5
Date Collected: 11/02/23 13:10
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 04:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/14/23 04:15*	*1*

Client Sample ID: MW-131S_110223
Lab Sample ID: 240-194828-5
Date Collected: 11/02/23 13:10
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 19:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/10/23 19:53*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/23 19:53*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/10/23 19:53*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 19:53*	*1*

Client Sample ID: MW-75SR_110223
Lab Sample ID: 240-194828-6
Date Collected: 11/02/23 14:48
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/14/23 04:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 20:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 20:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 20:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:18	1
Vinyl chloride	**0.83**	**J**	1.0	0.45	ug/L			11/10/23 20:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/10/23 20:18*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/23 20:18*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 20:18*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 20:18*	*1*

Client Sample ID: DUP-15
Lab Sample ID: 240-194828-7
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/04/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/14/23 22:24*	*1*

Client Sample ID: DUP-15
Date Collected: 11/02/23 00:00
Date Received: 11/04/23 08:00

Lab Sample ID: 240-194828-7
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 20:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 20:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 20:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 20:44	1
Vinyl chloride	**0.46**	**J**	1.0	0.45	ug/L			11/10/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/10/23 20:44*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/10/23 20:44*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 20:44*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/23 20:44*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/16/2023 5:29:28 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194986-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194986-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Job ID: 240-194986-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194986-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-79SR_110323 (240-194986-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194986-1	TRIP BLANK_72	Water	11/03/23 00:00	11/08/23 08:00
240-194986-2	MW-79SR_110323	Water	11/03/23 10:10	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Client Sample ID: TRIP BLANK_72 — Lab Sample ID: 240-194986-1

No Detections.

Client Sample ID: MW-79SR_110323 — Lab Sample ID: 240-194986-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Client Sample ID: TRIP BLANK_72
Date Collected: 11/03/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194986-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*131*		*62 - 137*		*11/10/23 13:25*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 13:25*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 13:25*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 13:25*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Client Sample ID: MW-79SR_110323
Date Collected: 11/03/23 10:10
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194986-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*11/14/23 23:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:10	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/10/23 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/10/23 17:10*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/10/23 17:10*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 17:10*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/10/23 17:10*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194986-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194730-B-3 MS	Matrix Spike	101	85	91	92
240-194730-B-3 MSD	Matrix Spike Duplicate	103	84	89	98
240-194986-1	TRIP BLANK_72	131	87	100	112
240-194986-2	MW-79SR_110323	111	75	90	97
LCS 240-594169/5	Lab Control Sample	100	82	89	93
MB 240-594169/8	Method Blank	118	88	101	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194827-L-4 MS	Matrix Spike	97
240-194827-R-4 MSD	Matrix Spike Duplicate	97
240-194986-2	MW-79SR_110323	88
LCS 240-594613/3	Lab Control Sample	98
MB 240-594613/5	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594169/8
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 11:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 11:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 11:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 11:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*11/10/23 11:20*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/10/23 11:20*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/10/23 11:20*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/10/23 11:20*	*1*

Lab Sample ID: LCS 240-594169/5
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	27.5		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			25.0	25.1		ug/L		101	77 - 123		
Tetrachloroethene			25.0	25.6		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			25.0	25.9		ug/L		104	75 - 124		
Trichloroethene			25.0	25.1		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.2		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	5.0	U	125	134		ug/L		107	56 - 135		
cis-1,2-Dichloroethene	130		125	228		ug/L		80	66 - 128		
Tetrachloroethene	5.0	U	125	114		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	5.0	U	125	119		ug/L		95	56 - 136		
Trichloroethene	56		125	162		ug/L		84	61 - 124		
Vinyl chloride	5.0	U	62.5	57.9		ug/L		93	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194730-B-3 MS
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-194730-B-3 MSD
Matrix: Water
Analysis Batch: 594169

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	5.0	U	125	141		ug/L		113	56 - 135	5	26
cis-1,2-Dichloroethene	130		125	240		ug/L		90	66 - 128	5	14
Tetrachloroethene	5.0	U	125	111		ug/L		89	62 - 131	3	20
trans-1,2-Dichloroethene	5.0	U	125	125		ug/L		100	56 - 136	5	15
Trichloroethene	56		125	177		ug/L		96	61 - 124	9	15
Vinyl chloride	5.0	U	62.5	60.8		ug/L		97	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594613/5
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 20:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/14/23 20:49*	*1*

Lab Sample ID: LCS 240-594613/3
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-194827-L-4 MS
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-194827-R-4 MSD
Matrix: Water
Analysis Batch: 594613

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194986-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194986-1	TRIP BLANK_72	Total/NA	Water	8260D	
240-194986-2	MW-79SR_110323	Total/NA	Water	8260D	
MB 240-594169/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594169/5	Lab Control Sample	Total/NA	Water	8260D	
240-194730-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-194730-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194986-2	MW-79SR_110323	Total/NA	Water	8260D SIM	
MB 240-594613/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594613/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194827-L-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194827-R-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194986-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_72
Lab Sample ID: 240-194986-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 13:25

Client Sample ID: MW-79SR_110323
Lab Sample ID: 240-194986-2
Date Collected: 11/03/23 10:10
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594169	TJL2	EET CLE	11/10/23 17:10
Total/NA	Analysis	8260D SIM		1	594613	CS	EET CLE	11/14/23 23:59

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194986-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2013-1

Chain of Custody Record

MICHIGAN 190 TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_72	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79SR_110323	11/03/23	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194986 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Alaina Pitera	Company: Arcadis	Date/Time: 11/03/23 1500	Received by: NOVI cold storage	Company: Arcadis	Date/Time: 11/03/23 1500
Relinquished by: Jammer Day	Company: Arcadis	Date/Time: 11/7/23 1350	Received by:	Company: FEDEX	Date/Time: 11/7/23 1350
Relinquished by:	Company: FEDEX	Date/Time: 11/7/23 1400	Received in Laboratory by: Rochelle Hurd	Company: BETMC	Date/Time: 11-8-23 800

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11/16/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194986
Barberton Facility

Client Arcadis Site Name Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 16, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194986-1
Sample date: 2023-11-03
Report received by CADENA: 2023-11-16
Initial Data Verification completed by CADENA: 2023-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected or UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194986-1

Sample Name: MW-79SR_110323
Lab Sample ID: 2401949862
Sample Date: 11/3/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	1.5	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194986-1

		Sample Name:	TRIP BLANK_72				MW-79SR_110323			
		Lab Sample ID:	2401949861				2401949862			
		Sample Date:	11/3/2023				11/3/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.5	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194986-1

CADENA Verification Report: 2023-11-16

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52101R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194986-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_72	240-194986-1	Water	11/03/2023		X	
MW-79SR_110323	240-194986-2	Water	11/03/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-79SR_110323 (240-194986-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 05, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 11, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

2013-1

Chain of Custody Record

MICHIGAN 190 TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac)2 NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_72	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79SR_110323	11/03/23	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-194986 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/03/23 1500	Novi Cold Storage	Arcadis	11/03/23 1500
Jammer Day	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Curcio	EDTNL	11-8-23 800

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11/16/2023

Client Sample ID: TRIP BLANK_72
Lab Sample ID: 240-194986-1
Date Collected: 11/03/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/23 13:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 13:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 13:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 13:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/23 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*131*		*62 - 137*		*11/10/23 13:25*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/10/23 13:25*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/23 13:25*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/10/23 13:25*	*1*

Client Sample ID: MW-79SR_110323
Lab Sample ID: 240-194986-2
Date Collected: 11/03/23 10:10
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/23 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*11/14/23 23:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/10/23 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/23 17:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/23 17:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/23 17:10	1
Vinyl chloride	**1.5**	J	1.0	0.45	ug/L			11/10/23 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/10/23 17:10*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/10/23 17:10*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/10/23 17:10*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/10/23 17:10*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:29:06 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-194997-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-194997-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-194997-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-194997-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-85_110223 (240-194997-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194997-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194997-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194997-1	TRIP BLANK_51	Water	11/02/23 00:00	11/08/23 08:00
240-194997-2	MW-85_110223	Water	11/02/23 15:40	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194997-1

Client Sample ID: TRIP BLANK_51 — Lab Sample ID: 240-194997-1

No Detections.

Client Sample ID: MW-85_110223 — Lab Sample ID: 240-194997-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194997-1

Client Sample ID: TRIP BLANK_51
Date Collected: 11/02/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194997-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/11/23 17:35*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 17:35*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 17:35*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 17:35*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-194997-1

Client Sample ID: MW-85_110223
Date Collected: 11/02/23 15:40
Date Received: 11/08/23 08:00

Lab Sample ID: 240-194997-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/16/23 03:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:38	1
Vinyl chloride	**3.7**		1.0	0.45	ug/L			11/13/23 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 16:38*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 16:38*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 16:38*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 16:38*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-194997-1
Project/Site: Ford LTP - Off Site

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-194997-1	TRIP BLANK_51	104	78	100	97
240-194997-2	MW-85_110223	104	80	101	98
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-194997-2	MW-85_110223	93
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	23.0		ug/L		92	77 - 123
Tetrachloroethene	25.0	27.1		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122
Vinyl chloride	12.5	10.7		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-194997-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194997-1	TRIP BLANK_51	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194997-2	MW-85_110223	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194997-2	MW-85_110223	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-194997-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_51
Lab Sample ID: 240-194997-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 17:35

Client Sample ID: MW-85_110223
Lab Sample ID: 240-194997-2
Date Collected: 11/02/23 15:40
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 16:38
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 03:04

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-194997-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alana Phera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP ~~On-Site~~ offsite SG	Method of Shipment/Carrier:			Lab sampling
Project Number: 30167538 ~~401.03~~ 402.04 SG	Shipping/Tracking No:			Job/SDG No:
PO # 30167538 ~~401.03~~ 402.04 SG				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_51	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-85_110223	11/02/23	1540		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample adress: Rosati Ave ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Phera	Arcadis	11/02/23 1600	Novi cold storage	Arcadis	11/03/23 1500
Relinquished by: Sammer Key	Company: Arcadis	Date/Time: 11/7/23 1350	Received by:	Company: FEDEX	Date/Time: 11/7/23 1350
Relinquished by:	Company: FEDEX	Date/Time: 11/7/23 1400	Received in Laboratory by: Ronelle Hanks	Company: TA	Date/Time: 11/8/23 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 194997
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8 23 Opened on 11-8 23

Cooler unpacked by: Rachelle Hadet

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 194997-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194997-1

Sample Name: MW-85_110223
Lab Sample ID: 2401949972
Sample Date: 11/2/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	3.7	1.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 194997-1

		Sample Name:	TRIP BLANK_51				MW-85_110223			
		Lab Sample ID:	2401949971				2401949972			
		Sample Date:	11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.7	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-194997-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52123R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194997-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_51	240-194997-1	Water	11/02/2023		X	
MW-85_110223	240-194997-2	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-85_110223 (240-194997-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

20131

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Alana Phera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240		Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP ~~On Site~~ offsite SG		Shipping/Tracking No:			
Project Number: 30167538 ~~401.03~~ 402.04 SG					
PO # 30167538 ~~401.03~~ 402.04 SG					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	$ZnAc/NaOH$	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_51	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-85_110223	11/02/23	1540		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-194997 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample adress: Rosati Ave ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Phera	Arcadis	11/02/23 1600	Novi cold storage	Arcadis	11/03/23 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sammer Key	Arcadis	11/7/23 1350			11/7/23 1351
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/7/23 1400	Rachelle Hamlet	TETNC	11/8/23 800

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11/21/2023

Client Sample ID: TRIP BLANK_51
Lab Sample ID: 240-194997-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 17:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 17:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 17:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 17:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/11/23 17:35*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 17:35*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 17:35*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/23 17:35*	*1*

Client Sample ID: MW-85_110223
Lab Sample ID: 240-194997-2
Date Collected: 11/02/23 15:40
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 03:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*11/16/23 03:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 16:38	1
Vinyl chloride	**3.7**	J	1.0	0.45	ug/L			11/13/23 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 16:38*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 16:38*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 16:38*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 16:38*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:32:11 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195004-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195004-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195004-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-77_110223 (240-195004-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195004-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195004-1	TRIP BLANK_54	Water	11/02/23 00:00	11/08/23 08:00
240-195004-2	MW-77_110223	Water	11/02/23 10:30	11/08/23 08:00
240-195004-3	MW-77S_110223	Water	11/02/23 12:10	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_54 — Lab Sample ID: 240-195004-1

No Detections.

Client Sample ID: MW-77_110223 — Lab Sample ID: 240-195004-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.69	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-77S_110223 — Lab Sample ID: 240-195004-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195004-1

Client Sample ID: TRIP BLANK_54
Date Collected: 11/02/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195004-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 18:25*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 18:25*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 18:25*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:25*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195004-1

Client Sample ID: MW-77_110223
Date Collected: 11/02/23 10:30
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195004-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/16/23 05:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 20:24	1
cis-1,2-Dichloroethene	**0.69**	**J**	1.0	0.46	ug/L			11/13/23 20:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 20:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 20:24*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/13/23 20:24*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 20:24*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 20:24*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195004-1

Client Sample ID: MW-77S_110223
Date Collected: 11/02/23 12:10
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195004-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/16/23 05:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 20:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 20:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 20:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 20:49*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 20:49*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 20:49*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 20:49*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-195004-1	TRIP BLANK_54	106	78	101	99
240-195004-2	MW-77_110223	104	77	100	98
240-195004-3	MW-77S_110223	101	79	99	97
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195004-2	MW-77_110223	100
240-195004-3	MW-77S_110223	96
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			25.0	23.0		ug/L		92	77 - 123		
Tetrachloroethene			25.0	27.1		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			25.0	23.9		ug/L		96	75 - 124		
Trichloroethene			25.0	23.9		ug/L		96	70 - 122		
Vinyl chloride			12.5	10.7		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136		
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195004-1	TRIP BLANK_54	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195004-2	MW-77_110223	Total/NA	Water	8260D	
240-195004-3	MW-77S_110223	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195004-2	MW-77_110223	Total/NA	Water	8260D SIM	
240-195004-3	MW-77S_110223	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_54
Lab Sample ID: 240-195004-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 18:25

Client Sample ID: MW-77_110223
Lab Sample ID: 240-195004-2
Date Collected: 11/02/23 10:30
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 20:24
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 05:03

Client Sample ID: MW-77S_110223
Lab Sample ID: 240-195004-3
Date Collected: 11/02/23 12:10
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 20:49
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 05:27

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195004-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP ~~On Site~~ offsite SG

Project Number: 30167538.~~401.03~~ 402.04 SG

PO # 30167538.~~401.03~~ 402.04 SG

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Project Manager: Kris Hinskey

Telephone: 248-994-2240

Email: kristoffer.hinskey@arcadis.com

Sampler Name: Alaina Piterci

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2240

Lab Contact: Mike DelMonico

Telephone: 330-497-9396

Analysis Turnaround Time

TAT if different from below

10 day

☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

COC No:

1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 54	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-77_110223	11/02/23	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-77S_110223	11/02/23	1210		6						6					N	G	X	X	X	X	X	X	X	1

240-195004 Chain of Custody

Possible Hazard Identification

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample address: Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Piterci	Arcadis	11/02/23 1600	Novi Cold Storage	Arcadis	11/03/23 1500
Jennifer Hey	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1400	Received in Laboratory by: Rachelle Hunt	TESTAC	11-8-23 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** 195004
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8 23 Opened on 11-8 23

Cooler unpacked by: Rachelle Hadet

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195004-1
Sample date: 2023-11-02
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195004-1

Sample Name: MW-77_110223
Lab Sample ID: 2401950042
Sample Date: 11/2/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	0.69	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195004-1

		Sample Name:	TRIP BLANK_54				MW-77_110223				MW-77S_110223			
		Lab Sample ID:	2401950041				2401950042				2401950043			
		Sample Date:	11/2/2023				11/2/2023				11/2/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.69	1.0	ug/l	J	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195004-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52127R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195004-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_54	240-195004-1	Water	11/02/2023		X	
MW-77_110223	240-195004-2	Water	11/02/2023		X	X
MW-77S_110223	240-195004-3	Water	11/02/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-77_110223 (240-195004-2). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

DATA REVIEW

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190 | 20|31 | **Chain of Custody Record** | MICHIGAN 190 | TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	**Analysis Turnaround Time**	**Analyses**	For lab use only
Phone: 248-994-2240				Walk-in client
Project Name: Ford LTP ~~On Site~~ SG offsite	Sampler Name: Alaina Piterci	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Number: 30167538.~~401.03~~ SG 402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30167538.~~401.03~~ SG 402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 54	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-77_110223	11/02/23	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-77S_110223	11/02/23	1210		6						6					N	G	X	X	X	X	X	X	X	1

240-195004 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments: Sample address: Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Piterci	Arcadis	11/02/23 1600	Novi Cold Storage	Arcadis	11/03/23 1500
Jammer Hey	Arcadis	11/7/23 1350		FEDEX	11/7/23 1350
	FEDEX	11/7/23 1406	Received in Laboratory by: Rachelle Hunt	Company: EET Inc	Date/Time: 11-8-23 800

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11/21/2023

Client Sample ID: TRIP BLANK_54
Lab Sample ID: 240-195004-1
Date Collected: 11/02/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 18:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/11/23 18:25*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/23 18:25*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 18:25*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 18:25*	*1*

Client Sample ID: MW-77_110223
Lab Sample ID: 240-195004-2
Date Collected: 11/02/23 10:30
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/16/23 05:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 20:24	1
cis-1,2-Dichloroethene	**0.69**	**J**	1.0	0.46	ug/L			11/13/23 20:24	1
Tetrachloroethene	1.0	U UJ	1.0	0.44	ug/L			11/13/23 20:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 20:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 20:24*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/13/23 20:24*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 20:24*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 20:24*	*1*

Client Sample ID: MW-77S_110223
Lab Sample ID: 240-195004-3
Date Collected: 11/02/23 12:10
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/16/23 05:27*	*1*

Client Sample ID: MW-77S_110223
Lab Sample ID: 240-195004-3

Date Collected: 11/02/23 12:10
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 20:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 20:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 20:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 20:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/13/23 20:49*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 20:49*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 20:49*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 20:49*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:23:43 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195006-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195006-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195006-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195006-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195006-1	TRIP BLANK_3	Water	11/06/23 00:00	11/08/23 08:00
240-195006-2	MW-134S_110623	Water	11/06/23 11:23	11/08/23 08:00
240-195006-3	MW-135S_110623	Water	11/06/23 12:40	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_3 — Lab Sample ID: 240-195006-1

No Detections.

Client Sample ID: MW-134S_110623 — Lab Sample ID: 240-195006-2

No Detections.

Client Sample ID: MW-135S_110623 — Lab Sample ID: 240-195006-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195006-1

Client Sample ID: TRIP BLANK_3
Date Collected: 11/06/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195006-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 19:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 19:40*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 19:40*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 19:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/23 19:40*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195006-1

Client Sample ID: MW-134S_110623
Date Collected: 11/06/23 11:23
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195006-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/16/23 05:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 21:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 21:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 21:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 21:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/13/23 21:14*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 21:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 21:14*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 21:14*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195006-1

Client Sample ID: MW-135S_110623
Date Collected: 11/06/23 12:40
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195006-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/16/23 06:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 21:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 21:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 21:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 21:39*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/13/23 21:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 21:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 21:39*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195006-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194827-C-4 MS	Matrix Spike	96	91	104	98
240-194827-D-4 MSD	Matrix Spike Duplicate	97	91	104	97
240-195006-1	TRIP BLANK_3	105	76	100	98
240-195006-2	MW-134S_110623	105	78	100	97
240-195006-3	MW-135S_110623	102	77	99	97
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594285/5	Lab Control Sample	97	92	104	98
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594285/8	Method Blank	105	79	101	99
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195006-2	MW-134S_110623	95
240-195006-3	MW-135S_110623	109
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594285/8
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 16:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 16:45*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/23 16:45*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/11/23 16:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/11/23 16:45*	*1*

Lab Sample ID: LCS 240-594285/5
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			25.0	23.0		ug/L		92	77 - 123		
Tetrachloroethene			25.0	27.1		ug/L		109	76 - 123		
trans-1,2-Dichloroethene			25.0	23.9		ug/L		96	75 - 124		
Trichloroethene			25.0	23.9		ug/L		96	70 - 122		
Vinyl chloride			12.5	10.7		ug/L		85	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.1		ug/L		104	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136		
Trichloroethene	1.0	U	25.0	22.4		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	12.5	9.86		ug/L		79	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-194827-C-4 MS
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-194827-D-4 MSD
Matrix: Water
Analysis Batch: 594285

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	25.0		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.7		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	11.1		ug/L		89	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	26.5		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.87		ug/L		89	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195006-1	TRIP BLANK_3	Total/NA	Water	8260D	
MB 240-594285/8	Method Blank	Total/NA	Water	8260D	
LCS 240-594285/5	Lab Control Sample	Total/NA	Water	8260D	
240-194827-C-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-194827-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195006-2	MW-134S_110623	Total/NA	Water	8260D	
240-195006-3	MW-135S_110623	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195006-2	MW-134S_110623	Total/NA	Water	8260D SIM	
240-195006-3	MW-135S_110623	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_3
Lab Sample ID: 240-195006-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594285	TJL2	EET CLE	11/11/23 19:40

Client Sample ID: MW-134S_110623
Lab Sample ID: 240-195006-2
Date Collected: 11/06/23 11:23
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 21:14
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 05:51

Client Sample ID: MW-135S_110623
Lab Sample ID: 240-195006-3
Date Collected: 11/06/23 12:40
Matrix: Water
Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 21:39
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 06:15

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195006-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com			
Phone: 248-994-2240	Sampler Name: S. Sider	Analysis Turnaround Time: TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		For lab use only: Walk-in client / Lab sampling / Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_3	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1345_110623	11/06/2023	11:23		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-135S-110623	11/06/2023	12:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195006 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Stark ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	11/06/2023 1340	Novi Cold Storage	Arcadis	11/06/2023 1340
Jammer Ley	Arcadis	11/7/23 1350		FEDEX	11/7/23 1850
	FEDEX	11/7/23 1400	Rachelle Hurley	BETNE	11823 800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195006
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195006-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195006-1

		Sample Name:	TRIP BLANK_3				MW-134S_110623				MW-135S_110623			
		Lab Sample ID:	2401950061				2401950062				2401950063			
		Sample Date:	11/6/2023				11/6/2023				11/6/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195006-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52129R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195006-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_3	240-195006-1	Water	11/06/2023		X	
MW-134S_110623	240-195006-2	Water	11/06/2023		X	X
MW-135S_110623	240-195006-3	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

2.013.1

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: S. Sider	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_3	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1345_110623	11/06/2023	11:23		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-135S-110623	11/06/2023	12:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195006 Chain of Custody

MICHIGAN 190

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Stark ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	11/06/2023 1348	Novi Cold Storage	Arcadis	11/06/2023 1348
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/7/23 1350	[signature]	FEDEX	11/7/20 1850
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	FEDEX	11/7/23 1400	Rachelle Hurley	BETME	11823 800

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11/21/2023

Client Sample ID: TRIP BLANK_3
Lab Sample ID: 240-195006-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/23 19:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/23 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/23 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/23 19:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/23 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/11/23 19:40*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/23 19:40*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/23 19:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/23 19:40*	*1*

Client Sample ID: MW-134S_110623
Lab Sample ID: 240-195006-2
Date Collected: 11/06/23 11:23
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/16/23 05:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 21:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 21:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 21:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 21:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/13/23 21:14*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 21:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 21:14*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 21:14*	*1*

Client Sample ID: MW-135S_110623
Lab Sample ID: 240-195006-3
Date Collected: 11/06/23 12:40
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/16/23 06:15*	*1*

Client Sample ID: MW-135S_110623
Lab Sample ID: 240-195006-3

Date Collected: 11/06/23 12:40
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 21:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 21:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 21:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 21:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 21:39*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/13/23 21:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/13/23 21:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 21:39*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 12:23:29 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195007-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195007-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195007-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195007-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/8/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile samples were analyzed with headspace in the sample container(s): MW-74_110723 (240-195007-3) and MW-99S_110723 (240-195007-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195007-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195007-1	TRIP BLANK_25	Water	11/07/23 00:00	11/08/23 08:00
240-195007-2	MW-74S_110723	Water	11/07/23 09:57	11/08/23 08:00
240-195007-3	MW-74_110723	Water	11/07/23 11:00	11/08/23 08:00
240-195007-4	MW-99S_110723	Water	11/07/23 11:53	11/08/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195007-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_25 — Lab Sample ID: 240-195007-1

No Detections.

Client Sample ID: MW-74S_110723 — Lab Sample ID: 240-195007-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-74_110723 — Lab Sample ID: 240-195007-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	3.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-99S_110723 — Lab Sample ID: 240-195007-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.94	J	1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Client Sample ID: TRIP BLANK_25
Date Collected: 11/07/23 00:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195007-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 15:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 15:23*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 15:23*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Client Sample ID: MW-74S_110723
Date Collected: 11/07/23 09:57
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195007-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 06:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/16/23 06:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 22:05	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.46	ug/L			11/13/23 22:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 22:05*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 22:05*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 22:05*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/13/23 22:05*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Client Sample ID: MW-74_110723
Date Collected: 11/07/23 11:00
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195007-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			11/16/23 07:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*11/16/23 07:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 22:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 22:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:30	1
Vinyl chloride	3.7		1.0	0.45	ug/L			11/13/23 22:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/13/23 22:30*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 22:30*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 22:30*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/13/23 22:30*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Client Sample ID: MW-99S_110723
Date Collected: 11/07/23 11:53
Date Received: 11/08/23 08:00

Lab Sample ID: 240-195007-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 07:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/16/23 07:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 22:55	1
cis-1,2-Dichloroethene	**0.94**	**J**	1.0	0.46	ug/L			11/13/23 22:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 22:55*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 22:55*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 22:55*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/13/23 22:55*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195007-1	TRIP BLANK_25	102	79	100	98
240-195007-2	MW-74S_110723	104	79	101	100
240-195007-3	MW-74_110723	105	78	100	100
240-195007-4	MW-99S_110723	103	80	101	99
240-195026-C-7 MS	Matrix Spike	96	92	103	97
240-195026-E-7 MSD	Matrix Spike Duplicate	96	92	103	96
LCS 240-594404/4	Lab Control Sample	97	93	103	98
MB 240-594404/6	Method Blank	102	82	100	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-194828-J-3 MS	Matrix Spike	96
240-194828-P-3 MSD	Matrix Spike Duplicate	97
240-195007-2	MW-74S_110723	104
240-195007-3	MW-74_110723	91
240-195007-4	MW-99S_110723	98
LCS 240-594782/13	Lab Control Sample	85
MB 240-594782/15	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594404/6
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 14:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 14:33*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/13/23 14:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 14:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/13/23 14:33*	*1*

Lab Sample ID: LCS 240-594404/4
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.0		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			25.0	22.4		ug/L		90	77 - 123		
Tetrachloroethene			25.0	26.5		ug/L		106	76 - 123		
trans-1,2-Dichloroethene			25.0	23.4		ug/L		94	75 - 124		
Trichloroethene			25.0	24.0		ug/L		96	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U F1	25.0	22.1		ug/L		88	56 - 135		
cis-1,2-Dichloroethene	1.0	U F1	25.0	19.5		ug/L		78	66 - 128		
Tetrachloroethene	1.0	U F1	25.0	23.3		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	1.0	U F1	25.0	20.0		ug/L		80	56 - 136		
Trichloroethene	1.0	U F1	25.0	20.3		ug/L		81	61 - 124		
Vinyl chloride	1.0	U F1	12.5	10.1		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195026-C-7 MS
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195026-E-7 MSD
Matrix: Water
Analysis Batch: 594404

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U F1	25.0	25.3		ug/L		101	56 - 135	13	26
cis-1,2-Dichloroethene	1.0	U F1	25.0	21.8		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U F1	25.0	25.8		ug/L		103	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U F1	25.0	22.4		ug/L		90	56 - 136	11	15
Trichloroethene	1.0	U F1	25.0	22.9		ug/L		92	61 - 124	12	15
Vinyl chloride	1.0	U F1	12.5	11.0		ug/L		88	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-594782/15
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 01:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/16/23 01:05*	*1*

Lab Sample ID: LCS 240-594782/13
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.87		ug/L		89	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-194828-J-3 MS
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-194828-P-3 MSD
Matrix: Water
Analysis Batch: 594782

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195007-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195007-1	TRIP BLANK_25	Total/NA	Water	8260D	
240-195007-2	MW-74S_110723	Total/NA	Water	8260D	
240-195007-3	MW-74_110723	Total/NA	Water	8260D	
240-195007-4	MW-99S_110723	Total/NA	Water	8260D	
MB 240-594404/6	Method Blank	Total/NA	Water	8260D	
LCS 240-594404/4	Lab Control Sample	Total/NA	Water	8260D	
240-195026-C-7 MS	Matrix Spike	Total/NA	Water	8260D	
240-195026-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195007-2	MW-74S_110723	Total/NA	Water	8260D SIM	
240-195007-3	MW-74_110723	Total/NA	Water	8260D SIM	
240-195007-4	MW-99S_110723	Total/NA	Water	8260D SIM	
MB 240-594782/15	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594782/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194828-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-194828-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195007-1

Client Sample ID: TRIP BLANK_25

Lab Sample ID: 240-195007-1

Date Collected: 11/07/23 00:00

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 15:23

Client Sample ID: MW-74S_110723

Lab Sample ID: 240-195007-2

Date Collected: 11/07/23 09:57

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 22:05
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 06:39

Client Sample ID: MW-74_110723

Lab Sample ID: 240-195007-3

Date Collected: 11/07/23 11:00

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 22:30
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 07:03

Client Sample ID: MW-99S_110723

Lab Sample ID: 240-195007-4

Date Collected: 11/07/23 11:53

Matrix: Water

Date Received: 11/08/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594404	TJL2	EET CLE	11/13/23 22:55
Total/NA	Analysis	8260D SIM		1	594782	CS	EET CLE	11/16/23 07:27

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195007-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190 20131

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_25	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-74S_110723	11/7/23	0957		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-74_110723	11/7/23	1100		6						6					N	G	X	X	X	X	X	X	X	
MW-99S_110723	11/7/23	1153		6						6					N	G	X	X	X	X	X	X	X	

240-195007 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/7/23 1380	Received by:		11/7/23 1380
Relinquished by:	EEA	11/7/23 1400	Received by:		11823 800
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195007
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hadet

Cooler Received on 11-8 23 Opened on 11-8 23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 21, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195007-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-21
Initial Data Verification completed by CADENA: 2023-11-21
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SRN - Sample Receipt Non-conformance(headspace) - Sample -002 results for GCMS VOC should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect due to sample receipt non-conformance that affects the integrity of the sample. See laboratory submittal sample receipt forms for details.

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195007-1

		Sample Name:	MW-74_110723				MW-99S_110723			
		Lab Sample ID:	2401950073				2401950074			
		Sample Date:	11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ	0.94	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	3.7	1.0	ug/l	J	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195007-1

		Sample Name:	TRIP BLANK_25				MW-74S_110723				MW-74_110723				MW-99S_110723			
		Lab Sample ID:	2401950071				2401950072				2401950073				2401950074			
		Sample Date:	11/7/2023				11/7/2023				11/7/2023				11/7/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	UJ	0.94	1.0	ug/l	J
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ	ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.7	1.0	ug/l	J	ND	1.0	ug/l	UJ
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	1.7	2.0	ug/l	J	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195007-1

CADENA Verification Report: 2023-11-21

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52130R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195007-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_25	240-195007-1	Water	11/07/2023		X	
MW-74S_110723	240-195007-2	Water	11/07/2023		X	X
MW-74_110723	240-195007-3	Water	11/07/2023		X	X
MW-99S_110723	240-195007-4	Water	11/07/2023		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Sample Receipt Condition

The laboratory received VOC vials with significant headspace for sample MW-74_110723 (240-195007-3) and MW-99S_110723 (240-195007-4). In case of any deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
Bubbles in VOC vials > 6 mm	Non-detect	UJ
	Detect	J

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

5. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area

counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 20131 **Chain of Custody Record**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

MICHIGAN 190

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_25	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-74S_110723	11/7/23	0957		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-74_110723	11/7/23	1100		6						6					N	G	X	X	X	X	X	X	X	
MW-99S_110723	11/7/23	1153		6						6					N	G	X	X	X	X	X	X	X	

240-195007 Chain of Custody

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Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/7/23 1380			11/7/23 1380
	EEA	11/7/23 1400		EETNC	11823 800
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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11/21/2023

Client Sample ID: TRIP BLANK_25
Lab Sample ID: 240-195007-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/13/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 15:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 15:23*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/13/23 15:23*	*1*

Client Sample ID: MW-74S_110723
Lab Sample ID: 240-195007-2
Date Collected: 11/07/23 09:57
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 06:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/16/23 06:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/23 22:05	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.46	ug/L			11/13/23 22:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/13/23 22:05*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/13/23 22:05*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 22:05*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/13/23 22:05*	*1*

Client Sample ID: MW-74_110723
Lab Sample ID: 240-195007-3
Date Collected: 11/07/23 11:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.7**	**J**	2.0	0.86	ug/L			11/16/23 07:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*11/16/23 07:03*	*1*

Client Sample ID: MW-74_110723
Lab Sample ID: 240-195007-3

Date Collected: 11/07/23 11:00
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 22:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/23 22:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:30	1
Vinyl chloride	**3.7**	J	1.0	0.45	ug/L			11/13/23 22:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/13/23 22:30*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/13/23 22:30*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/13/23 22:30*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/13/23 22:30*	*1*

Client Sample ID: MW-99S_110723
Lab Sample ID: 240-195007-4

Date Collected: 11/07/23 11:53
Matrix: Water
Date Received: 11/08/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/23 07:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/16/23 07:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U UJ	1.0	0.49	ug/L			11/13/23 22:55	1
cis-1,2-Dichloroethene	**0.94**	J	1.0	0.46	ug/L			11/13/23 22:55	1
Tetrachloroethene	1.0	U UJ	1.0	0.44	ug/L			11/13/23 22:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/23 22:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/23 22:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/23 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/13/23 22:55*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/13/23 22:55*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/13/23 22:55*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/13/23 22:55*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/20/2023 5:09:21 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195197-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/20/2023 5:09:21 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195197-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195197-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195197-1	TRIP BLANK_47	Water	11/08/23 00:00	11/10/23 08:00
240-195197-2	MW-204S_110823	Water	11/08/23 10:30	11/10/23 08:00
240-195197-3	MW-204_110823	Water	11/08/23 11:45	11/10/23 08:00
240-195197-4	MW-205_110823	Water	11/08/23 13:10	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_47 — Lab Sample ID: 240-195197-1

No Detections.

Client Sample ID: MW-204S_110823 — Lab Sample ID: 240-195197-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	35		4.0	1.8	ug/L	4		8260D	Total/NA
trans-1,2-Dichloroethene	2.0	J	4.0	2.0	ug/L	4		8260D	Total/NA
Trichloroethene	110		4.0	1.8	ug/L	4		8260D	Total/NA
Vinyl chloride	2.6	J	4.0	1.8	ug/L	4		8260D	Total/NA

Client Sample ID: MW-204_110823 — Lab Sample ID: 240-195197-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.8	J	2.5	1.2	ug/L	2.5		8260D	Total/NA
Trichloroethene	52		2.5	1.1	ug/L	2.5		8260D	Total/NA

Client Sample ID: MW-205_110823 — Lab Sample ID: 240-195197-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Client Sample ID: TRIP BLANK_47
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195197-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 23:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 23:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 23:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 23:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/23 23:16*	*1*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*		*11/17/23 23:16*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/17/23 23:16*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/17/23 23:16*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Client Sample ID: MW-204S_110823
Date Collected: 11/08/23 10:30
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195197-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	35		4.0	1.8	ug/L			11/18/23 01:41	4
trans-1,2-Dichloroethene	2.0	J	4.0	2.0	ug/L			11/18/23 01:41	4
Trichloroethene	110		4.0	1.8	ug/L			11/18/23 01:41	4
Vinyl chloride	2.6	J	4.0	1.8	ug/L			11/18/23 01:41	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 01:41*	*4*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 01:41*	*4*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 01:41*	*4*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 01:41*	*4*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Client Sample ID: MW-204_110823
Date Collected: 11/08/23 11:45
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195197-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**1.8**	**J**	2.5	1.2	ug/L			11/18/23 02:05	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			11/18/23 02:05	2.5
Trichloroethene	**52**		2.5	1.1	ug/L			11/18/23 02:05	2.5
Vinyl chloride	2.5	U	2.5	1.1	ug/L			11/18/23 02:05	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/18/23 02:05*	*2.5*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 02:05*	*2.5*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/18/23 02:05*	*2.5*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 02:05*	*2.5*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Client Sample ID: MW-205_110823
Date Collected: 11/08/23 13:10
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195197-4
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 02:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 02:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 02:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 02:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 02:29*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*11/18/23 02:29*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 02:29*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 02:29*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195197-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195197-1	TRIP BLANK_47	114	112	110	111
240-195197-2	MW-204S_110823	115	109	112	109
240-195197-3	MW-204_110823	114	110	109	109
240-195197-4	MW-205_110823	117	111	112	111
240-195197-4 MS	MW-205-MS_110823	111	114	113	109
240-195197-4 MSD	MW-205-MSD_110823	112	115	114	109
LCS 240-595093/5	Lab Control Sample	100	106	105	99
MB 240-595093/8	Method Blank	106	108	107	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595093/8
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 18:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 18:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/23 18:27*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*11/17/23 18:27*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/17/23 18:27*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/23 18:27*	*1*

Lab Sample ID: LCS 240-595093/5
Matrix: Water
Analysis Batch: 595093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	25.0	22.9		ug/L		92	77 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	12.5	10.7		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-195197-4 MS
Matrix: Water
Analysis Batch: 595093

Client Sample ID: MW-205-MS_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128
trans-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	20.9		ug/L		83	61 - 124
Vinyl chloride	1.0	U	12.5	10.6		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*113*		*78 - 122*
Dibromofluoromethane (Surr)	*109*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195197-4 MSD
Matrix: Water
Analysis Batch: 595093

Client Sample ID: MW-205-MSD_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	66 - 128	1	14
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.5		ug/L		82	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*114*		*78 - 122*
Dibromofluoromethane (Surr)	*109*		*73 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195197-1	TRIP BLANK_47	Total/NA	Water	8260D	
240-195197-2	MW-204S_110823	Total/NA	Water	8260D	
240-195197-3	MW-204_110823	Total/NA	Water	8260D	
240-195197-4	MW-205_110823	Total/NA	Water	8260D	
MB 240-595093/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595093/5	Lab Control Sample	Total/NA	Water	8260D	
240-195197-4 MS	MW-205-MS_110823	Total/NA	Water	8260D	
240-195197-4 MSD	MW-205-MSD_110823	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_47
Lab Sample ID: 240-195197-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595093	CDG	EET CLE	11/17/23 23:16

Client Sample ID: MW-204S_110823
Lab Sample ID: 240-195197-2
Date Collected: 11/08/23 10:30
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		4	595093	CDG	EET CLE	11/18/23 01:41

Client Sample ID: MW-204_110823
Lab Sample ID: 240-195197-3
Date Collected: 11/08/23 11:45
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		2.5	595093	CDG	EET CLE	11/18/23 02:05

Client Sample ID: MW-205_110823
Lab Sample ID: 240-195197-4
Date Collected: 11/08/23 13:10
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595093	CDG	EET CLE	11/18/23 02:29

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195197-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	For lab use only
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		Walk-in client
Project Number: 30167538.402.04	Shipping/Tracking No:		Lab sampling
PO # 30167538.402.04			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_47	11/08/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-204s_110823	11/08/23	10:30		3						3					N	G		X	X		X	X		~~3 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ 3VOA's for both wells SG
MW-204_110823	11/08/23	11:45		3						3					N	G		X	X		X	X		
MW-205_110823	11/08/23	13:10	3 SG	3	3				3 SG	3					N	G		X	X		X	X		~~4 VOAs MS/MSD~~ SG
~~MW-202-110823~~	~~11/08/23~~	~~1445~~		3						3								X	X		X	X		GL
MW-205-MS_110823	11/8/23	1310		3						3					N	G		X	X		X	X		Run MS/MSD
MW-205-MSD_110823	11/8/23	1310		3						3					N	G		X	X		X	X		Run MS/MSD

MICHIGAN 190

240-195197 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B

may be assessed if samples are retained longer than 1 month)
☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Levan ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/08/23 15:35	ARCADIS Cold Storage (Novi)	ARCADIS	11/08/23 15:35
[signature]	Arcadis	11/9/23 0850	[signature]	EETA	11/9/23 10:00
[signature]	EETA	11/9/23 10:15	[signature]	EETNC	11-10-23 0800

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11/20/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195197
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkison

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(2) IC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(3) IC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #: _____			Wet Ice

DATA VERIFICATION REPORT

November 20, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195197-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-20
Initial Data Verification completed by CADENA: 2023-11-20
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195197-1

		Sample Name:	TRIP BLANK_47				MW-204S_110823				MW-204_110823				MW-205_110823			
		Lab Sample ID:	2401951971				2401951972				2401951973				2401951974			
		Sample Date:	11/8/2023				11/8/2023				11/8/2023				11/8/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	35	4.0	ug/l	---	1.8	2.5	ug/l	J	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	2.0	4.0	ug/l	J	ND	2.5	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	110	4.0	ug/l	---	52	2.5	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	2.6	4.0	ug/l	J	ND	2.5	ug/l	---	ND	1.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195197-1

CADENA Verification Report: 2023-11-20

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52120R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195197-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis
					VOC
TRIP BLANK_47	240-195197-1	Water	11/08/2023		X
MW-204S_110823	240-195197-2	Water	11/08/2023		X
MW-204_110823	240-195197-3	Water	11/08/2023		X
MW-205_110823	240-195197-4	Water	11/08/2023		X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 14, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Garrett Link	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_47	11/08/23	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-204S_110823	11/08/23	10:30		3						3					N	G		X	X		X	X		~~3 VOAs for 8260B~~ ~~3 VOAs for 8260B SIM~~ 3 VOA's for remaining wells
MW-204_110823	11/08/23	11:45		3						3					N	G		X	X		X	X		
MW-205_110823	11/08/23	13:10		3 SG	3 SG					3 SG					N	G		X	X		X	X		~~4 VOAs MS/MSD~~ SG
~~MW-202-110823~~	~~11/08/23~~	~~1445~~		3						3								X	X		X	X		GL
MW-205-MS_110823	11/8/23	1310		3						3					N	G		X	X		X	X		Run MS/MSD
MW-205-MSD_110823	11/8/23	1310		3						3					N	G		X	X		X	X		Run MS/MSD

MICHIGAN
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240-195197 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B

(may be assessed if samples are retained longer than 1 month)
☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Levan ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/08/23 15:35	ARCADIS Cold Storage (Nov.)	ARCADIS	11/08/23 15:35
[signature]	Arcadis	11/9/23 0850	[signature]	EETA	11/9/23 10:00
[signature]	EETA	11/9/23 10:15	Received in Laboratory by: [signature]	Company: EETMC	Date/Time: 11-10-23 0800

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11/20/2023

Client Sample ID: TRIP BLANK_47
Lab Sample ID: 240-195197-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 23:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 23:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 23:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 23:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/23 23:16*	*1*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*		*11/17/23 23:16*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/17/23 23:16*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/17/23 23:16*	*1*

Client Sample ID: MW-204S_110823
Lab Sample ID: 240-195197-2
Date Collected: 11/08/23 10:30
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**35**		4.0	1.8	ug/L			11/18/23 01:41	4
trans-1,2-Dichloroethene	**2.0**	**J**	4.0	2.0	ug/L			11/18/23 01:41	4
Trichloroethene	**110**		4.0	1.8	ug/L			11/18/23 01:41	4
Vinyl chloride	**2.6**	**J**	4.0	1.8	ug/L			11/18/23 01:41	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/18/23 01:41*	*4*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 01:41*	*4*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 01:41*	*4*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 01:41*	*4*

Client Sample ID: MW-204_110823
Lab Sample ID: 240-195197-3
Date Collected: 11/08/23 11:45
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**1.8**	**J**	2.5	1.2	ug/L			11/18/23 02:05	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	1.3	ug/L			11/18/23 02:05	2.5
Trichloroethene	**52**		2.5	1.1	ug/L			11/18/23 02:05	2.5
Vinyl chloride	2.5	U	2.5	1.1	ug/L			11/18/23 02:05	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/18/23 02:05*	*2.5*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*11/18/23 02:05*	*2.5*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/18/23 02:05*	*2.5*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*11/18/23 02:05*	*2.5*

Client Sample ID: MW-205_110823
Lab Sample ID: 240-195197-4
Date Collected: 11/08/23 13:10
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 02:29	1

Client Sample ID: MW-205_110823
Lab Sample ID: 240-195197-4
Date Collected: 11/08/23 13:10
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 02:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 02:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 02:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 02:29*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*11/18/23 02:29*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*11/18/23 02:29*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 02:29*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 6:59:55 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195201-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/24/2023 6:59:55 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195201-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195201-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195201-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195201-1	TRIP BLANK_31	Water	11/07/23 00:00	11/10/23 08:00
240-195201-2	MW-81_110723	Water	11/07/23 10:40	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_31 — Lab Sample ID: 240-195201-1

No Detections.

Client Sample ID: MW-81_110723 — Lab Sample ID: 240-195201-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195201-1

Client Sample ID: TRIP BLANK_31
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195201-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 17:05*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 17:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 17:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 17:05*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195201-1

Client Sample ID: MW-81_110723
Date Collected: 11/07/23 10:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195201-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/21/23 10:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 06:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 06:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 06:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/23 06:42*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 06:42*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/23 06:42*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 06:42*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195201-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195201-1	TRIP BLANK_31	95	95	102	96
240-195201-2	MW-81_110723	97	96	98	96
240-195201-2 MS	MW-81-MS_110723	93	102	102	95
240-195201-2 MSD	MW-81-MSD_110723	93	101	105	95
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195201-2	MW-81_110723	99
240-195201-2 MS	MW-81-MS_110723	104
240-195201-2 MSD	MW-81-MSD_110723	103
LCS 240-595348/4	Lab Control Sample	101
MB 240-595348/6	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.9		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			20.0	18.1		ug/L		90	77 - 123		
Tetrachloroethene			20.0	17.1		ug/L		86	76 - 123		
trans-1,2-Dichloroethene			20.0	18.8		ug/L		94	75 - 124		
Trichloroethene			20.0	18.6		ug/L		93	70 - 122		
Vinyl chloride			20.0	23.1		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: MW-81-MS_110723
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128		
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136		
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124		
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: MW-81-MS_110723
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: 240-195201-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: MW-81-MSD_110723
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	105		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		11/16/23 15:23	1
4-Bromofluorobenzene (Surr)	98		56 - 136		11/16/23 15:23	1
Toluene-d8 (Surr)	103		78 - 122		11/16/23 15:23	1
Dibromofluoromethane (Surr)	94		73 - 120		11/16/23 15:23	1

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595348/6
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 08:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/21/23 08:16*	*1*

Lab Sample ID: LCS 240-595348/4
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195201-2 MS
Matrix: Water
Analysis Batch: 595348

Client Sample ID: MW-81-MS_110723
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.72		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195201-2 MSD
Matrix: Water
Analysis Batch: 595348

Client Sample ID: MW-81-MSD_110723
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195201-2	MW-81_110723	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-2 MS	MW-81-MS_110723	Total/NA	Water	8260D	
240-195201-2 MSD	MW-81-MSD_110723	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195201-1	TRIP BLANK_31	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195201-2	MW-81_110723	Total/NA	Water	8260D SIM	
MB 240-595348/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595348/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195201-2 MS	MW-81-MS_110723	Total/NA	Water	8260D SIM	
240-195201-2 MSD	MW-81-MSD_110723	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_31
Lab Sample ID: 240-195201-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 17:05

Client Sample ID: MW-81_110723
Lab Sample ID: 240-195201-2
Date Collected: 11/07/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 06:42
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 10:38

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195201-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	**Analysis Turnaround Time**		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 31	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-81_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-81-MS_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-81-MSD_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195201 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sierra Sider	Arcadis	11/07/2023 1350	Novi Cold Storage	Arcadis	11/07/2023 1350
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	11/9/23 0850	[illegible]	EETA	11/9/2023 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EETA	11/9/23 1015	[illegible]	TAL	11-10-23 0800

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11/24/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195201
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195201

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195201-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195201-1

		Sample Name:	TRIP BLANK_31				MW-81_110723			
		Lab Sample ID:	2401952011				2401952012			
		Sample Date:	11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195201-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52141R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195201-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_31	240-195201-1	Water	11/07/2023		X	
MW-81_110723	240-195201-2	Water	11/07/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: S. Sider	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 31	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-81_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-81-MS_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
✓ MW-81-MSD_110723	11/07/2023	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-195201 Chain of Custody

MICHIGAN
190

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Stark Row
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sierra Sider	Arcadis	11/07/2023 1350	Received by: Novi Cold Storage	Arcadis	11/07/2023 1350
Relinquished by: Jammer Guy	Arcadis	11/9/23 0850	Received by: [illegible]	EETA	11/9/2023 10:00
Relinquished by: [illegible]	EETA	11/9/23 1015	Received in Laboratory by: Alissa Atkinson	EE TNC	11-10-23 0800

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Client Sample ID: TRIP BLANK_31
Lab Sample ID: 240-195201-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 17:05*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 17:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 17:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 17:05*	*1*

Client Sample ID: MW-81_110723
Lab Sample ID: 240-195201-2
Date Collected: 11/07/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/21/23 10:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 06:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 06:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 06:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 06:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/23 06:42*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 06:42*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/23 06:42*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 06:42*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 7:00:53 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195205-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/24/2023 7:00:53 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195205-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195205-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195205-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195205-1	TRIP BLANK_39	Water	11/07/23 00:00	11/10/23 08:00
240-195205-2	MW-85SR_110723	Water	11/07/23 10:30	11/10/23 08:00
240-195205-3	DUP-09	Water	11/07/23 00:00	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_39 — Lab Sample ID: 240-195205-1

No Detections.

Client Sample ID: MW-85SR_110723 — Lab Sample ID: 240-195205-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-09 — Lab Sample ID: 240-195205-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195205-1

Client Sample ID: TRIP BLANK_39
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195205-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 17:56*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 17:56*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 17:56*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 17:56*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195205-1

Client Sample ID: MW-85SR_110723
Date Collected: 11/07/23 10:30
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195205-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 11:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/21/23 11:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 10:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 10:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 10:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:31	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/16/23 10:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 10:31*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/23 10:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 10:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 10:31*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195205-1

Client Sample ID: DUP-09
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195205-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/21/23 12:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 10:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 10:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 10:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:56	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			11/16/23 10:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 10:56*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 10:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/23 10:56*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 10:56*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195201-F-2 MS	Matrix Spike	93	102	102	95
240-195201-I-2 MSD	Matrix Spike Duplicate	93	101	105	95
240-195205-1	TRIP BLANK_39	96	98	101	96
240-195205-2	MW-85SR_110723	94	91	101	96
240-195205-3	DUP-09	95	96	98	95
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195201-H-2 MS	Matrix Spike	104
240-195201-N-2 MSD	Matrix Spike Duplicate	103
240-195205-2	MW-85SR_110723	101
240-195205-3	DUP-09	102
LCS 240-595348/4	Lab Control Sample	101
MB 240-595348/6	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	18.1		ug/L		90	77 - 123
Tetrachloroethene	20.0	17.1		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	18.8		ug/L		94	75 - 124
Trichloroethene	20.0	18.6		ug/L		93	70 - 122
Vinyl chloride	20.0	23.1		ug/L		116	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195201-I-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595348/6
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 08:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/21/23 08:16*	*1*

Lab Sample ID: LCS 240-595348/4
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195201-H-2 MS
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.72		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195201-N-2 MSD
Matrix: Water
Analysis Batch: 595348

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195205-2	MW-85SR_110723	Total/NA	Water	8260D	
240-195205-3	DUP-09	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195201-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195205-1	TRIP BLANK_39	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195205-2	MW-85SR_110723	Total/NA	Water	8260D SIM	
240-195205-3	DUP-09	Total/NA	Water	8260D SIM	
MB 240-595348/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595348/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195201-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195201-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_39
Lab Sample ID: 240-195205-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 17:56

Client Sample ID: MW-85SR_110723
Lab Sample ID: 240-195205-2
Date Collected: 11/07/23 10:30
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 10:31
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 11:49

Client Sample ID: DUP-09
Lab Sample ID: 240-195205-3
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 10:56
Total/NA	Analysis	8260D SIM		1	595348	CS	EET CLE	11/21/23 12:13

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195205-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab sampling ☐
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_39	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-855R_110723	11/07/23	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-09	11/9/23	—		6						6					N	G	X	X	X	X	X	X	X	"

240-195205 Chain of Custody

MICHIGAN
190

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Rosati ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	NAI cod storage	Arcadis	11/07/23 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sammer Key	Arcadis	11/9/23 0850		EETA	11/9/23 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/9/23 1015	Alissa Atherton	EETMC	11-10-23 0800

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Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195205
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkison

Cooler Received on 11.10.23 Opened on 11/10/23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195205

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195205-1
Sample date: 2023-11-07
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195205-1

		Sample Name:	TRIP BLANK_39				MW-85SR_110723				DUP-09			
		Lab Sample ID:	2401952051				2401952052				2401952053			
		Sample Date:	11/7/2023				11/7/2023				11/7/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.5	1.0	ug/l	---	1.4	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195205-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52139R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195205-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_39	240-195205-1	Water	11/07/2023		X	
MW-85SR_110723	240-195205-2	Water	11/07/2023		X	X
DUP-09	240-195205-3	Water	11/07/2023	MW-85SR_110723	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-85SR_110723 / DUP-09	Vinyl chloride	1.5	1.4	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

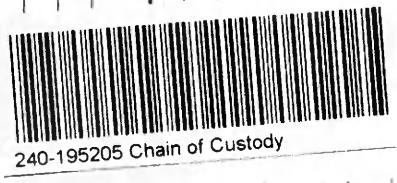
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_39	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-855R_110723	11/07/23	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-09	11/7/23	—		6						6					N	G	X	X	X	X	X	X	X	1



MICHIGAN
190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Nai cold storage	Arcadis	11/07/23 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jammer Key	Arcadis	11/9/23 0850	[illegible]	EETA	11/9/23 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EETA	11/9/23 1015	Alissa Atterson	EETMC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_39
Lab Sample ID: 240-195205-1
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/23 17:56*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 17:56*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 17:56*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 17:56*	*1*

Client Sample ID: MW-85SR_110723
Lab Sample ID: 240-195205-2
Date Collected: 11/07/23 10:30
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 11:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/21/23 11:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 10:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 10:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 10:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:31	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/16/23 10:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 10:31*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/23 10:31*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/23 10:31*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 10:31*	*1*

Client Sample ID: DUP-09
Lab Sample ID: 240-195205-3
Date Collected: 11/07/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/21/23 12:13*	*1*

Client Sample ID: DUP-09
Date Collected: 11/07/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195205-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 10:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 10:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 10:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 10:56	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			11/16/23 10:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 10:56*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/16/23 10:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/23 10:56*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 10:56*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 7:01:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195206-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/24/2023 7:01:04 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195206-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195206-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195206-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195206-1	TRIP BLANK_53	Water	11/08/23 00:00	11/10/23 08:00
240-195206-2	MW-76S_110823	Water	11/08/23 09:23	11/10/23 08:00
240-195206-3	MW-75D_110823	Water	11/08/23 10:40	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Client Sample ID: TRIP BLANK_53 — Lab Sample ID: 240-195206-1

No Detections.

Client Sample ID: MW-76S_110823 — Lab Sample ID: 240-195206-2

No Detections.

Client Sample ID: MW-75D_110823 — Lab Sample ID: 240-195206-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.5		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Client Sample ID: TRIP BLANK_53
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195206-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 18:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 18:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 18:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 18:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/23 18:21*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 18:21*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 18:21*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Client Sample ID: MW-76S_110823
Date Collected: 11/08/23 09:23
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195206-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 02:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 22:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 22:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 22:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 22:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 22:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 22:36*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 22:36*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 22:36*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 22:36*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Client Sample ID: MW-75D_110823
Date Collected: 11/08/23 10:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195206-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.5		2.0	0.86	ug/L			11/22/23 04:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 04:00*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 23:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 23:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 23:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 23:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 23:52	1
Vinyl chloride	1.2		1.0	0.45	ug/L			11/16/23 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/23 23:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/16/23 23:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/16/23 23:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/23 23:52*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195206-1	TRIP BLANK_53	93	94	99	95
240-195206-2	MW-76S_110823	94	95	102	95
240-195206-2 MS	MW-76S-MS_110823	93	103	105	96
240-195206-2 MSD	MW-76S-MSD_110823	92	99	106	96
240-195206-3	MW-75D_110823	99	102	105	100
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195206-2	MW-76S_110823	98
240-195206-2 MS	MW-76S-MS_110823	98
240-195206-2 MSD	MW-76S-MSD_110823	101
240-195206-3	MW-75D_110823	97
LCS 240-595505/4	Lab Control Sample	97
MB 240-595505/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	20.7		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			20.0	18.5		ug/L		93	77 - 123		
Tetrachloroethene			20.0	19.2		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			20.0	19.5		ug/L		97	75 - 124		
Trichloroethene			20.0	18.4		ug/L		92	70 - 122		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: MW-76S-MS_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195206-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: MW-76S-MS_110823
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: MW-76S-MSD_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595505/6
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/21/23 21:18*	*1*

Lab Sample ID: LCS 240-595505/4
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.86		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195206-2 MS
Matrix: Water
Analysis Batch: 595505

Client Sample ID: MW-76S-MS_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195206-2 MSD
Matrix: Water
Analysis Batch: 595505

Client Sample ID: MW-76S-MSD_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

GC/MS VOA

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195206-1	TRIP BLANK_53	Total/NA	Water	8260D	
240-195206-2	MW-76S_110823	Total/NA	Water	8260D	
240-195206-3	MW-75D_110823	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-2 MS	MW-76S-MS_110823	Total/NA	Water	8260D	
240-195206-2 MSD	MW-76S-MSD_110823	Total/NA	Water	8260D	

Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195206-2	MW-76S_110823	Total/NA	Water	8260D SIM	
240-195206-3	MW-75D_110823	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-2 MS	MW-76S-MS_110823	Total/NA	Water	8260D SIM	
240-195206-2 MSD	MW-76S-MSD_110823	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195206-1

Client Sample ID: TRIP BLANK_53

Lab Sample ID: 240-195206-1

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 18:21

Client Sample ID: MW-76S_110823

Lab Sample ID: 240-195206-2

Date Collected: 11/08/23 09:23

Matrix: Water

Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 22:36
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 02:49

Client Sample ID: MW-75D_110823

Lab Sample ID: 240-195206-3

Date Collected: 11/08/23 10:40

Matrix: Water

Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 23:52
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 04:00

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195206-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_53	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-76S_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-76S-MS_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-76S-MSD_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-75D_110823	11/8/23	104D		6						6					N	G	X	X	X	X	X	X	X	

240-195206 Chain of Custody

MICHIGAN 190

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/9/23 0850	Received by:	Company: EETA	Date/Time: 11/9/2023 10:00
Relinquished by:	Company: EETA	Date/Time: 11/9/23 1015	Received by: Alissa Atterson	Company: EETMC	Date/Time: 11.10.23 0800
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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11/24/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195206
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkison

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 195206

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(IC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(IC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
IC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195206-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195206-1

		Sample Name:	TRIP BLANK_53				MW-76S_110823				MW-75D_110823			
		Lab Sample ID:	2401952061				2401952062				2401952063			
		Sample Date:	11/8/2023				11/8/2023				11/8/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	4.5	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195206-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52140R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195206-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_53	240-195206-1	Water	11/08/2023		X	
MW-76S_110823	240-195206-2	Water	11/08/2023		X	X
MW-75D_110823	240-195206-3	Water	11/08/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_53	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-76S_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-76S-MS_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-76S-MSD_110823	11/8/23	0923		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-75D_110823	11/8/23	1040		6						6					N	G	X	X	X	X	X	X	X	

240-195206 Chain of Custody

MICHIGAN 190

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden Ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 11/9/23 0850	Received by:	Company: EETA	Date/Time: 11/9/2023 10:00
Relinquished by:	Company: EETA	Date/Time: 11/9/23 1015	Received by: Alissa Atterson	Company: EETKC	Date/Time: 11-10-23 0800
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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11/27/2023

Client Sample ID: TRIP BLANK_53
Lab Sample ID: 240-195206-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 18:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 18:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 18:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 18:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/23 18:21*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 18:21*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 18:21*	*1*

Client Sample ID: MW-76S_110823
Lab Sample ID: 240-195206-2
Date Collected: 11/08/23 09:23
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 02:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 22:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 22:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 22:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 22:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 22:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 22:36*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 22:36*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 22:36*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 22:36*	*1*

Client Sample ID: MW-75D_110823
Lab Sample ID: 240-195206-3
Date Collected: 11/08/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.5**		2.0	0.86	ug/L			11/22/23 04:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 04:00*	*1*

Client Sample ID: MW-75D_110823
Lab Sample ID: 240-195206-3

Date Collected: 11/08/23 10:40
Matrix: Water

Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 23:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 23:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 23:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 23:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 23:52	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/16/23 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/23 23:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/16/23 23:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/16/23 23:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/23 23:52*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:35:52 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195202-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 4:35:52 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195202-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195202-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
Method 8260D_SIM: The following sample was analyzed outside of analytical holding time due to instrument malfunction: MW-98S_110623 (240-195202-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195202-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195202-1	TRIP BLANK_44	Water	11/06/23 00:00	11/10/23 08:00
240-195202-2	MW-138S_110623	Water	11/06/23 15:40	11/10/23 08:00
240-195202-3	MW-98S_110623	Water	11/06/23 16:55	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195202-1

Client Sample ID: TRIP BLANK_44 — Lab Sample ID: 240-195202-1

No Detections.

Client Sample ID: MW-138S_110623 — Lab Sample ID: 240-195202-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-98S_110623 — Lab Sample ID: 240-195202-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195202-1

Client Sample ID: TRIP BLANK_44
Date Collected: 11/06/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195202-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 17:30*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 17:30*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 17:30*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 17:30*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195202-1

Client Sample ID: MW-138S_110623
Date Collected: 11/06/23 15:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195202-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/20/23 23:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 07:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 07:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 07:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 07:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 07:59	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/16/23 07:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 07:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 07:59*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 07:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 07:59*	*1*

Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

Client Sample ID: MW-98S_110623
Lab Sample ID: 240-195202-3
Date Collected: 11/06/23 16:55
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			11/21/23 00:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/21/23 00:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 08:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 08:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 08:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 08:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 08:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 08:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 08:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 08:24*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 08:24*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 08:24*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195202-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195201-F-2 MS	Matrix Spike	93	102	102	95
240-195201-I-2 MSD	Matrix Spike Duplicate	93	101	105	95
240-195202-1	TRIP BLANK_44	94	95	99	94
240-195202-2	MW-138S_110623	94	98	102	96
240-195202-3	MW-98S_110623	93	95	99	94
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
LCS 240-594741/5	Lab Control Sample	94	102	105	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
MB 240-594741/9	Method Blank	93	93	102	95
MB 240-594812/9	Method Blank	93	98	103	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195156-E-37 MS	Matrix Spike	97
240-195156-E-37 MSD	Matrix Spike Duplicate	98
240-195202-2	MW-138S_110623	96
240-195202-3	MW-98S_110623	98
LCS 240-595335/13	Lab Control Sample	102
MB 240-595335/14	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594741/9
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 04:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 04:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 04:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 04:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 04:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 04:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/23 04:10*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 04:10*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 04:10*	*1*

Lab Sample ID: LCS 240-594741/5
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	18.1		ug/L		90	77 - 123
Tetrachloroethene	20.0	17.1		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	18.8		ug/L		94	75 - 124
Trichloroethene	20.0	18.6		ug/L		93	70 - 122
Vinyl chloride	20.0	23.1		ug/L		116	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	15.7		ug/L		79	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	56 - 136
Trichloroethene	1.0	U	20.0	15.6		ug/L		78	61 - 124
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195201-F-2 MS
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195201-I-2 MSD
Matrix: Water
Analysis Batch: 594741

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.9		ug/L		100	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	16.5		ug/L		82	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124	5	15
Vinyl chloride	1.0	U	20.0	22.4		ug/L		112	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.2		ug/L		116	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136		
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595335/14
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/20/23 23:08*	*1*

Lab Sample ID: LCS 240-595335/13
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.84		ug/L		98	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: 240-195156-E-37 MS
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	44		10.0	56.0	4	ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195156-E-37 MSD
Matrix: Water
Analysis Batch: 595335

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	44		10.0	56.3	4	ug/L		124	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 594741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195202-2	MW-138S_110623	Total/NA	Water	8260D	
240-195202-3	MW-98S_110623	Total/NA	Water	8260D	
MB 240-594741/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594741/5	Lab Control Sample	Total/NA	Water	8260D	
240-195201-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195201-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195202-1	TRIP BLANK_44	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195202-2	MW-138S_110623	Total/NA	Water	8260D SIM	
240-195202-3	MW-98S_110623	Total/NA	Water	8260D SIM	
MB 240-595335/14	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595335/13	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195156-E-37 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195156-E-37 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_44
Lab Sample ID: 240-195202-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 17:30

Client Sample ID: MW-138S_110623
Lab Sample ID: 240-195202-2
Date Collected: 11/06/23 15:40
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 07:59
Total/NA	Analysis	8260D SIM		1	595335	CS	EET CLE	11/20/23 23:56

Client Sample ID: MW-98S_110623
Lab Sample ID: 240-195202-3
Date Collected: 11/06/23 16:55
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594741	AJS	EET CLE	11/16/23 08:24
Total/NA	Analysis	8260D SIM		1	595335	CS	EET CLE	11/21/23 00:20

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195202-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Alaina P. Tera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Phone: 248-994-2240		Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			
Project Number: 30167538.402.04					
PO # 30167538.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_44	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138S_110623	11/06/23	1540		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-98S_110623	11/06/23	1655		6						6					N	G	X	X	X	X	X	X	X	1

240-195202 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Ptera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Relinquished by: Sommer Kay	Company: Arcadis	Date/Time: 11/9/23 0850	Received by:	Company: EETA	Date/Time: 11/9/23 10:00
Relinquished by:	Company: EETA	Date/Time: 11/9/23 10:15	Received in Laboratory by:	Company: EETNC	Date/Time: 11-10-23 0800

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 195202
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.10.23 Opened on 11/10/23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195202

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(3) EC Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) EC Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195202-1
Sample date: 2023-11-06
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HTQ - GCMS VOC SIM sample -003 analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with UJ flags if non-detect. GCMS

VOC SIM QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195202-1

Sample Name: MW-98S_110623
Lab Sample ID: 2401952023
Sample Date: 11/6/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260DSIM					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195202-1

		Sample Name:	TRIP BLANK_44				MW-138S_110623				MW-98S_110623			
		Lab Sample ID:	2401952021				2401952022				2401952023			
		Sample Date:	11/6/2023				11/6/2023				11/6/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.1	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	UJ

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195202-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52138R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195202-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_44	240-195202-1	Water	11/06/2023		X	
MW-138S_110623	240-195202-2	Water	11/06/2023		X	X
MW-98S_110623	240-195202-3	Water	11/06/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

The analyses that exceeded the holding are presented in the following table.

Sample ID	Holding Time	Criteria
MW-98S_110623	15 days from collection to analysis	14 days from collection to analysis

Sample results associated with sample locations analyzed by analytical method SW-846 8260D-SIM were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

DATA REVIEW

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X	X		
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 19, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240				Walk-in client
Project Name: Ford LTP Off-Site	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Number: 30167538.402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30167538.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_44	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138S_110623	11/06/23	1540		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-98S_110623	11/06/23	1655		6						6					N	G	X	X	X	X	X	X	X	1

240-195202 Chain of Custody

MICHIGAN 190

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/07/23 1530	Novi Cold Storage	Arcadis	11/07/23 1530
Jammer Ley	Arcadis	11/9/23 0850		EETA	11/9/23 10:00
	EETA	11/9/23 1015	Received in Laboratory by:	EETNC	11-10-23 0800

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11/27/2023

Client Sample ID: TRIP BLANK_44
Lab Sample ID: 240-195202-1
Date Collected: 11/06/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 17:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 17:30*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 17:30*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 17:30*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 17:30*	*1*

Client Sample ID: MW-138S_110623
Lab Sample ID: 240-195202-2
Date Collected: 11/06/23 15:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/23 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/20/23 23:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 07:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 07:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 07:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 07:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 07:59	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/16/23 07:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/23 07:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 07:59*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/16/23 07:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/23 07:59*	*1*

Client Sample ID: MW-98S_110623
Lab Sample ID: 240-195202-3
Date Collected: 11/06/23 16:55
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	~~U H~~ UJ	2.0	0.86	ug/L			11/21/23 00:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/21/23 00:20*	*1*

Client Sample ID: MW-98S_110623
Lab Sample ID: 240-195202-3

Date Collected: 11/06/23 16:55
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 08:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 08:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 08:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 08:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 08:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 08:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 08:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/23 08:24*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 08:24*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 08:24*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/24/2023 7:01:57 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195398-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/24/2023 7:01:57 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195398-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Job ID: 240-195398-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195398-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195398-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195398-1	TRIP BLANK_91	Water	11/08/23 00:00	11/14/23 10:00
240-195398-2	MW-136S_110823	Water	11/08/23 13:45	11/14/23 10:00
240-195398-3	DUP_13	Water	11/08/23 00:00	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195398-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_91 — Lab Sample ID: 240-195398-1

No Detections.

Client Sample ID: MW-136S_110823 — Lab Sample ID: 240-195398-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.91	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.84	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP_13 — Lab Sample ID: 240-195398-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.85	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Client Sample ID: TRIP BLANK_91
Date Collected: 11/08/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195398-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 12:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/20/23 12:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/20/23 12:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/20/23 12:04*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/20/23 12:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Client Sample ID: MW-136S_110823
Date Collected: 11/08/23 13:45
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195398-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.86	ug/L			11/22/23 05:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 05:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 12:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
Vinyl chloride	0.84	J	1.0	0.45	ug/L			11/20/23 12:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/20/23 12:28*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/20/23 12:28*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/20/23 12:28*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/20/23 12:28*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Client Sample ID: DUP_13

Date Collected: 11/08/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195398-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/22/23 05:36*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 23:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 23:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 23:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
Vinyl chloride	**0.85**	**J**	1.0	0.45	ug/L			11/19/23 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 23:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/19/23 23:10*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 23:10*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 23:10*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195398-1	TRIP BLANK_91	98	89	108	99
240-195398-2	MW-136S_110823	96	95	102	82
240-195398-3	DUP_13	105	98	99	96
240-195494-A-9 MS	Matrix Spike	84	100	106	86
240-195494-B-9 MSD	Matrix Spike Duplicate	87	106	104	89
LCS 240-595149/4	Lab Control Sample	103	98	97	101
LCS 240-595193/4	Lab Control Sample	88	107	107	98
MB 240-595149/7	Method Blank	103	95	99	96
MB 240-595193/7	Method Blank	95	102	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195206-K-2 MS	Matrix Spike	98
240-195206-O-2 MSD	Matrix Spike Duplicate	101
240-195398-2	MW-136S_110823	100
240-195398-3	DUP_13	99
LCS 240-595505/4	Lab Control Sample	97
MB 240-595505/6	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595149/7
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/19/23 14:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/19/23 14:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 14:57*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 14:57*	*1*

Lab Sample ID: LCS 240-595149/4
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	25.7		ug/L		103	63 - 134		
cis-1,2-Dichloroethene			25.0	25.4		ug/L		102	77 - 123		
Tetrachloroethene			25.0	24.1		ug/L		96	76 - 123		
trans-1,2-Dichloroethene			25.0	25.1		ug/L		100	75 - 124		
Trichloroethene			25.0	25.4		ug/L		102	70 - 122		
Vinyl chloride			12.5	10.2		ug/L		81	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-195260-A-5 MS
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135		
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128		
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136		
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124		
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195260-B-5 MSD
Matrix: Water
Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: MB 240-595193/7
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 10:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 10:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 10:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 10:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/20/23 10:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/20/23 10:52*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/20/23 10:52*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/20/23 10:52*	*1*

Lab Sample ID: LCS 240-595193/4
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.5		ug/L		110	63 - 134
cis-1,2-Dichloroethene	25.0	26.4		ug/L		106	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	27.3		ug/L		109	75 - 124
Trichloroethene	25.0	26.4		ug/L		106	70 - 122
Vinyl chloride	12.5	11.3		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195494-A-9 MS
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.7		ug/L		107	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		112	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	25.6		ug/L		103	61 - 124
Vinyl chloride	1.0	U	12.5	9.22		ug/L		74	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-195494-B-9 MSD
Matrix: Water
Analysis Batch: 595193

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	31.1		ug/L		124	62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 136	1	15
Trichloroethene	1.0	U	25.0	25.5		ug/L		102	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.1		ug/L		81	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595505/6
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/21/23 21:18*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-595505/4
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.86		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195206-K-2 MS
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195206-O-2 MSD
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195398-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-3	DUP_13	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-1	TRIP BLANK_91	Total/NA	Water	8260D	
240-195398-2	MW-136S_110823	Total/NA	Water	8260D	
MB 240-595193/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595193/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-A-9 MS	Matrix Spike	Total/NA	Water	8260D	
240-195494-B-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-2	MW-136S_110823	Total/NA	Water	8260D SIM	
240-195398-3	DUP_13	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-K-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195206-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195398-1

Client Sample ID: TRIP BLANK_91

Lab Sample ID: 240-195398-1

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 12:04

Client Sample ID: MW-136S_110823

Lab Sample ID: 240-195398-2

Date Collected: 11/08/23 13:45

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 12:28
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 05:12

Client Sample ID: DUP_13

Lab Sample ID: 240-195398-3

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 23:10
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 05:36

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195398-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.402.04	Shipping/Tracking No:			
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 2691		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-136S-110823	11/08/23	1345		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
DUP-13	11/8/23	—		6						6					N	G	X	X	X	X	X	X	X	

240-195398 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Capitol ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/10/23 1530	Novi Cold Storage	Arcadis	11/10/23 1530
	Arcadis	11/13/23 0825		EEN A	11/13/23
	EEN A	11/13/23	Alaina Pitera	EETNC	11-14-23 1000

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11/24/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Alissa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF _____ °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 602225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195398-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195398-1

		Sample Name:	TRIP BLANK_91				MW-136S_110823				DUP_13			
		Lab Sample ID:	2401953981				2401953982				2401953983			
		Sample Date:	11/8/2023				11/8/2023				11/8/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	0.84	1.0	ug/l	J	0.85	1.0	ug/l	J
OSW-8260DSIM														
1,4-Dioxane	123-91-1						0.91	2.0	ug/l	J	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195398-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52155R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195398-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_91	240-195398-1	Water	11/08/2023		X	
MW-136S_110823	240-195398-2	Water	11/08/2023		X	X
DUP_13	240-195398-3	Water	11/08/2023	MW-136S_110823	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-136S_110823/DUP_13	1,4-Dioxane	0.91 J	2.0 U	AC
	Vinyl chloride	0.84 J	0.85 J	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

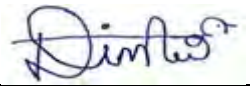
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 2691 (SS)		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-136S-110823	11/08/23	1345		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
DUP-13	11/8/23	—		6						6					N	G	X	X	X	X	X	X	X	↓

240-195398 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Capitol ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/10/23 1530	Novi Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/13/23 0835		EEN A	11/13/25
Relinquished by:	Company: AETNA	Date/Time: 11/13/23	Received in Laboratory by: Alaina Pitera	Company: EETNC	Date/Time: 11-14-23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_91
Lab Sample ID: 240-195398-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 12:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/20/23 12:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/20/23 12:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/20/23 12:04*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/20/23 12:04*	*1*

Client Sample ID: MW-136S_110823
Lab Sample ID: 240-195398-2
Date Collected: 11/08/23 13:45
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.91**	**J**	2.0	0.86	ug/L			11/22/23 05:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 05:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 12:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
Vinyl chloride	**0.84**	**J**	1.0	0.45	ug/L			11/20/23 12:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/20/23 12:28*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/20/23 12:28*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/20/23 12:28*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/20/23 12:28*	*1*

Client Sample ID: DUP_13
Lab Sample ID: 240-195398-3
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/22/23 05:36*	*1*

Client Sample ID: DUP_13
Date Collected: 11/08/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195398-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 23:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 23:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 23:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
Vinyl chloride	**0.85**	**J**	1.0	0.45	ug/L			11/19/23 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 23:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/19/23 23:10*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/19/23 23:10*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 23:10*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:43:56 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195400-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 4:43:56 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195400-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195400-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195400-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195400-1	TRIP BLANK_138	Water	11/09/23 00:00	11/14/23 10:00
240-195400-2	MW-101S_110923	Water	11/09/23 11:30	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_138 — Lab Sample ID: 240-195400-1

No Detections.

Client Sample ID: MW-101S_110923 — Lab Sample ID: 240-195400-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195400-1

Client Sample ID: TRIP BLANK_138
Date Collected: 11/09/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195400-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:36*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 17:36*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 17:36*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 17:36*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195400-1

Client Sample ID: MW-101S_110923
Date Collected: 11/09/23 11:30
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195400-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 22:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 18:01*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 18:01*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 18:01*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 18:01*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195400-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195284-B-4 MS	Matrix Spike	98	90	104	95
240-195284-B-4 MSD	Matrix Spike Duplicate	100	90	106	96
240-195400-1	TRIP BLANK_138	105	88	107	96
240-195400-2	MW-101S_110923	104	88	107	94
LCS 240-595140/5	Lab Control Sample	102	89	107	98
MB 240-595140/9	Method Blank	107	88	107	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195177-C-7 MS	Matrix Spike	98
240-195177-D-7 MSD	Matrix Spike Duplicate	100
240-195400-2	MW-101S_110923	101
LCS 240-595638/4	Lab Control Sample	101
MB 240-595638/5	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595140/9
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 15:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 15:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 15:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 15:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 15:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/19/23 15:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 15:12*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 15:12*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/19/23 15:12*	*1*

Lab Sample ID: LCS 240-595140/5
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	17.8		ug/L		89	63 - 134		
cis-1,2-Dichloroethene			20.0	17.2		ug/L		86	77 - 123		
Tetrachloroethene			20.0	19.7		ug/L		99	76 - 123		
trans-1,2-Dichloroethene			20.0	17.0		ug/L		85	75 - 124		
Trichloroethene			20.0	16.8		ug/L		84	70 - 122		
Vinyl chloride			20.0	19.9		ug/L		100	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	400	335		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	510		400	853		ug/L		85	66 - 128		
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131		
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136		
Trichloroethene	20	U	400	324		ug/L		81	61 - 124		
Vinyl chloride	380		400	769		ug/L		96	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195284-B-4 MS
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195284-B-4 MSD
Matrix: Water
Analysis Batch: 595140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	355		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	510		400	878		ug/L		91	66 - 128	3	14
Tetrachloroethene	20	U	400	398		ug/L		99	62 - 131	7	20
trans-1,2-Dichloroethene	20	U	400	363		ug/L		91	56 - 136	8	15
Trichloroethene	20	U	400	349		ug/L		87	61 - 124	7	15
Vinyl chloride	380		400	760		ug/L		94	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595638/5
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 15:25*	*1*

Lab Sample ID: LCS 240-595638/4
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.96		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195177-C-7 MS
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	280		20.0	309	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195177-D-7 MSD
Matrix: Water
Analysis Batch: 595638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	280		20.0	313	4	ug/L		144	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195400-1	TRIP BLANK_138	Total/NA	Water	8260D	
240-195400-2	MW-101S_110923	Total/NA	Water	8260D	
MB 240-595140/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595140/5	Lab Control Sample	Total/NA	Water	8260D	
240-195284-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-195284-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195400-2	MW-101S_110923	Total/NA	Water	8260D SIM	
MB 240-595638/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595638/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195177-C-7 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195177-D-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_138
Lab Sample ID: 240-195400-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 17:36

Client Sample ID: MW-101S_110923
Lab Sample ID: 240-195400-2
Date Collected: 11/09/23 11:30
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595140	HMB	EET CLE	11/19/23 18:01
Total/NA	Analysis	8260D SIM		1	595638	CS	EET CLE	11/22/23 22:15

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195400-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	
Phone: 248-994-2240	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30167538.402.04	Shipping/Tracking No:		
PO # 30167538.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_138	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1015_110923	11/09/23	1130		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195400 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden Ct. ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Alaina Pitera	Arcadis	11/10/23 1530	Novi Cold Storage	Arcadis	11/10/23 1530
Relinquished by:	Arcadis	11/13/23 0835	Received by:	EFNA	11/13/23
Relinquished by:	EFNA	11/13/23	Received in Laboratory by: Alissa Stevens	EETNC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # :_____

Client Arcadis Site Name_____

Cooler unpacked by: Alyssa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195400-1
Sample date: 2023-11-09
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195400-1

		Sample Name:	TRIP BLANK_138				MW-101S_110923			
		Lab Sample ID:	2401954001				2401954002			
		Sample Date:	11/9/2023				11/9/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195400-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52156R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195400-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_138	240-195400-1	Water	11/09/2023		X	
MW-101S_110923	240-195400-2	Water	11/09/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

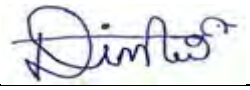
%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alaina Pitera	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_138	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1015_110923	11/09/23	1130		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195400 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden Ct. ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/10/23 1530	Novi Cold Storage	Arcadis	11/10/23 1530
	Arcadis	11/13/23 0835		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by: Alissa Attaway	EETWC	11-14-23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_138
Lab Sample ID: 240-195400-1
Date Collected: 11/09/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 17:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 17:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 17:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 17:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/19/23 17:36*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 17:36*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 17:36*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/19/23 17:36*	*1*

Client Sample ID: MW-101S_110923
Lab Sample ID: 240-195400-2
Date Collected: 11/09/23 11:30
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 22:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 18:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 18:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 18:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 18:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 18:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/19/23 18:01*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/19/23 18:01*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/19/23 18:01*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/19/23 18:01*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 8:53:29 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195207-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/27/2023 8:53:29 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Certification Summary 24
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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195207-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195207-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/10/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.7°C and 2.9°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-595063 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: MW-82SR_110823 (240-195207-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195207-1	TRIP BLANK_40	Water	11/08/23 00:00	11/10/23 08:00
240-195207-2	MW-106S_110823	Water	11/08/23 09:30	11/10/23 08:00
240-195207-3	MW-82SR_110823	Water	11/08/23 10:40	11/10/23 08:00
240-195207-4	MW-80SR_110823	Water	11/08/23 11:45	11/10/23 08:00
240-195207-5	DUP-16	Water	11/08/23 00:00	11/10/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: TRIP BLANK_40 — Lab Sample ID: 240-195207-1

No Detections.

Client Sample ID: MW-106S_110823 — Lab Sample ID: 240-195207-2

No Detections.

Client Sample ID: MW-82SR_110823 — Lab Sample ID: 240-195207-3

No Detections.

Client Sample ID: MW-80SR_110823 — Lab Sample ID: 240-195207-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-16 — Lab Sample ID: 240-195207-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: TRIP BLANK_40

Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195207-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 18:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 18:47*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 18:47*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 18:47*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: MW-106S_110823
Date Collected: 11/08/23 09:30
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195207-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 19:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 19:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 19:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 19:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 19:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 19:05*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/23 19:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/17/23 19:05*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/17/23 19:05*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: MW-82SR_110823
Date Collected: 11/08/23 10:40
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195207-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 11:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 11:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 20:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 20:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/17/23 20:22*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/23 20:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 20:22*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/23 20:22*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: MW-80SR_110823

Lab Sample ID: 240-195207-4

Date Collected: 11/08/23 11:45

Matrix: Water

Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/22/23 05:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 20:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 20:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 20:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:47	1
Vinyl chloride	**4.2**		1.0	0.45	ug/L			11/20/23 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 20:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 18:09*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/17/23 20:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/20/23 18:09*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 20:47*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/20/23 18:09*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/23 20:47*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/20/23 18:09*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: DUP-16
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195207-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 06:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 06:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 21:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 21:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 21:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 21:12	1
Vinyl chloride	**4.1**		1.0	0.45	ug/L			11/20/23 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 21:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 18:33*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/23 21:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/20/23 18:33*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/23 21:12*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/20/23 18:33*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/17/23 21:12*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/20/23 18:33*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195206-D-2 MS	Matrix Spike	93	103	105	96
240-195206-I-2 MSD	Matrix Spike Duplicate	92	99	106	96
240-195207-1	TRIP BLANK_40	95	97	99	95
240-195207-2	MW-106S_110823	93	93	102	95
240-195207-2 MS	MW-106S-MS_110823	90	99	101	93
240-195207-2 MSD	MW-106S-MSD_110823	89	101	104	94
240-195207-3	MW-82SR_110823	92	97	100	93
240-195207-4	MW-80SR_110823	93	96	100	93
240-195207-4	MW-80SR_110823	103	89	104	94
240-195207-5	DUP-16	93	97	98	95
240-195207-5	DUP-16	103	88	105	96
240-195272-E-9 MS	Matrix Spike	103	90	107	95
240-195272-F-9 MSD	Matrix Spike Duplicate	102	90	106	97
LCS 240-594812/5	Lab Control Sample	90	100	101	94
LCS 240-595063/5	Lab Control Sample	90	97	102	93
LCS 240-595210/5	Lab Control Sample	100	92	106	97
MB 240-594812/9	Method Blank	93	98	103	94
MB 240-595063/9	Method Blank	94	94	101	94
MB 240-595210/9	Method Blank	100	86	104	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195206-K-2 MS	Matrix Spike	98
240-195206-O-2 MSD	Matrix Spike Duplicate	101
240-195207-2	MW-106S_110823	100
240-195207-2 MS	MW-106S-MS_110823	99
240-195207-2 MSD	MW-106S-MSD_110823	103
240-195207-3	MW-82SR_110823	101
240-195207-4	MW-80SR_110823	99
240-195207-5	DUP-16	101
LCS 240-595505/4	Lab Control Sample	97
LCS 240-595507/4	Lab Control Sample	99
MB 240-595505/6	Method Blank	97
MB 240-595507/6	Method Blank	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-594812/9
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 15:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/16/23 15:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/16/23 15:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/16/23 15:23*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/16/23 15:23*	*1*

Lab Sample ID: LCS 240-594812/5
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	18.5		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		97	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122
Vinyl chloride	20.0	23.2		ug/L		116	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136
Trichloroethene	1.0	U	20.0	17.9		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	23.6		ug/L		118	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195206-D-2 MS
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195206-I-2 MSD
Matrix: Water
Analysis Batch: 594812

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		95	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: MB 240-595063/9
Matrix: Water
Analysis Batch: 595063

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 18:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 18:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 18:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 18:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/23 18:40	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/17/23 18:40*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/17/23 18:40*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/23 18:40*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/17/23 18:40*	*1*

Lab Sample ID: LCS 240-595063/5
Matrix: Water
Analysis Batch: 595063

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.3		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.7		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	19.8		ug/L		99	75 - 124
Trichloroethene	20.0	18.3		ug/L		92	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595063/5
Matrix: Water
Analysis Batch: 595063

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	23.4		ug/L		117	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195207-2 MS
Matrix: Water
Analysis Batch: 595063

Client Sample ID: MW-106S-MS_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.8		ug/L		104	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		97	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		96	56 - 136		
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	20.0	23.4		ug/L		117	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-195207-2 MSD
Matrix: Water
Analysis Batch: 595063

Client Sample ID: MW-106S-MSD_110823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	21.1		ug/L		105	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		96	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	18.1		ug/L		90	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	22.5		ug/L		112	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-595210/9
Matrix: Water
Analysis Batch: 595210

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 12:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 12:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/20/23 12:08*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/20/23 12:08*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/20/23 12:08*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/20/23 12:08*	*1*

Lab Sample ID: LCS 240-595210/5
Matrix: Water
Analysis Batch: 595210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.5		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	16.9		ug/L		85	77 - 123
Tetrachloroethene	20.0	18.9		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		85	75 - 124
Trichloroethene	20.0	16.5		ug/L		83	70 - 122
Vinyl chloride	20.0	20.7		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-195272-E-9 MS
Matrix: Water
Analysis Batch: 595210

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	14.7		ug/L		74	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	15.1		ug/L		76	66 - 128
Tetrachloroethene	4.3		20.0	19.9		ug/L		78	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	14.2		ug/L		71	56 - 136
Trichloroethene	1.0	U	20.0	13.9		ug/L		70	61 - 124
Vinyl chloride	1.0	U	20.0	18.0		ug/L		90	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195272-E-9 MS
Matrix: Water
Analysis Batch: 595210

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-195272-F-9 MSD
Matrix: Water
Analysis Batch: 595210

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	15.6		ug/L		78	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	15.8		ug/L		79	66 - 128	5	14
Tetrachloroethene	4.3		20.0	20.0		ug/L		79	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	15.4		ug/L		77	56 - 136	8	15
Trichloroethene	1.0	U	20.0	14.5		ug/L		72	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	19.0		ug/L		95	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595505/6
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/21/23 21:18*	*1*

Lab Sample ID: LCS 240-595505/4
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.86		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195206-K-2 MS
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195206-O-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595505

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: MB 240-595507/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595507

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 09:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 09:09*	*1*

Lab Sample ID: LCS 240-595507/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.2		ug/L		102	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195207-2 MS — **Client Sample ID: MW-106S-MS_110823**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595507

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-195207-2 MSD — **Client Sample ID: MW-106S-MSD_110823**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595507

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195207-2 MSD
Matrix: Water
Analysis Batch: 595507

Client Sample ID: MW-106S-MSD_110823
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

GC/MS VOA

Analysis Batch: 594812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195207-1	TRIP BLANK_40	Total/NA	Water	8260D	
MB 240-594812/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594812/5	Lab Control Sample	Total/NA	Water	8260D	
240-195206-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195206-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195207-2	MW-106S_110823	Total/NA	Water	8260D	
240-195207-3	MW-82SR_110823	Total/NA	Water	8260D	
240-195207-4	MW-80SR_110823	Total/NA	Water	8260D	
240-195207-5	DUP-16	Total/NA	Water	8260D	
MB 240-595063/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595063/5	Lab Control Sample	Total/NA	Water	8260D	
240-195207-2 MS	MW-106S-MS_110823	Total/NA	Water	8260D	
240-195207-2 MSD	MW-106S-MSD_110823	Total/NA	Water	8260D	

Analysis Batch: 595210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195207-4	MW-80SR_110823	Total/NA	Water	8260D	
240-195207-5	DUP-16	Total/NA	Water	8260D	
MB 240-595210/9	Method Blank	Total/NA	Water	8260D	
LCS 240-595210/5	Lab Control Sample	Total/NA	Water	8260D	
240-195272-E-9 MS	Matrix Spike	Total/NA	Water	8260D	
240-195272-F-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195207-4	MW-80SR_110823	Total/NA	Water	8260D SIM	
240-195207-5	DUP-16	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-K-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195206-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195207-2	MW-106S_110823	Total/NA	Water	8260D SIM	
240-195207-3	MW-82SR_110823	Total/NA	Water	8260D SIM	
MB 240-595507/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595507/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195207-2 MS	MW-106S-MS_110823	Total/NA	Water	8260D SIM	
240-195207-2 MSD	MW-106S-MSD_110823	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Client Sample ID: TRIP BLANK_40
Lab Sample ID: 240-195207-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	594812	AJS	EET CLE	11/16/23 18:47

Client Sample ID: MW-106S_110823
Lab Sample ID: 240-195207-2
Date Collected: 11/08/23 09:30
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595063	AJS	EET CLE	11/17/23 19:05
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 09:57

Client Sample ID: MW-82SR_110823
Lab Sample ID: 240-195207-3
Date Collected: 11/08/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595063	AJS	EET CLE	11/17/23 20:22
Total/NA	Analysis	8260D SIM		1	595507	CS	EET CLE	11/22/23 11:08

Client Sample ID: MW-80SR_110823
Lab Sample ID: 240-195207-4
Date Collected: 11/08/23 11:45
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595063	AJS	EET CLE	11/17/23 20:47
Total/NA	Analysis	8260D		1	595210	HMB	EET CLE	11/20/23 18:09
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 05:59

Client Sample ID: DUP-16
Lab Sample ID: 240-195207-5
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595063	AJS	EET CLE	11/17/23 21:12
Total/NA	Analysis	8260D		1	595210	HMB	EET CLE	11/20/23 18:33
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 06:23

Laboratory References:
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195207-1

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day (✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day)		Lab sampling
Project Name: Ford LTP ~~On-Site~~ offsite SG	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538.~~401.03~~ 402.04 SG	Shipping/Tracking No:			
PO # 30167538.~~401.03~~ 402.04 SG				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_40	----	-----		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-106S_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-106S-MS_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-106S-MSD_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-82SR_110823	11-8-23	1040		6						6					N	G	X	X	X	X	X	X	X	
MW-80SR_110823	11-8-23	1145		6						6					N	G	X	X	X	X	X	X	X	
DUP-16	11-8-23	—		6						6					N	G	X	X	X	X	X	X	X	

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample address: BEACON ROW, STARK ROW, BREWSTER ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
	Arcadis	11.8.23 / 1445	Novi Cold Storage	Arcadis	11/8/23 / 1445
	Arcadis	11/9/23 0850		EETA	11/9/23 10.00
	EETA	11/9/23 10.15	Received in Laboratory by:	Company: EETNC	Date/Time: 11-9-23 0800

11-10-23

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240-195207 Chain of Custody

11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195207

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkinson

Cooler Received on 11.10.23 Opened on 11/10/23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195207

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(EC) Client Box Other	IR GUN #: 22	1.8	2.9	(Wet Ice) Blue Ice Dry Ice Water None
(EC) Client Box Other	IR GUN #: 22	1.6	2.7	(Wet Ice) Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195207-1
Sample date: 2023-11-08
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195207-1

	Sample Name:	TRIP BLANK_40				MW-106S_110823				MW-82SR_110823				MW-80SR_110823				DUP-16			
	Lab Sample ID:	2401952071				2401952072				2401952073				2401952074				2401952075			
	Sample Date:	11/8/2023				11/8/2023				11/8/2023				11/8/2023				11/8/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.2	1.0	ug/l	---	4.1	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195207-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52142R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195207-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_40	240-195207-1	Water	11/08/2023		X	
MW-106S_110823	240-195207-2	Water	11/08/2023		X	X
MW-82SR_110823	240-195207-3	Water	11/08/2023		X	X
MW-80SR_110823	240-195207-4	Water	11/08/2023		X	X
DUP-16	240-195207-5	Water	11/08/2023	MW-80SR_110823	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
MW-106S_110823 MW-82SR_110823	Continuing Calibration Verification %D	Vinyl chloride	+22.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-80SR_110823 / DUP-16	Vinyl chloride	4.2	4.1	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

DATA REVIEW

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: JOE FOSTIK	TAT if different from below: 10 day ✓ 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Lab sampling
Project Name: Ford LTP ~~On-Site~~ offsite SG	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30167538 ~~.401.03~~ 402.04 SG	Shipping/Tracking No:			
PO # 30167538 ~~.401.03~~ 402.04 SG				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_40	----	-----		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-106S_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-106S-MS_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	Run MS|MSD
MW-106S-MSD_110823	11-8-23	0930		6						6					N	G	X	X	X	X	X	X	X	Run MS|MSD
MW-82SR_110823	11-8-23	1040		6						6					N	G	X	X	X	X	X	X	X	*
MW-80SR_110823	11-8-23	1145		6						6					N	G	X	X	X	X	X	X	X	
DUP-16	11-8-23	—		6						6					N	G	X	X	X	X	X	X	X	—

MICHIGAN 190

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample address: BEACON ROW, STARK ROW, BREWSTER ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
	Arcadis	11.8.23 / 1445	Novi Cold Storage	Arcadis	11/8/23 / 1445
	Arcadis	11/9/23 0850		EETA	11/9/23 10.10
	EETA	11/9/23 10.15	Received in Laboratory by:	Company: EETNC	Date/Time: 11-9-23 0800

11-10-23

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240-195207 Chain of Custody

11/27/2023

Client Sample ID: TRIP BLANK_40
Lab Sample ID: 240-195207-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/23 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/23 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/23 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/23 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/23 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/23 18:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/16/23 18:47*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/23 18:47*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/23 18:47*	*1*

Client Sample ID: MW-106S_110823
Lab Sample ID: 240-195207-2
Date Collected: 11/08/23 09:30
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/22/23 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 19:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 19:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 19:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 19:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 19:05	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/17/23 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 19:05*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/23 19:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/17/23 19:05*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/17/23 19:05*	*1*

Client Sample ID: MW-82SR_110823
Lab Sample ID: 240-195207-3
Date Collected: 11/08/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 11:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 11:08*	*1*

Client Sample ID: MW-82SR_110823
Lab Sample ID: 240-195207-3

Date Collected: 11/08/23 10:40
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 20:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 20:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 20:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:22	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/17/23 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/17/23 20:22*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/23 20:22*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 20:22*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/23 20:22*	*1*

Client Sample ID: MW-80SR_110823
Lab Sample ID: 240-195207-4

Date Collected: 11/08/23 11:45
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/22/23 05:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 20:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 20:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 20:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 20:47	1
Vinyl chloride	**4.2**		1.0	0.45	ug/L			11/20/23 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 20:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 18:09*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/17/23 20:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/20/23 18:09*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/23 20:47*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/20/23 18:09*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/23 20:47*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/20/23 18:09*	*1*

Client Sample ID: DUP-16
Lab Sample ID: 240-195207-5

Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/10/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 06:23	1

Client Sample ID: DUP-16
Date Collected: 11/08/23 00:00
Date Received: 11/10/23 08:00

Lab Sample ID: 240-195207-5
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/22/23 06:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/23 21:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/23 21:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 21:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/23 21:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/23 21:12	1
Vinyl chloride	**4.1**		1.0	0.45	ug/L			11/20/23 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/23 21:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/20/23 18:33*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/23 21:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/20/23 18:33*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/23 21:12*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/20/23 18:33*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/17/23 21:12*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/20/23 18:33*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/27/2023 4:40:28 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195388-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/27/2023 4:40:28 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195388-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195388-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195388-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195388-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195388-1	TRIP BLANK_119	Water	11/08/23 00:00	11/14/23 10:00
240-195388-2	MW-192S_110823	Water	11/08/23 11:10	11/14/23 10:00
240-195388-3	DUP_11	Water	11/08/23 00:00	11/14/23 10:00
240-195388-4	MW-78S_111023	Water	11/10/23 12:00	11/14/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195388-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_119 — Lab Sample ID: 240-195388-1

No Detections.

Client Sample ID: MW-192S_110823 — Lab Sample ID: 240-195388-2

No Detections.

Client Sample ID: DUP_11 — Lab Sample ID: 240-195388-3

No Detections.

Client Sample ID: MW-78S_111023 — Lab Sample ID: 240-195388-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.46	J	1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Client Sample ID: TRIP BLANK_119
Date Collected: 11/08/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195388-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 16:04*	*1*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*		*11/18/23 16:04*	*1*
Toluene-d8 (Surr)	*118*		*78 - 122*		*11/18/23 16:04*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/18/23 16:04*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Client Sample ID: MW-192S_110823
Date Collected: 11/08/23 11:10
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195388-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 04:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 04:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 20:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 20:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 20:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 20:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 20:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 20:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/18/23 20:53*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 20:53*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/18/23 20:53*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 20:53*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Client Sample ID: DUP_11
Date Collected: 11/08/23 00:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195388-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 04:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 04:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 21:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 21:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 21:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/18/23 21:17*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/18/23 21:17*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/18/23 21:17*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/18/23 21:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Client Sample ID: MW-78S_111023
Date Collected: 11/10/23 12:00
Date Received: 11/14/23 10:00

Lab Sample ID: 240-195388-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 17:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 21:41	1
cis-1,2-Dichloroethene	**0.46**	**J**	1.0	0.46	ug/L			11/18/23 21:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 21:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/18/23 21:41*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 21:41*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/18/23 21:41*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 21:41*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195156-C-52 MS	Matrix Spike	110	109	108	106
240-195156-C-52 MSD	Matrix Spike Duplicate	109	112	108	106
240-195388-1	TRIP BLANK_119	117	117	118	112
240-195388-2	MW-192S_110823	114	109	109	110
240-195388-3	DUP_11	109	106	105	105
240-195388-4	MW-78S_111023	116	109	106	111
LCS 240-595129/5	Lab Control Sample	116	122	117	114
MB 240-595129/8	Method Blank	123	118	117	115

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195206-K-2 MS	Matrix Spike	98
240-195206-O-2 MSD	Matrix Spike Duplicate	101
240-195388-2	MW-192S_110823	98
240-195388-3	DUP_11	97
240-195388-4	MW-78S_111023	99
240-195409-G-3 MS	Matrix Spike	95
240-195409-M-3 MSD	Matrix Spike Duplicate	96
LCS 240-595505/4	Lab Control Sample	97
LCS 240-595685/4	Lab Control Sample	99
MB 240-595505/6	Method Blank	97
MB 240-595685/5	Method Blank	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595129/8
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 14:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*62 - 137*		*11/18/23 14:52*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*11/18/23 14:52*	*1*
Toluene-d8 (Surr)	*117*		*78 - 122*		*11/18/23 14:52*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*11/18/23 14:52*	*1*

Lab Sample ID: LCS 240-595129/5
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*114*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	100	U	2500	2250		ug/L		90	56 - 135
cis-1,2-Dichloroethene	2400		2500	4550		ug/L		86	66 - 128
Tetrachloroethene	100	U	2500	2090		ug/L		83	62 - 131
trans-1,2-Dichloroethene	100	U	2500	2240		ug/L		90	56 - 136
Trichloroethene	440		2500	2480		ug/L		82	61 - 124
Vinyl chloride	50	J	1250	1060		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195156-C-52 MS
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-195156-C-52 MSD
Matrix: Water
Analysis Batch: 595129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2500	2170		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	2400		2500	4500		ug/L		84	66 - 128	1	14
Tetrachloroethene	100	U	2500	2010		ug/L		80	62 - 131	4	20
trans-1,2-Dichloroethene	100	U	2500	2160		ug/L		87	56 - 136	4	15
Trichloroethene	440		2500	2390		ug/L		78	61 - 124	4	15
Vinyl chloride	50	J	1250	1050		ug/L		80	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595505/6
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/21/23 21:18*	*1*

Lab Sample ID: LCS 240-595505/4
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.86		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-195206-K-2 MS
Matrix: Water
Analysis Batch: 595505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: 240-195206-O-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595505

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

Lab Sample ID: MB 240-595685/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595685

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 13:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		66 - 120		11/24/23 13:54	1

Lab Sample ID: LCS 240-595685/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595685

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		66 - 120

Lab Sample ID: 240-195409-G-3 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595685

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		66 - 120

Lab Sample ID: 240-195409-M-3 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595685

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153	9	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195409-M-3 MSD
Matrix: Water
Analysis Batch: 595685

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

GC/MS VOA

Analysis Batch: 595129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195388-1	TRIP BLANK_119	Total/NA	Water	8260D	
240-195388-2	MW-192S_110823	Total/NA	Water	8260D	
240-195388-3	DUP_11	Total/NA	Water	8260D	
240-195388-4	MW-78S_111023	Total/NA	Water	8260D	
MB 240-595129/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595129/5	Lab Control Sample	Total/NA	Water	8260D	
240-195156-C-52 MS	Matrix Spike	Total/NA	Water	8260D	
240-195156-C-52 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195388-2	MW-192S_110823	Total/NA	Water	8260D SIM	
240-195388-3	DUP_11	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-K-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195206-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195388-4	MW-78S_111023	Total/NA	Water	8260D SIM	
MB 240-595685/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595685/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195409-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195409-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195388-1

Client Sample ID: TRIP BLANK_119

Lab Sample ID: 240-195388-1

Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 16:04

Client Sample ID: MW-192S_110823

Lab Sample ID: 240-195388-2

Date Collected: 11/08/23 11:10
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 20:53
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 04:24

Client Sample ID: DUP_11

Lab Sample ID: 240-195388-3

Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 21:17
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 04:48

Client Sample ID: MW-78S_111023

Lab Sample ID: 240-195388-4

Date Collected: 11/10/23 12:00
Matrix: Water
Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595129	CDG	EET CLE	11/18/23 21:41
Total/NA	Analysis	8260D SIM		1	595685	CS	EET CLE	11/24/23 17:06

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195388-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alaina Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_119		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1925_110823	11/08/23	1110		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-11	—	—		6						6					N	6	X	X	X	X	X	X	X	
MW-785_111023	11/10/23	1200		6						6					N	G	X	X	X	X	X	X	X	—

240-195388 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Beacon ROW

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alaina Pitera	Arcadis	11/09/23 1530	NOVI Cold Storage	Arcadis	11/09/23 1530
[signature]	Arcadis	11/13/23 0835	[signature]	EEA	11/13/23
[signature]	EEA	11/13/23	[signature]	BE INC	11-14-23 1000

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11/27/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Alyssa Atkinson

Cooler Received on 11-14-23 Opened on 11-14-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time_____ Storage Location_____

Eurofins Cooler # EC Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) (Foam) (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # _____ (CF_____°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 602225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 21	3.2	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	3.0	3.2	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	

DATA VERIFICATION REPORT

November 27, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195388-1
Sample date: 2023-11-08 2023-11-10
Report received by CADENA: 2023-11-27
Initial Data Verification completed by CADENA: 2023-11-27
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195388-1

		Sample Name:	TRIP BLANK_119				MW-192S_110823				DUP_11				MW-78S_111023			
		Lab Sample ID:	2401953881				2401953882				2401953883				2401953884			
		Sample Date:	11/8/2023				11/8/2023				11/8/2023				11/10/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.46	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195388-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52149R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195388-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_119	240-195388-1	Water	11/08/2023		X	
MW-192S_110823	240-195388-2	Water	11/08/2023		X	X
DUP_11	240-195388-3	Water	11/08/2023	MW-192S_110823	X	X
MW-78S_111023	240-195388-4	Water	11/08/2023		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-192S_110823/DUP_11	All target compounds	U	U	AC

Note:

AC Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

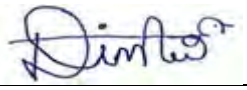
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Alana Pitera	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_119		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1925_110823	11/08/23	1110		6						6					N	6	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-11	—	—		6						6					N	6	X	X	X	X	X	X	X	
MW-785_111023	11/10/23	1200		6						6					N	G	X	X	X	X	X	X	X	—

240-195388 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Beacon Row
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alana Pitera	Arcadis	11/09/23 1530	Novi Cold Storage	Arcadis	11/09/23 1530
	Arcadis	11/13/23 0835		EEA	11/13/23
	EEA	11/13/23	Received in Laboratory by: Alisha Adams	BE INC	11-14-23 1000

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11/27/2023

Client Sample ID: TRIP BLANK_119
Lab Sample ID: 240-195388-1
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 16:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/18/23 16:04*	*1*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*		*11/18/23 16:04*	*1*
Toluene-d8 (Surr)	*118*		*78 - 122*		*11/18/23 16:04*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*11/18/23 16:04*	*1*

Client Sample ID: MW-192S_110823
Lab Sample ID: 240-195388-2
Date Collected: 11/08/23 11:10
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 04:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/22/23 04:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 20:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 20:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 20:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 20:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 20:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 20:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/18/23 20:53*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 20:53*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*11/18/23 20:53*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/18/23 20:53*	*1*

Client Sample ID: DUP_11
Lab Sample ID: 240-195388-3
Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 04:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/22/23 04:48*	*1*

Client Sample ID: DUP_11
Lab Sample ID: 240-195388-3

Date Collected: 11/08/23 00:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 21:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/23 21:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 21:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/18/23 21:17*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*11/18/23 21:17*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/18/23 21:17*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*11/18/23 21:17*	*1*

Client Sample ID: MW-78S_111023
Lab Sample ID: 240-195388-4

Date Collected: 11/10/23 12:00
Matrix: Water
Date Received: 11/14/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/24/23 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/24/23 17:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/23 21:41	1
cis-1,2-Dichloroethene	**0.46**	**J**	1.0	0.46	ug/L			11/18/23 21:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/23 21:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/23 21:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/23 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/18/23 21:41*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*11/18/23 21:41*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/18/23 21:41*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*11/18/23 21:41*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:13:22 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195972-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/1/2023 5:13:22 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195972-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195972-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195972-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/25/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.7°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-596013 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Job ID: 240-195972-1
Project/Site: Ford LTP - Off Site

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195972-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195972-1	TRIP BLANK_114	Water	11/21/23 00:00	11/25/23 10:00
240-195972-2	MW-100S_112123	Water	11/21/23 13:45	11/25/23 10:00
240-195972-3	MW-82D_112123	Water	11/21/23 14:45	11/25/23 10:00
240-195972-4	MW-96S_112123	Water	11/21/23 16:10	11/25/23 10:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195972-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_114 **Lab Sample ID: 240-195972-1**

No Detections.

Client Sample ID: MW-100S_112123 **Lab Sample ID: 240-195972-2**

No Detections.

Client Sample ID: MW-82D_112123 **Lab Sample ID: 240-195972-3**

No Detections.

Client Sample ID: MW-96S_112123 **Lab Sample ID: 240-195972-4**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Client Sample ID: TRIP BLANK_114
Date Collected: 11/21/23 00:00
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195972-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 15:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 15:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 15:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/29/23 15:09*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/23 15:09*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/23 15:09*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/23 15:09*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Client Sample ID: MW-100S_112123
Date Collected: 11/21/23 13:45
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195972-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/23 20:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:26*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/29/23 16:26*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/23 16:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 16:26*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Client Sample ID: MW-82D_112123
Date Collected: 11/21/23 14:45
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195972-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 21:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/23 16:51*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/23 16:51*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/23 16:51*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Client Sample ID: MW-96S_112123
Date Collected: 11/21/23 16:10
Date Received: 11/25/23 10:00

Lab Sample ID: 240-195972-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/29/23 21:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/29/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 17:16*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 17:16*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/29/23 17:16*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195972-1	TRIP BLANK_114	96	97	102	98
240-195972-2	MW-100S_112123	100	95	100	100
240-195972-3	MW-82D_112123	100	99	104	101
240-195972-4	MW-96S_112123	99	96	103	102
240-195972-4 MS	MW-96S-MS_112123	94	101	105	96
240-195972-4 MSD	MW-96S-MSD_112123	93	103	105	96
LCS 240-596013/5	Lab Control Sample	89	98	106	98
MB 240-596013/9	Method Blank	95	98	101	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195972-2	MW-100S_112123	107
240-195972-3	MW-82D_112123	106
240-195972-4	MW-96S_112123	108
240-195972-4 MS	MW-96S-MS_112123	105
240-195972-4 MSD	MW-96S-MSD_112123	104
LCS 240-596116/4	Lab Control Sample	104
MB 240-596116/6	Method Blank	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-596013/9
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 11:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 11:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 11:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 11:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 11:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/29/23 11:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/23 11:23*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/23 11:23*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/23 11:23*	*1*

Lab Sample ID: LCS 240-596013/5
Matrix: Water
Analysis Batch: 596013

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	22.0		ug/L		110	63 - 134		
cis-1,2-Dichloroethene			20.0	19.0		ug/L		95	77 - 123		
Tetrachloroethene			20.0	20.8		ug/L		104	76 - 123		
trans-1,2-Dichloroethene			20.0	20.6		ug/L		103	75 - 124		
Trichloroethene			20.0	18.3		ug/L		92	70 - 122		
Vinyl chloride			20.0	23.8		ug/L		119	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-195972-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: MW-96S-MS_112123
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128		
Tetrachloroethene	1.0	U	20.0	18.8		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.8		ug/L		99	56 - 136		
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	20.0	22.5		ug/L		112	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195972-4 MS
Matrix: Water
Analysis Batch: 596013

Client Sample ID: MW-96S-MS_112123
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-195972-4 MSD
Matrix: Water
Analysis Batch: 596013

Client Sample ID: MW-96S-MSD_112123
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		97	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	21.9		ug/L		110	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596116/6
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 19:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 19:46*	*1*

Lab Sample ID: LCS 240-596116/4
Matrix: Water
Analysis Batch: 596116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.93		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: 240-195972-4 MS
Matrix: Water
Analysis Batch: 596116

Client Sample ID: MW-96S-MS_112123
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-195972-4 MSD
Matrix: Water
Analysis Batch: 596116

Client Sample ID: MW-96S-MSD_112123
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.79		ug/L		98	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

GC/MS VOA

Analysis Batch: 596013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195972-1	TRIP BLANK_114	Total/NA	Water	8260D	
240-195972-2	MW-100S_112123	Total/NA	Water	8260D	
240-195972-3	MW-82D_112123	Total/NA	Water	8260D	
240-195972-4	MW-96S_112123	Total/NA	Water	8260D	
MB 240-596013/9	Method Blank	Total/NA	Water	8260D	
LCS 240-596013/5	Lab Control Sample	Total/NA	Water	8260D	
240-195972-4 MS	MW-96S-MS_112123	Total/NA	Water	8260D	
240-195972-4 MSD	MW-96S-MSD_112123	Total/NA	Water	8260D	

Analysis Batch: 596116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195972-2	MW-100S_112123	Total/NA	Water	8260D SIM	
240-195972-3	MW-82D_112123	Total/NA	Water	8260D SIM	
240-195972-4	MW-96S_112123	Total/NA	Water	8260D SIM	
MB 240-596116/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596116/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195972-4 MS	MW-96S-MS_112123	Total/NA	Water	8260D SIM	
240-195972-4 MSD	MW-96S-MSD_112123	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195972-1

Client Sample ID: TRIP BLANK_114
Lab Sample ID: 240-195972-1
Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 15:09

Client Sample ID: MW-100S_112123
Lab Sample ID: 240-195972-2
Date Collected: 11/21/23 13:45
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 16:26
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 20:44

Client Sample ID: MW-82D_112123
Lab Sample ID: 240-195972-3
Date Collected: 11/21/23 14:45
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 16:51
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 21:08

Client Sample ID: MW-96S_112123
Lab Sample ID: 240-195972-4
Date Collected: 11/21/23 16:10
Matrix: Water
Date Received: 11/25/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596013	AJS	EET CLE	11/29/23 17:16
Total/NA	Analysis	8260D SIM		1	596116	TJL2	EET CLE	11/29/23 21:31

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195972-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only		
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite - C / Grab - G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_ 114	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-100S_112123	11/21/23	1345		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260 3 VOAs for 8260 SIM
MW-82D_112123		1445		6						6					N	G	X	X	X	X	X	X	X	
MW-96S_112123		1610		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-96S-MS_112123		1610		6						6					X	X	X	X	X	X	X	X	X	Run MS/MSD
MW-96S-MSD_112123		1610		6						6					X	X	X	X	X	X	X	X	X	Run MS/MSD

240-195972 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments: Belden ROW; Stark ROW

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	ARCADIS	11/21/23 1730	Received by: Novi Cold Storage	ARCADIS	11/21/23 1730
Relinquished by:	ARCADIS	11/22/23/1406	Received by:	EGTA	11/22/23 1406
Relinquished by:	EETA	11/22/23 1406	Received in Laboratory by:	EETNC	11-25-23 1000

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Ford LTP | Cooler unpacked by: DMB

Cooler Received on 11-25-23 Opened on 11-27-23

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 12 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195972-1
Sample date: 2023-11-21
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195972-1

		Sample Name:	TRIP BLANK_114				MW-100S_112123				MW-82D_112123				MW-96S_112123			
		Lab Sample ID:	2401959721				2401959722				2401959723				2401959724			
		Sample Date:	11/21/2023				11/21/2023				11/21/2023				11/21/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195972-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52179R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195972-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_114	240-195972-1	Water	11/21/2023		X	
MW-100S_112123	240-195972-2	Water	11/21/2023		X	X
MW-82D_112123	240-195972-3	Water	11/21/2023		X	X
MW-96S_112123	240-195972-4	Water	11/21/2023		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_114 MW-100S_112123 MW-82D_112123 MW-96S_112123	Continuing Calibration Verification %D	Vinyl chloride	+29.9%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only		
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_ 114	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-100S_112123	11/2/23	1345		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260
MW-82D_112123		1445		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260 SIM
MW-96S_112123		1610		6						6					N	G	X	X	X	X	X	X	X	
MW-96S-MS_112123		1610		6						6					X	X	X	X	X	X	X	X	X	Run MS/MSD
MW-96S-MSD_112123		1610		6						6					X	X	X	X	X	X	X	X	X	Run MS/MSD

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240-195972 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments: Belden ROW; Stark ROW

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/23 1730	Novi Cold Storage	ARCADIS	11/21/23 1730
	ARCADIS	11/22/23/1406		EGTA	11/22/23 1406
	EETA	11/22/23 1406	Received in Laboratory by:	EETNC	11-25-23 1000

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12/01/2023

Client Sample ID: TRIP BLANK_114
Lab Sample ID: 240-195972-1
Date Collected: 11/21/23 00:00
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 15:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 15:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 15:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 15:09	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/29/23 15:09*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/23 15:09*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/23 15:09*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/23 15:09*	*1*

Client Sample ID: MW-100S_112123
Lab Sample ID: 240-195972-2
Date Collected: 11/21/23 13:45
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/23 20:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:26	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:26*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/29/23 16:26*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/23 16:26*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/23 16:26*	*1*

Client Sample ID: MW-82D_112123
Lab Sample ID: 240-195972-3
Date Collected: 11/21/23 14:45
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/23 21:08*	*1*

Client Sample ID: MW-82D_112123
Lab Sample ID: 240-195972-3

Date Collected: 11/21/23 14:45
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 16:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 16:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 16:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 16:51	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/29/23 16:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/23 16:51*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/23 16:51*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/23 16:51*	*1*

Client Sample ID: MW-96S_112123
Lab Sample ID: 240-195972-4

Date Collected: 11/21/23 16:10
Matrix: Water
Date Received: 11/25/23 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/29/23 21:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 17:16	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/29/23 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/29/23 17:16*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/23 17:16*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/23 17:16*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/29/23 17:16*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:22:35 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195929-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195929-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195929-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195929-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The MSD for batch 240-595975 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195929-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195929-1	TRIP BLANK_113	Water	11/20/23 00:00	11/22/23 08:00
240-195929-2	MW-83_112023	Water	11/20/23 14:10	11/22/23 08:00
240-195929-3	MW-83S_112023	Water	11/20/23 15:30	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195929-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_113 — Lab Sample ID: 240-195929-1

No Detections.

Client Sample ID: MW-83_112023 — Lab Sample ID: 240-195929-2

No Detections.

Client Sample ID: MW-83S_112023 — Lab Sample ID: 240-195929-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

Client Sample ID: TRIP BLANK_113
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195929-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/28/23 20:51*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/28/23 20:51*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:51*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

Client Sample ID: MW-83_112023
Date Collected: 11/20/23 14:10
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195929-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/30/23 14:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 10:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 10:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 10:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 10:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 10:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/28/23 10:51*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/28/23 10:51*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 10:51*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/23 10:51*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

Client Sample ID: MW-83S_112023
Date Collected: 11/20/23 15:30
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195929-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 13:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 02:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 02:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 02:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 02:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 02:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 02:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/29/23 02:17*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 02:17*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/29/23 02:17*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/29/23 02:17*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195840-C-2 MS	Matrix Spike	103	114	109	108
240-195840-C-2 MSD	Matrix Spike Duplicate	106	109	109	104
240-195929-1	TRIP BLANK_113	111	81	105	102
240-195929-2	MW-83_112023	106	85	103	97
240-195929-2 MS	MW-83-MS_112023	103	99	108	99
240-195929-2 MSD	MW-83-MSD_112023	102	97	105	99
240-195929-3	MW-83S_112023	117	80	106	104
LCS 240-595856/4	Lab Control Sample	100	95	105	100
LCS 240-595975/4	Lab Control Sample	107	98	109	103
MB 240-595856/6	Method Blank	107	86	104	97
MB 240-595975/6	Method Blank	112	84	105	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195929-2	MW-83_112023	96
240-195929-2 MS	MW-83-MS_112023	96
240-195929-2 MSD	MW-83-MSD_112023	96
240-195929-3	MW-83S_112023	98
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595856/6
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 06:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 06:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 06:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 06:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 06:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/28/23 06:39*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/28/23 06:39*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/23 06:39*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/23 06:39*	*1*

Lab Sample ID: LCS 240-595856/4
Matrix: Water
Analysis Batch: 595856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.6		ug/L		106	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	27.7		ug/L		111	76 - 123
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	12.3		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-195929-2 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-83-MS_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		84	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.2		ug/L		85	56 - 136
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124
Vinyl chloride	1.0	U	12.5	9.76		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195929-2 MS
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-83-MS_112023
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-195929-2 MSD
Matrix: Water
Analysis Batch: 595856

Client Sample ID: MW-83-MSD_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.4		ug/L		81	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 136	0	15
Trichloroethene	1.0	U	25.0	21.0		ug/L		84	61 - 124	0	15
Vinyl chloride	1.0	U	12.5	11.0		ug/L		88	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	105		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: MB 240-595975/6
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		62 - 137		11/28/23 18:46	1
4-Bromofluorobenzene (Surr)	84		56 - 136		11/28/23 18:46	1
Toluene-d8 (Surr)	105		78 - 122		11/28/23 18:46	1
Dibromofluoromethane (Surr)	101		73 - 120		11/28/23 18:46	1

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.3		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.2		ug/L		93	77 - 123
Tetrachloroethene	25.0	26.3		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	23.5		ug/L		94	75 - 124
Trichloroethene	25.0	24.8		ug/L		99	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	510		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	170		500	662		ug/L		99	66 - 128		
Tetrachloroethene	20	U	500	454		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	61		500	561		ug/L		100	56 - 136		
Trichloroethene	510		500	885		ug/L		75	61 - 124		
Vinyl chloride	20	U	250	207		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MSD
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	508		ug/L		102	56 - 135	0	26
cis-1,2-Dichloroethene	170		500	632		ug/L		93	66 - 128	5	14
Tetrachloroethene	20	U	500	484		ug/L		97	62 - 131	6	20
trans-1,2-Dichloroethene	61		500	550		ug/L		98	56 - 136	2	15
Trichloroethene	510		500	925		ug/L		83	61 - 124	4	15
Vinyl chloride	20	U	250	233		ug/L		93	43 - 157	12	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195929-2 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: MW-83-MS_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-195929-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: MW-83-MSD_112023
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195929-1

GC/MS VOA

Analysis Batch: 595856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195929-2	MW-83_112023	Total/NA	Water	8260D	
MB 240-595856/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595856/4	Lab Control Sample	Total/NA	Water	8260D	
240-195929-2 MS	MW-83-MS_112023	Total/NA	Water	8260D	
240-195929-2 MSD	MW-83-MSD_112023	Total/NA	Water	8260D	

Analysis Batch: 595975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195929-1	TRIP BLANK_113	Total/NA	Water	8260D	
240-195929-3	MW-83S_112023	Total/NA	Water	8260D	
MB 240-595975/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595975/4	Lab Control Sample	Total/NA	Water	8260D	
240-195840-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195840-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195929-2	MW-83_112023	Total/NA	Water	8260D SIM	
240-195929-3	MW-83S_112023	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195929-2 MS	MW-83-MS_112023	Total/NA	Water	8260D SIM	
240-195929-2 MSD	MW-83-MSD_112023	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195929-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_113
Lab Sample ID: 240-195929-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/28/23 20:51

Client Sample ID: MW-83_112023
Lab Sample ID: 240-195929-2
Date Collected: 11/20/23 14:10
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595856	TJL2	EET CLE	11/28/23 10:51
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 14:09

Client Sample ID: MW-83S_112023
Lab Sample ID: 240-195929-3
Date Collected: 11/20/23 15:30
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 02:17
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 13:45

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195929-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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3.8/4.9

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Regulatory program: | DW | NPDES | RCRA | Other

TestAmerica Lab

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks / 3 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Speci / Special Instr
✓ TRIP BLANK_113	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
✓ MW-83_112023	11/20/23	1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 ~~Run~~ SG
✓ MW-83-MS-112023		SG ~~1414~~ 1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 MS/MSD
✓ MW-83-MSD-112023		SG ~~1418~~ 1410		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
✓ MW-83S-112023		15:30		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-195929 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
| Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address:
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Stark Row

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/20/23 1645	Novi Cold Storage	ARCADIS	11/20/23 1645
Relinquished by: [signature]	Company: Arcadis	Date/Time: 11/21/23 0935	Received by: [signature]	Company: EEEA	Date/Time: 11/21/23
Relinquished by: [signature]	Company: EEEA	Date/Time: 11/21/23	Received in Laboratory by: Alissa Allard	Company: EEEA 0800	Date/Time: 11.22.23

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler Received on 11.22.23 Opened on 11.22.23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195929-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195929-1

		Sample Name:	TRIP BLANK_113				MW-83_112023				MW-83S_112023			
		Lab Sample ID:	2401959291				2401959292				2401959293			
		Sample Date:	11/20/2023				11/20/2023				11/20/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195929-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52174R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195929-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_113	240-195929-1	Water	11/20/2023		X	
MW-83_112023	240-195929-2	Water	11/20/2023		X	X
MW-83S_112023	240-195929-3	Water	11/20/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

3.8/49

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	TestAmerica Lab COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30167538.402.04				
PO # 30167538.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
✓ TRIP BLANK_113	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
✓ MW-83_112023	11/20/23	1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8: ~~Run~~ SG MS/MSD
✓ MW-83-MS_112023		SG ~~1414~~ 1410		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8: Run MS/MSD
✓ MW-83-MSD_112023		SG ~~1410~~ 1410		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
✓ MW-83S_112023		15:30		6						6					N	G	X	X	X	X	X	X	X	

240-195929 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): | Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	ARCADIS	11/20/23 1645	Novi Cold storage	ARCADIS	11/20/23 1645
Relinquished by:	Arcadis	11/21/23 0935		EEEA	11/21/23
Relinquished by:	EEEA	11/21/23	Received in Laboratory by: Alissa Allison	EEEA 0800	11-22-23

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11/01/2023

Client Sample ID: TRIP BLANK_113
Lab Sample ID: 240-195929-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/28/23 20:51*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/28/23 20:51*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:51*	*1*

Client Sample ID: MW-83_112023
Lab Sample ID: 240-195929-2
Date Collected: 11/20/23 14:10
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*11/30/23 14:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 10:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 10:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 10:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 10:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 10:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/28/23 10:51*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/28/23 10:51*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/23 10:51*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/23 10:51*	*1*

Client Sample ID: MW-83S_112023
Lab Sample ID: 240-195929-3
Date Collected: 11/20/23 15:30
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/30/23 13:45*	*1*

Client Sample ID: MW-83S_112023
Lab Sample ID: 240-195929-3

Date Collected: 11/20/23 15:30
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 02:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 02:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 02:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 02:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 02:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 02:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/29/23 02:17*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 02:17*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/29/23 02:17*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/29/23 02:17*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:19:33 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195926-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195926-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195926-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/22/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.9°C

GC/MS VOA
Method 8260D: The MSD for batch 240-595975 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195926-1	TRIP BLANK_112	Water	11/20/23 00:00	11/22/23 08:00
240-195926-2	MW-142S_112023	Water	11/20/23 09:50	11/22/23 08:00
240-195926-3	MW-133S_112023	Water	11/20/23 10:55	11/22/23 08:00
240-195926-4	MW-76_112023	Water	11/20/23 11:55	11/22/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_112 — Lab Sample ID: 240-195926-1

No Detections.

Client Sample ID: MW-142S_112023 — Lab Sample ID: 240-195926-2

No Detections.

Client Sample ID: MW-133S_112023 — Lab Sample ID: 240-195926-3

No Detections.

Client Sample ID: MW-76_112023 — Lab Sample ID: 240-195926-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.57	J	1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Client Sample ID: TRIP BLANK_112
Date Collected: 11/20/23 00:00
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195926-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/28/23 20:01*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/28/23 20:01*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:01*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:01*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Client Sample ID: MW-142S_112023
Date Collected: 11/20/23 09:50
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195926-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 12:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 00:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 00:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 00:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 00:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/29/23 00:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/29/23 00:37*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 00:37*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/29/23 00:37*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Client Sample ID: MW-133S_112023
Date Collected: 11/20/23 10:55
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195926-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 12:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 01:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:02*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 01:02*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/29/23 01:02*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/29/23 01:02*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Client Sample ID: MW-76_112023
Date Collected: 11/20/23 11:55
Date Received: 11/22/23 08:00

Lab Sample ID: 240-195926-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 12:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:27	1
cis-1,2-Dichloroethene	**0.57**	**J**	1.0	0.46	ug/L			11/29/23 01:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:27*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 01:27*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 01:27*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/29/23 01:27*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195840-C-2 MS	Matrix Spike	103	114	109	108
240-195840-C-2 MSD	Matrix Spike Duplicate	106	109	109	104
240-195926-1	TRIP BLANK_112	113	82	105	102
240-195926-2	MW-142S_112023	112	78	105	103
240-195926-3	MW-133S_112023	116	80	106	102
240-195926-4	MW-76_112023	116	80	105	104
LCS 240-595975/4	Lab Control Sample	107	98	109	103
MB 240-595975/6	Method Blank	112	84	105	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195926-2	MW-142S_112023	99
240-195926-3	MW-133S_112023	97
240-195926-4	MW-76_112023	99
240-195929-H-2 MS	Matrix Spike	96
240-195929-O-2 MSD	Matrix Spike Duplicate	96
LCS 240-596122/4	Lab Control Sample	98
MB 240-596122/6	Method Blank	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595975/6
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 18:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/28/23 18:46*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/28/23 18:46*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 18:46*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/28/23 18:46*	*1*

Lab Sample ID: LCS 240-595975/4
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.3		ug/L		97	63 - 134		
cis-1,2-Dichloroethene			25.0	23.2		ug/L		93	77 - 123		
Tetrachloroethene			25.0	26.3		ug/L		105	76 - 123		
trans-1,2-Dichloroethene			25.0	23.5		ug/L		94	75 - 124		
Trichloroethene			25.0	24.8		ug/L		99	70 - 122		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	510		ug/L		102	56 - 135		
cis-1,2-Dichloroethene	170		500	662		ug/L		99	66 - 128		
Tetrachloroethene	20	U	500	454		ug/L		91	62 - 131		
trans-1,2-Dichloroethene	61		500	561		ug/L		100	56 - 136		
Trichloroethene	510		500	885		ug/L		75	61 - 124		
Vinyl chloride	20	U	250	207		ug/L		83	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195840-C-2 MS
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-195840-C-2 MSD
Matrix: Water
Analysis Batch: 595975

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	508		ug/L		102	56 - 135	0	26
cis-1,2-Dichloroethene	170		500	632		ug/L		93	66 - 128	5	14
Tetrachloroethene	20	U	500	484		ug/L		97	62 - 131	6	20
trans-1,2-Dichloroethene	61		500	550		ug/L		98	56 - 136	2	15
Trichloroethene	510		500	925		ug/L		83	61 - 124	4	15
Vinyl chloride	20	U	250	233		ug/L		93	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596122/6
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 07:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 07:21*	*1*

Lab Sample ID: LCS 240-596122/4
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-195929-H-2 MS
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-195929-O-2 MSD
Matrix: Water
Analysis Batch: 596122

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 595975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195926-1	TRIP BLANK_112	Total/NA	Water	8260D	
240-195926-2	MW-142S_112023	Total/NA	Water	8260D	
240-195926-3	MW-133S_112023	Total/NA	Water	8260D	
240-195926-4	MW-76_112023	Total/NA	Water	8260D	
MB 240-595975/6	Method Blank	Total/NA	Water	8260D	
LCS 240-595975/4	Lab Control Sample	Total/NA	Water	8260D	
240-195840-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-195840-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195926-2	MW-142S_112023	Total/NA	Water	8260D SIM	
240-195926-3	MW-133S_112023	Total/NA	Water	8260D SIM	
240-195926-4	MW-76_112023	Total/NA	Water	8260D SIM	
MB 240-596122/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596122/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195929-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195929-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195926-1

Client Sample ID: TRIP BLANK_112

Lab Sample ID: 240-195926-1

Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/28/23 20:01

Client Sample ID: MW-142S_112023

Lab Sample ID: 240-195926-2

Date Collected: 11/20/23 09:50
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 00:37
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 12:09

Client Sample ID: MW-133S_112023

Lab Sample ID: 240-195926-3

Date Collected: 11/20/23 10:55
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 01:02
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 12:33

Client Sample ID: MW-76_112023

Lab Sample ID: 240-195926-4

Date Collected: 11/20/23 11:55
Matrix: Water
Date Received: 11/22/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595975	CDG	EET CLE	11/29/23 01:27
Total/NA	Analysis	8260D SIM		1	596122	CS	EET CLE	11/30/23 12:57

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195926-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico			COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396			1 of 1
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				For lab use only
Phone: 248-994-2240	Sampler Name: JOE FOJTIK	TAT if different from below				Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day	☐ 3 weeks ☑ 2 weeks ☐ 1 week 2 days 1 day			Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:					Job/SDG No:
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite / Grab	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
✓ TRIP BLANK_ 112	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
✓ MW-142s_112023	11-20-23	0950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8
✓ MW-133s_112023	11-20-23	1055		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8
✓ MW-76_112023	11-20-23	1155		6						6					N	G	X	X	X	X	X	X	X	

240-195926 Chain of Custody

Page 20 of 21

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ROSATI, STARK, PLYMOUTH ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11-20-23 / 1515	Received by: NOVI COLD STORAGE	Arcadis	11-20-23/1515
Relinquished by:	Arcadis	11/21/23 0935	Received by:	EETA	11/21/23
Relinquished by:	EETA	11/21/23	Received in Laboratory by:	EETNE 0800	11-22-23

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : _____

Client Arcadis Site Name _____

Cooler Received on 11-22-23 Opened on 11-22-23

Cooler unpacked by: Alissa Atkinson

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp(Y)N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195926-1
Sample date: 2023-11-20
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

GCMS VOC QC batch MS/MSD issue as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The following significant QC anomalies were identified during verification of the analytical report:

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195926-1

		Sample Name:	TRIP BLANK_112				MW-142S_112023				MW-133S_112023				MW-76_112023			
		Lab Sample ID:	2401959261				2401959262				2401959263				2401959264			
		Sample Date:	11/20/2023				11/20/2023				11/20/2023				11/20/2023			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.57	1.0	ug/l	J
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195926-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52176R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195926-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_112	240-195926-1	Water	11/20/2023		X	
MW-142S_112023	240-195926-2	Water	11/20/2023		X	X
MW-133S_112023	240-195926-3	Water	11/20/2023		X	X
MW-76_112023	240-195926-4	Water	11/20/2023		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 18, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

THE LEADER IN ENVIRON

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	1 of 1		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only		
Phone: 248-994-2240	Sampler Name: JOE FOJTIK	TAT if different from below		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day	3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day	Lab sampling		
Project Number: 30167538.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30167538.402.04						

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
✓	TRIP BLANK_ 112	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
✓	MW-142s_112023	11-20-23	0950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8
✓	MW-133s_112023	11-20-23	1055		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8
✓	MW-76_112023	11-20-23	1155		6						6					N	G	X	X	X	X	X	X	X	

240-195926 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): | Return to Client | ✓ Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ROSATI, STARK, PLYMOUTH ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11-20-23 / 1515	Received by: NOVI COLD STORAGE	Arcadis	11-20-23 / 1515
Relinquished by:	Arcadis	11/21/23 0935	Received by:	EETA	11/21/23
Relinquished by:	EETA	11/21/23	Received in Laboratory by:	EETNC 0800	11-22-23

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11/01/2023

Client Sample ID: TRIP BLANK_112
Lab Sample ID: 240-195926-1
Date Collected: 11/20/23 00:00
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/23 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/23 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/23 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/23 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/23 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*11/28/23 20:01*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/28/23 20:01*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/23 20:01*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/28/23 20:01*	*1*

Client Sample ID: MW-142S_112023
Lab Sample ID: 240-195926-2
Date Collected: 11/20/23 09:50
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 12:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 00:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 00:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 00:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 00:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 00:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/29/23 00:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/29/23 00:37*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 00:37*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/29/23 00:37*	*1*

Client Sample ID: MW-133S_112023
Lab Sample ID: 240-195926-3
Date Collected: 11/20/23 10:55
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/30/23 12:33*	*1*

Client Sample ID: MW-133S_112023
Lab Sample ID: 240-195926-3

Date Collected: 11/20/23 10:55
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/23 01:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:02*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 01:02*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/29/23 01:02*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/29/23 01:02*	*1*

Client Sample ID: MW-76_112023
Lab Sample ID: 240-195926-4

Date Collected: 11/20/23 11:55
Matrix: Water
Date Received: 11/22/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/23 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/30/23 12:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/23 01:27	1
cis-1,2-Dichloroethene	**0.57**	**J**	1.0	0.46	ug/L			11/29/23 01:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/23 01:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/23 01:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/23 01:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/29/23 01:27*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/29/23 01:27*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/29/23 01:27*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/29/23 01:27*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 5:34:09 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195748-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195748-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195748-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195748-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/18/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.7°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195748-1	TRIP BLANK_78	Water	11/16/23 00:00	11/18/23 08:00
240-195748-2	MW-81S_111623	Water	11/16/23 11:42	11/18/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-195748-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_78 — Lab Sample ID: 240-195748-1

No Detections.

Client Sample ID: MW-81S_111623 — Lab Sample ID: 240-195748-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

Client Sample ID: TRIP BLANK_78
Date Collected: 11/16/23 00:00
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195748-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 18:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 18:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 18:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 18:17*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 18:17*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/26/23 18:17*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/26/23 18:17*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

Client Sample ID: MW-81S_111623
Date Collected: 11/16/23 11:42
Date Received: 11/18/23 08:00

Lab Sample ID: 240-195748-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 13:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/29/23 13:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 22:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 22:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 22:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 22:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/26/23 22:02*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 22:02*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 22:02*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/26/23 22:02*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195660-B-33 MS	Matrix Spike	106	97	109	105
240-195660-B-33 MSD	Matrix Spike Duplicate	107	99	107	105
240-195748-1	TRIP BLANK_78	111	86	102	103
240-195748-2	MW-81S_111623	115	82	104	107
LCS 240-595705/5	Lab Control Sample	106	97	106	105
MB 240-595705/8	Method Blank	111	86	104	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195748-2	MW-81S_111623	99
LCS 240-595985/4	Lab Control Sample	93
MB 240-595985/6	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595705/8
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 17:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 17:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 17:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 17:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 17:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 17:26*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 17:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 17:26*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/26/23 17:26*	*1*

Lab Sample ID: LCS 240-595705/5
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.1		ug/L		105	63 - 134		
cis-1,2-Dichloroethene			25.0	23.7		ug/L		95	77 - 123		
Tetrachloroethene			25.0	26.8		ug/L		107	76 - 123		
trans-1,2-Dichloroethene			25.0	24.2		ug/L		97	75 - 124		
Trichloroethene			25.0	24.9		ug/L		100	70 - 122		
Vinyl chloride			12.5	11.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	20	U	500	506		ug/L		101	56 - 135		
cis-1,2-Dichloroethene	20	U	500	470		ug/L		94	66 - 128		
Tetrachloroethene	20	U	500	498		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	20	U	500	467		ug/L		93	56 - 136		
Trichloroethene	32		500	501		ug/L		94	61 - 124		
Vinyl chloride	20	U	250	236		ug/L		94	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-195660-B-33 MS
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-195660-B-33 MSD
Matrix: Water
Analysis Batch: 595705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	511		ug/L		102	56 - 135	1	26
cis-1,2-Dichloroethene	20	U	500	471		ug/L		94	66 - 128	0	14
Tetrachloroethene	20	U	500	507		ug/L		101	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	476		ug/L		95	56 - 136	2	15
Trichloroethene	32		500	508		ug/L		95	61 - 124	1	15
Vinyl chloride	20	U	250	225		ug/L		90	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595985/6
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/29/23 05:13*	*1*

Lab Sample ID: LCS 240-595985/4
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*

Lab Sample ID: 240-195693-D-6 MS
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-195693-I-6 MSD
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195748-1

GC/MS VOA

Analysis Batch: 595705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195748-1	TRIP BLANK_78	Total/NA	Water	8260D	
240-195748-2	MW-81S_111623	Total/NA	Water	8260D	
MB 240-595705/8	Method Blank	Total/NA	Water	8260D	
LCS 240-595705/5	Lab Control Sample	Total/NA	Water	8260D	
240-195660-B-33 MS	Matrix Spike	Total/NA	Water	8260D	
240-195660-B-33 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195748-2	MW-81S_111623	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-195748-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_78
Lab Sample ID: 240-195748-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 18:17

Client Sample ID: MW-81S_111623
Lab Sample ID: 240-195748-2
Date Collected: 11/16/23 11:42
Matrix: Water
Date Received: 11/18/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595705	CDG	EET CLE	11/26/23 22:02
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 13:38

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195748-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

3/6/4.7

TestAmerica
THE EA ER N ENVIRONMENTA TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 78	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-815_111623	11/16/23	1142		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195748 Chain of Custody

Possible Hazard Identification
[✓] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client [✓] Disposal By Lab [ ] Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Stark Row
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	NOVI Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/23 1150		EEA	11/17/23 11:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/17/23 11:50	Alyssa Atkinson	TAL	11-18-23 0800

MICHIGAN 190

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Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195748

Client Arcadis Site Name

Cooler unpacked by: Alissa Atkerson

Cooler Received on 11-18-23 Opened on 11-18-23

FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) (Foam) Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 4.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195748-1
Sample date: 2023-11-16
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195748-1

		Sample Name:	TRIP BLANK_78				MW-81S_111623			
		Lab Sample ID:	2401957481				2401957482			
		Sample Date:	11/16/2023				11/16/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195748-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52169R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195748-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_78	240-195748-1	Water	11/16/2023		X	
MW-81S_111623	240-195748-2	Water	11/16/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

DATA REVIEW

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

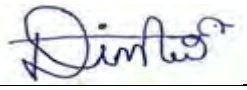
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

3.6/4.7

TestAmerica
THE EA ER N ENV RONMENTA TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client / Lab sampling / Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_18	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-81S_111623	11/16/23	1142		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-195748 Chain of Custody

Possible Hazard Identification
[✓] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
[ ] Return to Client [✓] Disposal By Lab [ ] Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Stark Row
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11/17/23 0700	Novi Cold Storage	Arcadis	11/17/23 0700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/23 1150		EETA	11/17/23 1150
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/17/23 1150	Alysha Patterson	EETMC	11-18-23 0800

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12/01/2023

Client Sample ID: TRIP BLANK_78
Lab Sample ID: 240-195748-1
Date Collected: 11/16/23 00:00
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 18:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 18:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 18:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 18:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*11/26/23 18:17*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/26/23 18:17*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/26/23 18:17*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/26/23 18:17*	*1*

Client Sample ID: MW-81S_111623
Lab Sample ID: 240-195748-2
Date Collected: 11/16/23 11:42
Matrix: Water
Date Received: 11/18/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 13:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/29/23 13:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/23 22:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/23 22:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/23 22:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/23 22:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/23 22:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*11/26/23 22:02*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/26/23 22:02*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/26/23 22:02*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/26/23 22:02*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2023 7:40:41 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-195694-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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Authorization

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12/1/2023 7:40:41 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-195694-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-195694-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-195694-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/17/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.3°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 595765 recovered above the upper control limit for 1,1-Dichloroethene and Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: MW-73SR_111523 (240-195694-3).

Method 8260D: No MS/MSD in batch 595765 due to an auto sampler fault: MW-73SR_111523 (240-195694-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195694-1	TRIP BLANK_29	Water	11/15/23 00:00	11/17/23 08:00
240-195694-2	MW-73D_111523	Water	11/15/23 12:47	11/17/23 08:00
240-195694-3	MW-73SR_111523	Water	11/15/23 13:43	11/17/23 08:00

Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Client Sample ID: TRIP BLANK_29 — Lab Sample ID: 240-195694-1

No Detections.

Client Sample ID: MW-73D_111523 — Lab Sample ID: 240-195694-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-73SR_111523 — Lab Sample ID: 240-195694-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.4		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.47	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Client Sample ID: TRIP BLANK_29

Date Collected: 11/15/23 00:00
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 13:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 13:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*		*62 - 137*		*11/27/23 13:54*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/27/23 13:54*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/27/23 13:54*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 13:54*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Client Sample ID: MW-73D_111523
Date Collected: 11/15/23 12:47
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			11/29/23 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/29/23 02:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*62 - 137*		*11/27/23 14:19*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/27/23 14:19*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/27/23 14:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/27/23 14:19*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Client Sample ID: MW-73SR_111523
Date Collected: 11/15/23 13:43
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/29/23 05:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 13:39	1
cis-1,2-Dichloroethene	**2.4**		1.0	0.46	ug/L			11/27/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
Vinyl chloride	**0.47**	**J**	1.0	0.45	ug/L			11/27/23 13:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/27/23 13:39*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 13:39*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/27/23 13:39*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/27/23 13:39*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-195694-1	TRIP BLANK_29	122	97	102	104
240-195694-2	MW-73D_111523	119	94	100	103
240-195694-3	MW-73SR_111523	95	99	108	85
LCS 240-595763/4	Lab Control Sample	115	102	102	106
LCS 240-595765/4	Lab Control Sample	83	94	103	86
MB 240-595763/7	Method Blank	117	99	104	104
MB 240-595765/7	Method Blank	94	94	104	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-195542-G-2 MS	Matrix Spike	97
240-195542-J-2 MSD	Matrix Spike Duplicate	98
240-195693-D-6 MS	Matrix Spike	101
240-195693-I-6 MSD	Matrix Spike Duplicate	100
240-195694-2	MW-73D_111523	97
240-195694-3	MW-73SR_111523	95
LCS 240-595979/4	Lab Control Sample	98
LCS 240-595985/4	Lab Control Sample	93
MB 240-595979/6	Method Blank	96
MB 240-595985/6	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-595763/7
Matrix: Water
Analysis Batch: 595763

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*62 - 137*		*11/27/23 12:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 12:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 12:16*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 12:16*	*1*

Lab Sample ID: LCS 240-595763/4
Matrix: Water
Analysis Batch: 595763

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	9.14		ug/L		73	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 12:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 12:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 12:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 12:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 12:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/27/23 12:52*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/27/23 12:52*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/27/23 12:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-595765/7
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	88		73 - 120		11/27/23 12:52	1

Lab Sample ID: LCS 240-595765/4
Matrix: Water
Analysis Batch: 595765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	28.8		ug/L		115	77 - 123
Tetrachloroethene	25.0	29.6		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	30.0		ug/L		120	75 - 124
Trichloroethene	25.0	27.3		ug/L		109	70 - 122
Vinyl chloride	12.5	14.6		ug/L		117	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	94		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	86		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-595979/6
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/23 17:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		66 - 120		11/28/23 17:37	1

Lab Sample ID: LCS 240-595979/4
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: 240-195542-G-2 MS
Matrix: Water
Analysis Batch: 595979

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.7		10.0	14.0		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 120

Lab Sample ID: 240-195542-J-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595979

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.7		10.0	14.8		ug/L		121	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 120

Lab Sample ID: MB 240-595985/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595985

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		11/29/23 05:13	1

Lab Sample ID: LCS 240-595985/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595985

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-195693-D-6 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595985

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

Lab Sample ID: 240-195693-I-6 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 595985

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-195693-I-6 MSD
Matrix: Water
Analysis Batch: 595985

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

GC/MS VOA

Analysis Batch: 595763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-1	TRIP BLANK_29	Total/NA	Water	8260D	
240-195694-2	MW-73D_111523	Total/NA	Water	8260D	
MB 240-595763/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595763/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-3	MW-73SR_111523	Total/NA	Water	8260D	
MB 240-595765/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595765/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 595979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-2	MW-73D_111523	Total/NA	Water	8260D SIM	
MB 240-595979/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595979/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195542-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195542-J-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 595985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195694-3	MW-73SR_111523	Total/NA	Water	8260D SIM	
MB 240-595985/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595985/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195693-D-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195693-I-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-195694-1

Client Sample ID: TRIP BLANK_29
Date Collected: 11/15/23 00:00
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 13:54

Client Sample ID: MW-73D_111523
Date Collected: 11/15/23 12:47
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595763	LEE	EET CLE	11/27/23 14:19
Total/NA	Analysis	8260D SIM		1	595979	CS	EET CLE	11/29/23 02:25

Client Sample ID: MW-73SR_111523
Date Collected: 11/15/23 13:43
Date Received: 11/17/23 08:00

Lab Sample ID: 240-195694-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595765	LEE	EET CLE	11/27/23 13:39
Total/NA	Analysis	8260D SIM		1	595985	CS	EET CLE	11/29/23 05:37

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-195694-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

4.2/5.3

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_29		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-73D_111523	11/15/23	1247		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-735R_111523	11/15/23	1343		6						6					N	G	X	X	X	X	X	X	X	↓

240-195694 Chain of Custody

Page 20 of 22

Possible Hazard Identification: ✓ Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / ✓ Disposal By Lab / Archive For / Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beldon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-16-23/0745	Novi Cold Storage	Arcadis	11-16-23/0745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 1220		EEN	11/16/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEN	11/16/23		EC	11-17-23 800

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12/1/2023

Eurofins – Cleveland Sample Receipt Form/Narrative
Barberton Facility

Login # : 195694

Client Arcadis Site Name

Cooler Received on 11-17-23 Opened on 11-17-23

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN # 21 (CF +0.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No) MJC 11-18-23
   -Were tamper/custody seals intact and uncompromised? (Yes) No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 195694

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.8	2.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	1.6	2.7	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 22	2.4	3.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 01, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 195694-1
Sample date: 2023-11-15
Report received by CADENA: 2023-12-01
Initial Data Verification completed by CADENA: 2023-12-01
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 195694-1

		Sample Name:	TRIP BLANK_29				MW-73D_111523				MW-73SR_111523			
		Lab Sample ID:	2401956941				2401956942				2401956943			
		Sample Date:	11/15/2023				11/15/2023				11/15/2023			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.4	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.47	1.0	ug/l	J
OSW-8260DSIM														
1,4-Dioxane	123-91-1						3.0	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195694-1

CADENA Verification Report: 2023-12-01

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52168R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195694-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_29	240-195694-1	Water	11/15/2023		X	
MW-73D_111523	240-195694-2	Water	11/15/2023		X	X
MW-73SR_111523	240-195694-3	Water	11/15/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
MW-73SR_111523	Continuous Calibration Verification %D	1,1-Dichloroethene	+30.5%
		Vinyl chloride	+21%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

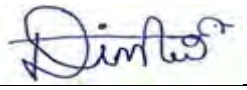
%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 18, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

4.2/5.3

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Nolan Schendel	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_29		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-73D_111523	11/15/23	1247		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-73SR_111523	11/15/23	1343		6						6					N	G	X	X	X	X	X	X	X	

240-195694 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belton Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-16-23/0745	Novi cold storage	Arcadis	11-16-23/0745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 1220		EEN	11/16/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEN	11/16/23		EC	11-17-23 800

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12/01/2023

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Chain of Custody Record

4.2/5.3

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: | DW | NPDES | RCRA | Other |

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Nolan Schendel	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_29		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-73D_111523	11/15/23	1247		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-73SR_111523	11/15/23	1343		6						6					N	G	X	X	X	X	X	X	X	

240-195694 Chain of Custody

Page 637 of 639

Possible Hazard Identification: ✓ Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | ✓ Disposal By Lab | Archive For | Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beldon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Nolan Schendel	Arcadis	11-16-23/0745	Novi cold storage	Arcadis	11-16-23/0745
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/16/23 1220		EEN	11/16/23
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEN	11/16/23		EC	11-17-23 800

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12/01/2023

Client Sample ID: TRIP BLANK_29
Lab Sample ID: 240-195694-1
Date Collected: 11/15/23 00:00
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 13:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 13:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*		*62 - 137*		*11/27/23 13:54*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/27/23 13:54*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/27/23 13:54*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/27/23 13:54*	*1*

Client Sample ID: MW-73D_111523
Lab Sample ID: 240-195694-2
Date Collected: 11/15/23 12:47
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.0**		2.0	0.86	ug/L			11/29/23 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/29/23 02:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/27/23 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/27/23 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/27/23 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*62 - 137*		*11/27/23 14:19*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/27/23 14:19*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/27/23 14:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/27/23 14:19*	*1*

Client Sample ID: MW-73SR_111523
Lab Sample ID: 240-195694-3
Date Collected: 11/15/23 13:43
Matrix: Water
Date Received: 11/17/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/23 05:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/29/23 05:37*	*1*

Client Sample ID: MW-73SR_111523
Lab Sample ID: 240-195694-3

Date Collected: 11/15/23 13:43
Matrix: Water

Date Received: 11/17/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U ~~J~~ UJ	1.0	0.49	ug/L			11/27/23 13:39	1
cis-1,2-Dichloroethene	**2.4**		1.0	0.46	ug/L			11/27/23 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/27/23 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/27/23 13:39	1
Vinyl chloride	**0.47**	~~J~~ J	1.0	0.45	ug/L			11/27/23 13:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/27/23 13:39*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/27/23 13:39*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*11/27/23 13:39*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/27/23 13:39*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/7/2023 8:27:10 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-196045-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-196045-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-196045-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/29/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.3°C and 2.5°C

GC/MS VOA
Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container(s): MW-108S_112423 (240-196045-2).

Method 8260D: The continuing calibration verification (CCV) analyzed in batch 596151 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-196045-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-196045-1	TRIP BLANK_102	Water	11/24/23 00:00	11/29/23 08:00
240-196045-2	MW-108S_112423	Water	11/24/23 11:00	11/29/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_102 — Lab Sample ID: 240-196045-1

No Detections.

Client Sample ID: MW-108S_112423 — Lab Sample ID: 240-196045-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-196045-1

Client Sample ID: TRIP BLANK_102
Date Collected: 11/24/23 00:00
Date Received: 11/29/23 08:00

Lab Sample ID: 240-196045-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/23 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/23 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/23 16:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/23 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/30/23 16:00*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/30/23 16:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/30/23 16:00*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/23 16:00*	*1*

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-196045-1

Client Sample ID: MW-108S_112423
Date Collected: 11/24/23 11:00
Date Received: 11/29/23 08:00

Lab Sample ID: 240-196045-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/05/23 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*12/05/23 21:50*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/23 16:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/23 16:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/23 16:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/23 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*		*11/30/23 16:24*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/30/23 16:24*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/30/23 16:24*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/30/23 16:24*	*1*

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-196045-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-196045-1	TRIP BLANK_102	121	98	100	103
240-196045-2	MW-108S_112423	120	97	102	104
240-196081-B-4 MS	Matrix Spike	120	101	100	105
240-196081-B-4 MSD	Matrix Spike Duplicate	120	102	102	102
LCS 240-596151/4	Lab Control Sample	116	103	100	105
MB 240-596151/7	Method Blank	119	99	101	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-196045-2	MW-108S_112423	100
500-243189-A-3 MS	Matrix Spike	96
500-243189-A-3 MSD	Matrix Spike Duplicate	96
LCS 240-596624/4	Lab Control Sample	97
MB 240-596624/6	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-596151/7
Matrix: Water
Analysis Batch: 596151

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/23 11:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/23 11:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 11:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/23 11:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 11:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/23 11:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*62 - 137*		*11/30/23 11:52*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/30/23 11:52*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/30/23 11:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/30/23 11:52*	*1*

Lab Sample ID: LCS 240-596151/4
Matrix: Water
Analysis Batch: 596151

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	16.0		ug/L		64	63 - 134
cis-1,2-Dichloroethene	25.0	22.3		ug/L		89	77 - 123
Tetrachloroethene	25.0	22.4		ug/L		90	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	22.5		ug/L		90	70 - 122
Vinyl chloride	12.5	9.75		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-196081-B-4 MS
Matrix: Water
Analysis Batch: 596151

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-196081-B-4 MSD
Matrix: Water
Analysis Batch: 596151

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-196081-B-4 MSD
Matrix: Water
Analysis Batch: 596151

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-596624/6
Matrix: Water
Analysis Batch: 596624

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/05/23 19:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*12/05/23 19:03*	*1*

Lab Sample ID: LCS 240-596624/4
Matrix: Water
Analysis Batch: 596624

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.91		ug/L		99	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 500-243189-A-3 MS
Matrix: Water
Analysis Batch: 596624

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	260		50.0	301	4	ug/L		78	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 500-243189-A-3 MSD
Matrix: Water
Analysis Batch: 596624

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	260		50.0	314	4	ug/L		105	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

QC Association Summary

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 596151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-196045-1	TRIP BLANK_102	Total/NA	Water	8260D	
240-196045-2	MW-108S_112423	Total/NA	Water	8260D	
MB 240-596151/7	Method Blank	Total/NA	Water	8260D	
LCS 240-596151/4	Lab Control Sample	Total/NA	Water	8260D	
240-196081-B-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-196081-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 596624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-196045-2	MW-108S_112423	Total/NA	Water	8260D SIM	
MB 240-596624/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-596624/4	Lab Control Sample	Total/NA	Water	8260D SIM	
500-243189-A-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-243189-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_102
Lab Sample ID: 240-196045-1

Date Collected: 11/24/23 00:00
Matrix: Water
Date Received: 11/29/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596151	LEE	EET CLE	11/30/23 16:00

Client Sample ID: MW-108S_112423
Lab Sample ID: 240-196045-2

Date Collected: 11/24/23 11:00
Matrix: Water
Date Received: 11/29/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	596151	LEE	EET CLE	11/30/23 16:24
Total/NA	Analysis	8260D SIM		1	596624	CS	EET CLE	12/05/23 21:50

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Job ID: 240-196045-1
Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-24
Georgia	State	4062	02-27-24
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-28-24
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-24
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23 *
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-02-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-27-24
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190 THE LEADER IN ENVIRON

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	TestAmerica Lab COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com			1 of 1	
Phone: 248-994-2240	Sampler Name: Kent Kasper	Analysis Turnaround Time		For lab use only	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client	
Project Number: 30167538.402.04	Shipping/Tracking No:			Lab sampling	
PO # 30167538.402.04				Job/SDG No:	

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_ 102	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-108S_112423	11/24/23	1100		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 82 3 VOAs for 82

240-196045 Chain of Custody

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab | Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12321 - 12331 Rosati
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/24/23 1247	Novi Cold Storage	Arcadis	11/24/23 1247
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/28/23 0900		EETIA	11/28/23 0900
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETIA	11/28/23 0900		EETMC	11-29-23 800

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12/7/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 196045
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-29-23 Opened on 11-29-23

Cooler unpacked by: Rachelle Haidet

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC ~~Foam Box~~ Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN # 22 (CF +1.1 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC316719
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login #: 196045

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 22	1.2	2.3	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 77	1.4	2.5	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
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EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 11, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30167538.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 196045-1
Sample date: 2023-11-24
Report received by CADENA: 2023-12-11
Initial Data Verification completed by CADENA: 2023-12-11
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV STANDARD response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 196045-1

		Sample Name:	TRIP BLANK_102				MW-108S_112423			
		Lab Sample ID:	2401960451				2401960452			
		Sample Date:	11/24/2023				11/24/2023			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-196045-1

CADENA Verification Report: 2023-12-11

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 52315R
Review Level: Tier III
Project: 30167538.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-196045-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_102	240-196045-1	Water	11/24/2023		X	
MW-108S_112423	240-196045-2	Water	11/24/2023		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_102 MW-108S_112423	Continuing Calibration Verification %D	Vinyl chloride	-27.1%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	UJ
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE:

DATE: December 19, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 20, 2023

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190 THE LEADER IN ENVIRON

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	TestAmerica Lab
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico			COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396			1 of 1
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				For lab use only
Phone: 248-994-2240	Sampler Name: Kent Kasper	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day				Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:					Lab sampling
Project Number: 30167538.402.04	Shipping/Tracking No:					Job/SDG No:
PO # 30167538.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite – C / Grab – G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Special Instr
TRIP BLANK_ 102	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blan
MW-108S_112423	11/24/23	1100		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8 3 VOAs for 8

240-196045 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12321 - 12331 Rosati
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kent Kasper	Arcadis	11/24/23 1247	Novi Cold Storage	Arcadis	11/24/23 1247
	ARCADIS	11/28/23 0900		EETA	11/28/23 0900
	EETA	11/28/23 0900	Received in Laboratory by:	EETA	11-29-23 800

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Client Sample ID: TRIP BLANK_102
Lab Sample ID: 240-196045-1
Date Collected: 11/24/23 00:00
Matrix: Water
Date Received: 11/29/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/23 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/23 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/23 16:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:00	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/30/23 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*62 - 137*		*11/30/23 16:00*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/30/23 16:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/30/23 16:00*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/23 16:00*	*1*

Client Sample ID: MW-108S_112423
Lab Sample ID: 240-196045-2
Date Collected: 11/24/23 11:00
Matrix: Water
Date Received: 11/29/23 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			12/05/23 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*12/05/23 21:50*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/23 16:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/23 16:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/23 16:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/23 16:24	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			11/30/23 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*62 - 137*		*11/30/23 16:24*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/30/23 16:24*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/30/23 16:24*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/30/23 16:24*	*1*