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ANALYTICAL REPORT

PREPARED FOR

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

Generated 8/15/2023 5:03:34 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-189490-1

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

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

Table of Contents

Definitions/Glossary

Client: ARCADIS US Inc
Job ID: 240-189490-1
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.
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: 240-189490-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative
240-189490-1

Receipt
The samples were received on 8/3/2023 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 0.5°C

GC/MS VOA
Method 8260D: The MS/MSD for batch 583456 was not analyzed because the parent sample needs reanalyzed at a high dilution.TRIP BLANK_48 (240-189490-1), MW-10_080123 (240-189490-2) and MW-04_080123 (240-189490-3)

Method 8260D_SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with analytical batch 240-582950 were outside control limits for the internal standards, this was due to the internal standard running out when the MS/MSD were analyzed.: MW-10_080123 (240-189490-2) and MW-04_080123 (240-189490-3). The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-04_080123 (240-189490-3). This sample did not contain any target analytes above the reporting limit; 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 - On Site

Job ID: 240-189490-1

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: 240-189490-1
Project/Site: Ford LTP - On Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-189490-1	TRIP BLANK_48	Water	08/01/23 00:00	08/03/23 08:00
240-189490-2	MW-10_080123	Water	08/01/23 11:20	08/03/23 08:00
240-189490-3	MW-04_080123	Water	08/01/23 12:25	08/03/23 08:00

Detection Summary

Client: ARCADIS US Inc
Job ID: 240-189490-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_48 — Lab Sample ID: 240-189490-1

No Detections.

Client Sample ID: MW-10_080123 — Lab Sample ID: 240-189490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	7.7		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.1		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	5600		100	45	ug/L	100		8260D	Total/NA

Client Sample ID: MW-04_080123 — Lab Sample ID: 240-189490-3

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
1,1-Dichloroethene	6.6		1.0	0.49	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	6000		200	92	ug/L	200		8260D	Total/NA
trans-1,2-Dichloroethene	190		50	26	ug/L	50		8260D	Total/NA
Trichloroethene	660		50	22	ug/L	50		8260D	Total/NA
Vinyl chloride	2500		50	23	ug/L	50		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

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

Job ID: 240-189490-1

Client Sample ID: TRIP BLANK_48
Date Collected: 08/01/23 00:00
Date Received: 08/03/23 08:00

Lab Sample ID: 240-189490-1
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			08/10/23 15:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/23 15:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 15:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/23 15:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 15:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/23 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*08/10/23 15:39*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/23 15:39*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/10/23 15:39*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/10/23 15:39*	*1*

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

Job ID: 240-189490-1

Client Sample ID: MW-10_080123
Date Collected: 08/01/23 11:20
Date Received: 08/03/23 08:00

Lab Sample ID: 240-189490-2
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	**4.8**		2.0	0.86	ug/L			08/04/23 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*08/04/23 15:36*	*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			08/10/23 18:13	1
cis-1,2-Dichloroethene	**7.7**		1.0	0.46	ug/L			08/10/23 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 18:13	1
trans-1,2-Dichloroethene	**1.1**		1.0	0.51	ug/L			08/10/23 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 18:13	1
Vinyl chloride	**5600**		100	45	ug/L			08/11/23 13:44	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/10/23 18:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/11/23 13:44*	*100*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/10/23 18:13*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/11/23 13:44*	*100*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/10/23 18:13*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/11/23 13:44*	*100*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/10/23 18:13*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/11/23 13:44*	*100*

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

Job ID: 240-189490-1

Client Sample ID: MW-04_080123
Date Collected: 08/01/23 12:25
Date Received: 08/03/23 08:00

Lab Sample ID: 240-189490-3
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	1.9	J	2.0	0.86	ug/L			08/04/23 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*130*	*S1+*	*66 - 120*		*08/04/23 16:00*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	6.6		1.0	0.49	ug/L			08/10/23 18:39	1
cis-1,2-Dichloroethene	6000		200	92	ug/L			08/12/23 14:07	200
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 18:39	1
trans-1,2-Dichloroethene	190		50	26	ug/L			08/11/23 14:09	50
Trichloroethene	660		50	22	ug/L			08/11/23 14:09	50
Vinyl chloride	2500		50	23	ug/L			08/11/23 14:09	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*08/10/23 18:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/11/23 14:09*	*50*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*08/12/23 14:07*	*200*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/10/23 18:39*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/11/23 14:09*	*50*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/12/23 14:07*	*200*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/10/23 18:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/23 14:09*	*50*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/12/23 14:07*	*200*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/23 18:39*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/11/23 14:09*	*50*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/12/23 14:07*	*200*

Surrogate Summary

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

Job ID: 240-189490-1

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)
240-189490-1	TRIP BLANK_48	83	89	97	87
240-189490-2	MW-10_080123	84	91	96	87
240-189490-2	MW-10_080123	84	89	96	88
240-189490-3	MW-04_080123	85	91	98	90
240-189490-3	MW-04_080123	87	91	99	89
240-189490-3	MW-04_080123	83	91	98	88
240-189490-3 MS	MW-04_080123	83	93	99	90
240-189490-3 MSD	MW-04_080123	82	91	98	89
240-189506-G-3 MSD	Matrix Spike Duplicate	82	92	99	90
240-189506-H-3 MS	Matrix Spike	84	93	99	89
LCS 240-583456/6	Lab Control Sample	84	92	100	91
LCS 240-583595/6	Lab Control Sample	82	90	97	88
LCS 240-583710/6	Lab Control Sample	81	91	97	90
MB 240-583456/10	Method Blank	86	90	97	87
MB 240-583595/10	Method Blank	83	88	97	87
MB 240-583710/10	Method Blank	86	90	96	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)
240-189490-2	MW-10_080123	114
240-189490-3	MW-04_080123	130 S1+
LCS 240-582950/5	Lab Control Sample	105
MB 240-582950/7	Method Blank	106

Surrogate Legend

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

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

Lab Sample ID: MB 240-583456/10
Matrix: Water
Analysis Batch: 583456

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			08/10/23 13:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/23 13:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 13:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/23 13:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/23 13:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/23 13:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/10/23 13:56*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/23 13:56*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/10/23 13:56*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/10/23 13:56*	*1*

Lab Sample ID: LCS 240-583456/6
Matrix: Water
Analysis Batch: 583456

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	17.9		ug/L		90	63 - 134
cis-1,2-Dichloroethene	20.0	17.1		ug/L		86	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	16.9		ug/L		84	75 - 124
Trichloroethene	20.0	17.4		ug/L		87	70 - 122
Vinyl chloride	20.0	20.5		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: MB 240-583595/10
Matrix: Water
Analysis Batch: 583595

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			08/11/23 11:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/23 11:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/23 11:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/23 11:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/23 11:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/23 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*08/11/23 11:10*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/11/23 11:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/11/23 11:10*	*1*

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

Lab Sample ID: MB 240-583595/10
Matrix: Water
Analysis Batch: 583595

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/11/23 11:10*	*1*

Lab Sample ID: LCS 240-583595/6
Matrix: Water
Analysis Batch: 583595

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	18.2		ug/L		91	63 - 134		
cis-1,2-Dichloroethene			20.0	17.5		ug/L		87	77 - 123		
Tetrachloroethene			20.0	19.8		ug/L		99	76 - 123		
trans-1,2-Dichloroethene			20.0	17.1		ug/L		85	75 - 124		
Trichloroethene			20.0	17.4		ug/L		87	70 - 122		
Vinyl chloride			20.0	19.5		ug/L		98	60 - 144		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-189506-G-3 MSD
Matrix: Water
Analysis Batch: 583595

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	18.5		ug/L		93	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	6	14
Tetrachloroethene	1.0	U	20.0	20.1		ug/L		100	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		88	56 - 136	8	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	8	15
Vinyl chloride	1.0	U	20.0	19.8		ug/L		99	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-189506-H-3 MS
Matrix: Water
Analysis Batch: 583595

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	16.8		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	66 - 128		
Tetrachloroethene	1.0	U	20.0	19.3		ug/L		97	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	16.3		ug/L		81	56 - 136		
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124		

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

Lab Sample ID: 240-189506-H-3 MS
Matrix: Water
Analysis Batch: 583595

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
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-583710/10
Matrix: Water
Analysis Batch: 583710

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			08/12/23 13:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/23 13:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/23 13:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/23 13:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/23 13:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/23 13:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/12/23 13:41*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/12/23 13:41*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/12/23 13:41*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/12/23 13:41*	*1*

Lab Sample ID: LCS 240-583710/6
Matrix: Water
Analysis Batch: 583710

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	17.6		ug/L		88	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	16.5		ug/L		83	75 - 124
Trichloroethene	20.0	17.2		ug/L		86	70 - 122
Vinyl chloride	20.0	19.9		ug/L		99	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

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

Lab Sample ID: 240-189490-3 MS
Matrix: Water
Analysis Batch: 583710

Client Sample ID: MW-04_080123
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	6000		4000	9220		ug/L		82	66 - 128		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-189490-3 MSD
Matrix: Water
Analysis Batch: 583710

Client Sample ID: MW-04_080123
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	6000		4000	9420		ug/L		86	66 - 128	2	14

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

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

Lab Sample ID: MB 240-582950/7
Matrix: Water
Analysis Batch: 582950

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			08/04/23 14:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*08/04/23 14:49*	*1*

Lab Sample ID: LCS 240-582950/5
Matrix: Water
Analysis Batch: 582950

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	9.76		ug/L		98	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

QC Association Summary

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

Job ID: 240-189490-1

GC/MS VOA

Analysis Batch: 582950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189490-2	MW-10_080123	Total/NA	Water	8260D SIM	
240-189490-3	MW-04_080123	Total/NA	Water	8260D SIM	
MB 240-582950/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-582950/5	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 583456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189490-1	TRIP BLANK_48	Total/NA	Water	8260D	
240-189490-2	MW-10_080123	Total/NA	Water	8260D	
240-189490-3	MW-04_080123	Total/NA	Water	8260D	
MB 240-583456/10	Method Blank	Total/NA	Water	8260D	
LCS 240-583456/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 583595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189490-2	MW-10_080123	Total/NA	Water	8260D	
240-189490-3	MW-04_080123	Total/NA	Water	8260D	
MB 240-583595/10	Method Blank	Total/NA	Water	8260D	
LCS 240-583595/6	Lab Control Sample	Total/NA	Water	8260D	
240-189506-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-189506-H-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 583710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189490-3	MW-04_080123	Total/NA	Water	8260D	
MB 240-583710/10	Method Blank	Total/NA	Water	8260D	
LCS 240-583710/6	Lab Control Sample	Total/NA	Water	8260D	
240-189490-3 MS	MW-04_080123	Total/NA	Water	8260D	
240-189490-3 MSD	MW-04_080123	Total/NA	Water	8260D	

Lab Chronicle

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

Job ID: 240-189490-1

Client Sample ID: TRIP BLANK_48

Lab Sample ID: 240-189490-1

Date Collected: 08/01/23 00:00

Matrix: Water

Date Received: 08/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	583456	AJS	EET CLE	08/10/23 15:39

Client Sample ID: MW-10_080123

Lab Sample ID: 240-189490-2

Date Collected: 08/01/23 11:20

Matrix: Water

Date Received: 08/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	583456	AJS	EET CLE	08/10/23 18:13
Total/NA	Analysis	8260D		100	583595	HMB	EET CLE	08/11/23 13:44
Total/NA	Analysis	8260D SIM		1	582950	MRL	EET CLE	08/04/23 15:36

Client Sample ID: MW-04_080123

Lab Sample ID: 240-189490-3

Date Collected: 08/01/23 12:25

Matrix: Water

Date Received: 08/03/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	583456	AJS	EET CLE	08/10/23 18:39
Total/NA	Analysis	8260D		50	583595	HMB	EET CLE	08/11/23 14:09
Total/NA	Analysis	8260D		200	583710	HMB	EET CLE	08/12/23 14:07
Total/NA	Analysis	8260D SIM		1	582950	MRL	EET CLE	08/04/23 16:00

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: 240-189490-1
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	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
West Virginia DEP	State	210	12-31-23

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

MICHIGAN 190

Chain of Custody Record

0.6/0-5

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: 1
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: Samantha Szpaichler	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: 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 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_ 48	----	-----		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-10_080123	8/1/23	11:20		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-04_080123	8/1/23	12:25		6						6					N	G	X	X	X	X	X	X	X	4 4

240-189490 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 inside plant

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/1/23 13:58	Novi cold storage	8/1/23 Arcadis	13:58
Relinquished by: Novi cold storage	Company: Arcadis	Date/Time: 8/1/23 1540	Received by: Samantha Szpaichler	Company: Arcadis	Date/Time: 8/1/23 1540
Relinquished by:	Company: Arcadis	Date/Time: 8/2/23 0835	Received in Laboratory by:	Company: EE TM	Date/Time: 02 Aug 23 0835
	EETM	02 Aug 23 0850		EETNC	8-3-23 0800

8/15/2023

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

Client ARCADIS Site Name _____ Cooler unpacked by: M Lach

Cooler Received on 8-3-23 Opened on 8-3-23

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

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

Eurofins Cooler # 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 # 22 (CF 0.1 °C) Observed Cooler Temp 0.6 °C Corrected Cooler Temp. 0.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	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# HC312502
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

August 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: 189490-1
Sample date: 2023-08-01
Report received by CADENA: 2023-08-16
Initial Data Verification completed by CADENA: 2023-08-16
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:

SUR - GCMS VOC SIM sample -003 surrogate recoveries were outliers biased high for 1 surrogate. These client sample results should be considered to be estimated and qualified with J flags if detected.

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 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: 189490-1

Sample Name: MW-04_080123
Lab Sample ID: 2401894903
Sample Date: 8/1/2023

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260DSIM					
1,4-Dioxane	123-91-1	1.9	2.0	ug/l	J

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory Submittal: 189490-1

		Sample Name:	TRIP BLANK_48				MW-10_080123				MW-04_080123			
		Lab Sample ID:	2401894901				2401894902				2401894903			
		Sample Date:	8/1/2023				8/1/2023				8/1/2023			
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	---	6.6	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	7.7	1.0	ug/l	---	6000	200	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	---	1.1	1.0	ug/l	---	190	50	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	660	50	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	5600	100	ug/l	---	2500	50	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					4.8	2.0	ug/l	---	1.9	2.0	ug/l	J