

Environment Testing America

ANALYTICAL REPORT

Eurofins Canton 180 S. Van Buren Avenue Barberton, OH 44203 Tel: (330)497-9396

Laboratory Job ID: 240-167064-1 Client Project/Site: Ford LTP - Off Site

For:

ARCADIS U.S., Inc. 28550 Cabot Drive Suite 500 Novi, Michigan 48377

Attn: Kristoffer Hinskey

Mode Del Your

Authorized for release by: 6/6/2022 10:18:29 AM

Michael DelMonico, Project Manager I (330)497-9396

Michael.DelMonico@et.eurofinsus.com

LINKS

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Laboratory Job ID: 240-167064-1

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

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.

Example 2 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

r 0 '

6/6/2022

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Case Narrative

Client: ARCADIS U.S., Inc.

Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Job ID: 240-167064-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-167064-1

Comments

No additional comments.

Receipt

The samples were received on 5/21/2022 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 0.9° C and 1.2° C.

GC/MS VOA

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

VOA Prep

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

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Method Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-167064-1

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

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site

Job ID: 240-167064-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167064-1	TRIP BLANK_146	Water	05/19/22 00:00	05/21/22 08:00
240-167064-2	MW-186S_051922	Water	05/19/22 10:45	05/21/22 08:00

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Detection Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_146 Lab Sample ID: 240-167064-1

No Detections.

No Detections.

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_146

Date Collected: 05/19/22 00:00 Date Received: 05/21/22 08:00 Lab Sample ID: 240-167064-1

Matrix: Water

Method: 8260D - Volatile O Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/01/22 12:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/01/22 12:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/01/22 12:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/01/22 12:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		62 - 137					06/01/22 12:20	1
4-Bromofluorobenzene (Surr)	99		56 ₋ 136					06/01/22 12:20	1
Toluene-d8 (Surr)	103		78 - 122					06/01/22 12:20	1
Dibromofluoromethane (Surr)	115		73 - 120					06/01/22 12:20	1

Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-186S_051922

Date Collected: 05/19/22 10:45 Date Received: 05/21/22 08:00 Lab Sample ID: 240-167064-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/01/22 00:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		66 - 120					06/01/22 00:22	1
Method: 8260D - Volatile O	rganic Compo	unds by G	C/MS						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/01/22 12:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/01/22 12:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/01/22 12:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/01/22 12:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		62 - 137					06/01/22 12:43	1
4-Bromofluorobenzene (Surr)	102		56 ₋ 136					06/01/22 12:43	1
Toluene-d8 (Surr)	104		78 - 122					06/01/22 12:43	1
Dibromofluoromethane (Surr)	111		73 - 120					06/01/22 12:43	1

Surrogate Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

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

Matrix: Water Prep Type: Total/NA

			Pe	ercent Surre	ogate Reco
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-167064-1	TRIP BLANK_146	120	99	103	115
240-167064-2	MW-186S_051922	120	102	104	111
240-167067-K-2 MS	Matrix Spike	115	95	99	111
240-167067-N-2 MSD	Matrix Spike Duplicate	116	95	97	110
LCS 240-528681/5	Lab Control Sample	105	92	97	106
MB 240-528681/8	Method Blank	116	93	95	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)	
240-167064-2	MW-186S_051922	87	
240-167067-G-2 MS	Matrix Spike	88	
240-167067-M-2 MSD	Matrix Spike Duplicate	89	
LCS 240-528626/3	Lab Control Sample	86	
MB 240-528626/4	Method Blank	87	
Surrogate Legend			

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

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Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

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

Lab Sample ID: MB 240-528681/8

Matrix: Water

Analysis Batch: 528681

Client S	Sample ID:	Method	Blank
	Prep '	Type: To	tal/NA

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 1,1-Dichloroethene 1.0 U 1.0 0.49 ug/L 06/01/22 10:08 cis-1,2-Dichloroethene 1.0 U 1.0 0.46 ug/L 06/01/22 10:08 Tetrachloroethene 1.0 U 1.0 0.44 ug/L 06/01/22 10:08 trans-1,2-Dichloroethene 1.0 U 1.0 0.51 ug/L 06/01/22 10:08 Trichloroethene 1.0 0.44 ug/L 1.0 U 06/01/22 10:08 Vinyl chloride 1.0 U 1.0 0.45 ug/L 06/01/22 10:08

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepare	ed Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		62 - 137		06/01/22 10:08	1
4-Bromofluorobenzene (Surr)	93		56 ₋ 136		06/01/22 10:08	1
Toluene-d8 (Surr)	95		78 - 122		06/01/22 10:08	1
Dibromofluoromethane (Surr)	108		73 - 120		06/01/22 10:08	1
	1,2-Dichloroethane-d4 (Surr) 4-Bromofluorobenzene (Surr) Toluene-d8 (Surr)	Surrogate %Recovery 1,2-Dichloroethane-d4 (Surr) 116 4-Bromofluorobenzene (Surr) 93 Toluene-d8 (Surr) 95	1,2-Dichloroethane-d4 (Surr) 116 4-Bromofluorobenzene (Surr) 93 Toluene-d8 (Surr) 95	Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 116 62 - 137 4-Bromofluorobenzene (Surr) 93 56 - 136 Toluene-d8 (Surr) 95 78 - 122	Surrogate %Recovery Qualifier Limits Prepare 1,2-Dichloroethane-d4 (Surr) 116 62 - 137 4-Bromofluorobenzene (Surr) 93 56 - 136 Toluene-d8 (Surr) 95 78 - 122	Surrogate %Recovery Qualifier Limits Prepared Analyzed 1,2-Dichloroethane-d4 (Surr) 116 62 - 137 06/01/22 10:08 4-Bromofluorobenzene (Surr) 93 56 - 136 06/01/22 10:08 Toluene-d8 (Surr) 95 78 - 122 06/01/22 10:08

Lab Sample ID: LCS 240-528681/5

Matrix: Water

Analysis Batch: 528681

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	21.2		ug/L		106	63 - 134	
cis-1,2-Dichloroethene	20.0	20.7		ug/L		104	77 - 123	
Tetrachloroethene	20.0	18.9		ug/L		95	76 - 123	
trans-1,2-Dichloroethene	20.0	21.4		ug/L		107	75 - 124	
Trichloroethene	20.0	19.5		ug/L		97	70 - 122	
Vinyl chloride	20.0	19.6		ug/L		98	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

Lab Sample ID: 240-167067-K-2 MS

Matrix: Water

Analysis Batch: 528681

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

Limits
56 - 135
66 - 128
62 - 131
56 - 136
61 - 124
43 - 157
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	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	115		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	99		78 - 122

Project/Site: Ford LTP - Off Site

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

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

Lab Sample ID: 240-167067-K-2 MS **Client Sample ID: Matrix Spike** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 528681

MS MS

%Recovery Qualifier Limits Surrogate Dibromofluoromethane (Surr) 111 73 - 120

Client Sample ID: Matrix Spike Duplicate Lab Sample ID: 240-167067-N-2 MSD Prep Type: Total/NA

Matrix: Water

Analysis Batch: 528681

Sample Sample Spike MSD MSD %Rec **RPD** Result Qualifier Added Limits RPD Limit **Analyte** Result Qualifier Unit %Rec 1.0 U 1,1-Dichloroethene 20.0 16.4 ug/L 82 56 - 135 26 cis-1,2-Dichloroethene 1.0 U 20.0 18.3 ug/L 92 66 - 128 2 14 Tetrachloroethene 1.0 UF1 20.0 13.4 ug/L 67 62 - 13112 20 trans-1.2-Dichloroethene 1.0 U 20.0 17.1 86 56 - 136 15 ug/L 1 Trichloroethene 1.0 U 20.0 148 ug/L 74 61 - 124 15 Vinyl chloride 1.0 U 20.0 16.6 ug/L 43 - 157 24

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	116		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	110		73 - 120

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

Matrix: Water

Analysis Batch: 528626

MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 2.0 05/31/22 20:47 1,4-Dioxane 2.0 U 0.86 ug/L

MB MB

%Recovery Qualifier Limits Surrogate Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 87 66 - 120 05/31/22 20:47

Lab Sample ID: LCS 240-528626/3

Lab Sample ID: MB 240-528626/4

Matrix: Water

Analysis Batch: 528626

Spike LCS LCS %Rec Added Result Qualifier Analyte Unit D %Rec Limits 1,4-Dioxane 10.0 11.7 ug/L 117 80 - 122

LCS LCS

Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 66 - 120 86

Lab Sample ID: 240-167067-G-2 MS

Matrix: Water

Analysis Batch: 528626

Allaly 515 Datoll. 020020									
	Sample Sample	Spike	MS	MS				%Rec	
Analyte	Result Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,4-Dioxane		10.0	10.9		ug/L		109	51 - 153	

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Prep Type: Total/NA

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Type: Total/NA

QC Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	88		66 - 120								
Lab Sample ID: 240-1670 Matrix: Water Analysis Batch: 528626	067-M-2 MSD					Client	Samp	le ID: N	latrix Spil Prep Ty		
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
, and y to											- 40
1,4-Dioxane	2.0	U	10.0	11.9		ug/L		119	51 - 153	9	16
		U	10.0	11.9		ug/L		119	51 - 153	9	16
		MSD	10.0	11.9		ug/L		119	51 - 153	9	16

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QC Association Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-167064-1

GC/MS VOA

Analysis Batch: 528626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167064-2	MW-186S_051922	Total/NA	Water	8260D SIM	
MB 240-528626/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528626/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-167067-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-167067-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 528681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167064-1	TRIP BLANK_146	Total/NA	Water	8260D	
240-167064-2	MW-186S_051922	Total/NA	Water	8260D	
MB 240-528681/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528681/5	Lab Control Sample	Total/NA	Water	8260D	
240-167067-K-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-167067-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_146

Lab Sample ID: 240-167064-1 Date Collected: 05/19/22 00:00

Matrix: Water

Date Received: 05/21/22 08:00

	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260D		1	528681	06/01/22 12:20	TJL1	TAL CAN	

Client Sample ID: MW-186S_051922 Lab Sample ID: 240-167064-2

Date Collected: 05/19/22 10:45 **Matrix: Water**

Date Received: 05/21/22 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528681	06/01/22 12:43	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528626	06/01/22 00:22	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Laboratory: Eurofins Canton

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	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
lowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

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CI	Client Contact	Regulatory program: DW NPDES RCRA Other	NPDES RCRA Other		
Company Name: Arcadis					TestAmerica Laboratories, Inc.
Address: 28550 Cabot Drive, Suite 500	e, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
		Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	8377	110 20 110 20 110 20 20 20 20 20 20 20 20 20 20 20 20 20			1 of 1 COCs
Phone: 248-994-2240		Linaii: Kristoffer. Hinskey (a arcadis.com	Analysis I urnaround 1 ime	Analyses	For lab use only
Project Name: Ford LTP Off-Site	Off-Site	Sampler Name:	TAT if different from below 3 weeks		Walk-in client
Project Number: 30080642.402.04	.402.04	Method of Shipment/Carrier:	I week		Lab sampling
PO # 30080642,402.04		Shipping/Trucking No:	Grab	8560D	Job/SDG No:
		Matrix)=3	D D D D D D D D D	
Samp	Sample Identification	Sample Date Sample Time Air Solid	Elllered S Composit Composit Confort Confort Confort HUGG HUGG	1,1-DCE 8 Vinyl Chlo 7,4-Dioxai	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 146	146	2	\S\1	×××××××××××××××××××××××××××××××××××××××	1 Trip Blank
Mw-(865	553	Stabe loss	6	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	3 VOAs for 8260D
Page 17					
of 10					
			240	240-167064 Chain of Custody	
Possible Hazard Identification	ammable	Skin Irritant Poison B Unknown	Sample Disposal (A fee may be assessed if samples are retained longer than I month) Return to Client Disposed Reliah Assessed Fee	mples are retained longer than I month)	
Special Instructions/OC Requirements & Comments: Sample Address: 232 STRRK Submit all results through Cadena at Itomalia@	equirements & Comments:	om, Cadena #E203631			
Refinitished by	TOSTUG	Company: Date Time	140 Received by LLC	Company	Date/Time:
Relinquished by	14	Congany Date Time: S/20/22		Ō	17.10
Relinquished by:		Company: Date/Time:	Received in Laboratory by:	Company	3 3
© 2000 Testings Laddensky Mr. Mr. 1975, method (middensky S. December 1975) Testings W. St. Preference of Testings W. St. Preference of Testings Williams (Middensky S. December 1975)	1 rights meanwaid of feed-memora Laboratories, Inc.				
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TestAmerica

Chain of Custody Record

MICHIGAN 190

9. 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)
0. SAMPLE PRESERVATION	
sample(s)	were further preserved in the laboratory. eservative(s) added/Lot number(s):
	. () 11.10

Login#: 167069

Cooler D	occeintia-	IR Gun #	Observed		Coolant
	escription rcle)	(Oircle)	Observed Temp °C	Corrected Temp °C	(Circle)
IA Client	Box Other	IR-13 IR-15	1-2	1.2	Wel ice Blue ice Dry
TA Client	Box Other	IR-13 R-15	0.9	00	Wet ice Sive ice Dry
TA Client	Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry
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TA Client	Box Other	IR-13 IR-15			Wet ice Sive ice Dry Water None
TA Client	Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Water None
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TA Client	Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry I
TA Client	Box Other	IR-13 IR-15			Wet ice Blue ice Dry is Water None
				☐ See Tem	perature Excursion Form

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

DATA VERIFICATION REPORT



June 07, 2022

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: 30080642.402.04

Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Barberton

Laboratory submittal: 167064-1 Sample date: 2022-05-19

Report received by CADENA: 2022-06-06

Initial Data Verification completed by CADENA: 2022-06-07

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 528681.

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.
В	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.
Е	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 - Barberton

Laboratory Submittal: 167064-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLANK_146 2401670641 5/19/2022				MW-186S_051922 2401670642 5/19/2022				
				Report		Valid		Report		Valid	
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC											
OSW-8260											
	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-8260	<u>DDSIM</u>										
	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 # 240-167064-1

CADENA Verification Report: 2022-06-07

Analyses Performed By:

TestAmerica North Canton, Ohio

Report # 46000R Review Level: Tier III Project: 30080642.402.01

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-167064-1 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 Collection		Analysis		
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM	
TRIP BLANK_146	240-167064-1	Water	05/19/2022		Х		
MW-186S_051922	240-167064-2	Water	05/19/2022		X	X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - 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 8260B/8260B-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.

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

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE: Sfutzele

DATE: June 23, 2022

PEER REVIEW: Andrew Korycinski

DATE: June 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



Chain of Custody Record

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763 Client Contact Regulatory program: - DW - NPDES - RCRA Company Name: Arcadis TestAmerica Laboratories, Inc. Client Project Manager: Kris Hinskey Site Contact: Christina Weaver Lab Contact: Mike DelMonico Address: 28550 Cabot Drive, Suite 500 Telephone: 269-832-7478 Telephone: 248-994-2329 Telephone: 330-966-9783 City/State/Zip: Novi, MI, 48377 COCs 1 of 1 Email: Kristoffer.Hinskey@arcadis.com Analysis Turnaround Time For lab use only Phone: 248-994-2240 Walk-in client Project Name: Ford LTP Off-Site □ 3 weeks - 2 weeks 10 day Lab sampling Project Number: 30080642.402.04 ☐ I week 8260D SIM Composite=C / Grab=G 2 days /inyl Chloride 8260D PO # 30080642,402,04 Shipping/Tracking No: □ I day Job/SDG No: Matrix Containers & Preservatives PCE 8260D Sample Specific Notes / NAOE HC Special Instructions: Sample Identification Sample Time TRIP BLANK_ 146 1 Trip Blank 6 80 3 VOAs for 8260D 3 VOAs for 8260D SIM Possible Hazard Identification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Non-Hazard Flammable Skin Irritant Poison B Unknown Return to Client Disposal By Lab Archive For [Special Instructions/QC Requirements & Comments: 12321 STARK Sample Address: Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631 Relinquished by 02008, TentAmence Lebdretories, Inc., All rights reserved. TestAmence & Design " are trademerks of TestAmence Laboratories, Inc.

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_146

Date Collected: 05/19/22 00:00 Date Received: 05/21/22 08:00 Lab Sample ID: 240-167064-1

Matrix: Water

Method: 8260D - Volatile O Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/01/22 12:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/01/22 12:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/01/22 12:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/01/22 12:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		62 - 137					06/01/22 12:20	1
4-Bromofluorobenzene (Surr)	99		56 - 136					06/01/22 12:20	1
Toluene-d8 (Surr)	103		78 - 122					06/01/22 12:20	1
Dibromofluoromethane (Surr)	115		73 - 120					06/01/22 12:20	1

Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-167064-1

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-186S_051922

Date Collected: 05/19/22 10:45 Date Received: 05/21/22 08:00 Lab Sample ID: 240-167064-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/01/22 00:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		66 - 120					06/01/22 00:22	1
Method: 8260D - Volatile O	rganic Compo	unds by G	C/MS						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/01/22 12:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/01/22 12:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/01/22 12:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/01/22 12:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/01/22 12:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		62 - 137					06/01/22 12:43	1
4-Bromofluorobenzene (Surr)	102		56 ₋ 136					06/01/22 12:43	1
Toluene-d8 (Surr)	104		78 - 122					06/01/22 12:43	1
Dibromofluoromethane (Surr)	111		73 - 120					06/01/22 12:43	1