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Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton 4101 Shuffel Street NW North Canton, OH 44720 Tel: (330)497-9396

Laboratory Job ID: 240-159413-1

Client Project/Site: Ford LTP - Off-Site

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

Attn: Kristoffer Hinskey

Mole Del your

Authorized for release by: 11/19/2021 1:47:18 PM

Michael DelMonico, Project Manager I (330)497-9396 Michael.DelMonico@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Qualifiers

Qualifiers		3
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.	5
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	7
%R	Percent Recovery	
CFL	Contains Free Liquid	0
CFU	Colony Forming Unit	0
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	Э
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"	13
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDI	Mothed Detection Limit	

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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%R	Percent Recovery
CFL	Contains Free Liquid
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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

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-159413-1

Case Narrative

Comments

No additional comments.

Receipt

The samples were received on 11/5/2021 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 was 0.7° C.

GC/MS VOA

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

VOA Prep

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

Job ID: 240-159413-1

Method Summary

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

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	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 TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-159413-1	TRIP BLANK_07	Water	11/03/21 00:00	11/05/21 08:00
240-159413-2	MW-89S_110321	Water	11/03/21 15:05	11/05/21 08:00

Eurofins TestAmerica, Canton

Client Sample ID: TRIP BLANK_07

No Detections.

Client Sample ID: MW-89S_110321

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Ргер Туре
cis-1,2-Dichloroethene	1.8	1.0	0.46 ug/L	1	8260B	Total/NA
Vinyl chloride	0.69 J	1.0	0.45 ug/L	1	8260B	Total/NA

Job ID: 240-159413-1

Lab Sample ID: 240-159413-1

Lab Sample ID: 240-159413-2

Client Sample ID: TRIP BLANK_07 Date Collected: 11/03/21 00:00 Date Received: 11/05/21 08:00

Job ID: 240-159413-1

Lab Sample ID: 240-159413-1 Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/21 16:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/21 16:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/21 16:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/21 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/13/21 16:31	1
4-Bromofluorobenzene (Surr)	77		56 - 136					11/13/21 16:31	1
Toluene-d8 (Surr)	106		78 - 122					11/13/21 16:31	1
Dibromofluoromethane (Surr)	94		73 - 120					11/13/21 16:31	1

Client Sample ID: MW-89S_110321 Date Collected: 11/03/21 15:05 Date Received: 11/05/21 08:00

Job	١D·	240-1	5941	3-1
000	ıD.	270-1	10041	0-1

Lab Sample ID: 240-159413-2 Matrix: Water

later

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/21 21:27	1	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	81		66 - 120					11/11/21 21:27	1	
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)							ï
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/21 16:54	1	17
cis-1,2-Dichloroethene	1.8		1.0	0.46	ug/L			11/13/21 16:54	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:54	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/21 16:54	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:54	1	
Vinyl chloride	0.69	J	1.0	0.45	ug/L			11/13/21 16:54	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/13/21 16:54	1	
4-Bromofluorobenzene (Surr)	74		56 - 136					11/13/21 16:54	1	
Toluene-d8 (Surr)	105		78 - 122					11/13/21 16:54	1	
Dibromofluoromethane (Surr)	93		73 - 120					11/13/21 16:54	1	

Surrogate Summary

Method: 8260B - Volatile Organic Compounds (GC/MS) Matrix: Water

Percent Surrogate Recovery (Acceptance Limits) DCA BFB DBFM TOL (62-137) (73-120) Lab Sample ID **Client Sample ID** (56-136) (78-122) 240-159413-1 TRIP BLANK_07 94 94 77 106 240-159413-2 MW-89S_110321 93 94 74 105 240-159418-E-2 MS Matrix Spike 93 87 106 94 240-159418-L-2 MSD Matrix Spike Duplicate 90 87 107 91 LCS 240-512817/4 Lab Control Sample 90 89 112 90 MB 240-512817/6 Method Blank 98 81 112 98 Surrogate Legend DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr) TOL = Toluene-d8 (Surr) DBFM = Dibromofluoromethane (Surr) Method: 8260B SIM - Volatile Organic Compounds (GC/MS) Matrix: Water Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA		13
Lab Sample ID	Client Sample ID	(66-120)		
240-159413-2	MW-89S_110321	81		
240-159418-H-2 MS	Matrix Spike	82		
240-159418-P-2 MSD	Matrix Spike Duplicate	83		
LCS 240-512585/4	Lab Control Sample	81		
MB 240-512585/5	Method Blank	84		
Surrogate Legend				

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

Job ID: 240-159413-1

Prep Type: Total/NA

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

Lab Sample ID: MB 240-512817/6 Matrix: Water

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

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analysis Batch: 512817 MB MB Analyte **Result Qualifier** RL MDL Unit D Prepared Analyzed Dil Fac 1,1-Dichloroethene 1.0 U 1.0 0.49 ug/L 11/13/21 13:55 1 cis-1,2-Dichloroethene 1.0 U 1.0 0.46 ug/L 11/13/21 13:55 1 Tetrachloroethene 1.0 U 1.0 0.44 ug/L 11/13/21 13:55 1 trans-1,2-Dichloroethene 1.0 U 1.0 0.51 ug/L 11/13/21 13:55 1 Trichloroethene 1.0 U 1.0 0.44 ug/L 11/13/21 13:55 1 Vinyl chloride 1.0 U 1.0 0.45 ug/L 11/13/21 13:55 1

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137		11/13/21 13:55	1
4-Bromofluorobenzene (Surr)	81		56 - 136		11/13/21 13:55	1
Toluene-d8 (Surr)	112		78 - 122		11/13/21 13:55	1
Dibromofluoromethane (Surr)	98		73 - 120		11/13/21 13:55	1

Lab Sample ID: LCS 240-512817/4 Matrix: Water Analysis Batch: 512817

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	10.0	10.9		ug/L		109	63 - 134	
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	77 - 123	
Tetrachloroethene	10.0	11.9		ug/L		119	76 - 123	
trans-1,2-Dichloroethene	10.0	10.8		ug/L		108	75 - 124	
Trichloroethene	10.0	9.19		ug/L		92	70 - 122	
Vinyl chloride	10.0	9.48		ug/L		95	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		62 - 137
4-Bromofluorobenzene (Surr)	89		56 - 136
Toluene-d8 (Surr)	112		78 - 122
Dibromofluoromethane (Surr)	90		73 - 120

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Lab Sample ID: 240-159418-E-2 MS Matrix: Water Analysis Batch: 512817

Toluene-d8 (Surr)

	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	1.0	U	10.0	10.3		ug/L		103	56 - 135
cis-1,2-Dichloroethene	1.0	U	10.0	9.89		ug/L		99	66 - 128
Tetrachloroethene	1.0	U	10.0	9.53		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	10.0	9.91		ug/L		99	56 - 136
Trichloroethene	1.0	U	10.0	8.16		ug/L		82	61 - 124
Vinyl chloride	1.0	U	10.0	9.96		ug/L		100	43 - 157
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	93		62 - 137						
4-Bromofluorobenzene (Surr)	87		56 - 136						

Client Sample ID: Matrix Spike

Prep Type: Total/NA

10

78 - 122

QC Sample Results

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

Matrix: Water												mple ID: Prep Ty		
Analysis Batch: 512817														
	MS	MS												
Surrogate	%Recovery	Qualif	ïer	Limits										
Dibromofluoromethane (Surr)	94			73 - 120										
Lab Sample ID: 240-1594 Matrix: Water	18-L-2 MSD							Client	Sam	npl	e ID: M	latrix Spi Prep Ty		
Analysis Batch: 512817														
-	Sample	Samp	le	Spike	MS	DM	SD					%Rec.		RP
Analyte	Result	Qualif	ier	Added	Resu	lt Q	ualifier	Unit	I	D	%Rec	Limits	RPD	Lim
1,1-Dichloroethene	1.0	U		10.0	10	0		ug/L			100	56 - 135	2	2
cis-1,2-Dichloroethene	1.0	U		10.0	10	1		ug/L			101	66 - 128	2	1
Tetrachloroethene	1.0	U		10.0	10	1		ug/L			101	62 - 131	5	2
trans-1,2-Dichloroethene	1.0	U		10.0	10	1		ug/L			101	56 - 136	2	1
Trichloroethene	1.0	U		10.0	8.6	1		ug/L			86	61 - 124	5	1
Vinyl chloride	1.0			10.0	10			ug/L			102	43 - 157	3	
-								5						
		MSD												
Surrogate	%Recovery	Qualif	ier	Limits										
1,2-Dichloroethane-d4 (Surr)	90			62 - 137										
4-Bromofluorobenzene (Surr)	87			56 - 136										
Toluene-d8 (Surr)	107			78 - 122										
Dibromofluoromethane (Surr)	91			73 - 120										
Lab Sample ID: MB 240-5 Matrix: Water		ganic	: Com	pound	s (GC/I	<u>(IS)</u>			С	lie	nt Sam	ple ID: N Prep Ty		
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585	512585/5	MB M	18	pound								Prep Ty	ире: То	otal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 ^{Analyte}	512585/5	MB N esult Q	1B Qualifier	ipound	RL	MD	L Unit		C		nt Sam epared	Prep Ty Analy	vpe: To	otal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte	512585/5	MB N esult Q 2.0 U	1B Qualifier	ipound		MD						Prep Ty	vpe: To	otal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane	512585/5 Re	MB N esult Q 2.0 U MB N	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		RL 2.0	MD	DL Unit			Pr	epared	Prep Ty Analy 	zed 19:04	Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate	512585/5 Re	MB N esult Q 2.0 U MB N very Q	1B Qualifier	Limi	RL 2.0	MD	DL Unit			Pr		Prep Ty	zed 19:04	Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate	512585/5 Re	MB N esult Q 2.0 U MB N	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		RL 2.0	MD	DL Unit			Pr	epared	Prep Ty Analy 	zed 19:04	Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water	512585/5 Re %Reco	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Limi	RL 2.0	MD	DL Unit	Clie	<u>D</u>	Pr Pr	epared epared	Prep Ty	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water	512585/5 Re %Reco	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u>Limi</u> 66`	RL 2.0	MD 0.8	9L Unit 36 ug/L	Clie	<u>D</u>	Pr Pr	epared epared	Prep Ty - Analy 11/11/21 - Analy 11/11/21 : Lab Coo Prep Ty	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585	512585/5 Re %Reco	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<i></i>	RL 2.0 120	MD 0.8	DL Unit 36 ug/L		<u>D</u>	Pr Pr	epared epared nple ID	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> Lab Col Prep Ty %Rec.	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte	512585/5 Re %Reco	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 Spike Added	<u>RL</u> 2.0 120 LC Resu	MD 0.8 S L0	9L Unit 36 ug/L	Unit	<u>D</u>	Pr Pr	epared epared nple ID %Rec	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> : Lab Co Prep Ty %Rec. Limits	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte	512585/5 Re %Reco	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<i></i>	RL 2.0 120	MD 0.8 S L0	DL Unit 36 ug/L		<u>D</u>	Pr Pr	epared epared nple ID	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> Lab Col Prep Ty %Rec.	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte	512585/5 	MB N esult Q 2.0 U MB N very Q	1B Qualifier 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 Spike Added	<u>RL</u> 2.0 120 LC Resu	MD 0.8 S L0	DL Unit 36 ug/L	Unit	<u>D</u>	Pr Pr	epared epared nple ID %Rec	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> : Lab Co Prep Ty %Rec. Limits	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane	512585/5 	MB M esult Q 2.0 U MB M very Q 84	1B Qualifier 1B Qualifier	 Spike Added	<u>RL</u> 2.0 120 LC Resu	MD 0.8 S L0	DL Unit 36 ug/L	Unit	<u>D</u>	Pr Pr	epared epared nple ID %Rec	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> : Lab Co Prep Ty %Rec. Limits	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane <i>Surrogate</i>	512585/5 Reco 512585/4 	MB M esult Q 2.0 U MB M very Q 84	1B Qualifier 1B Qualifier		<u>RL</u> 2.0 120 LC Resu	MD 0.8 S L0	DL Unit 36 ug/L	Unit	<u>D</u>	Pr Pr	epared epared nple ID %Rec	Prep Ty <u>Analy</u> <u>11/11/21</u> <u>Analy</u> <u>11/11/21</u> : Lab Co Prep Ty %Rec. Limits	zed 19:04 rzed 19:04	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512585 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	512585/5 Reco -512585/4 LCS _%Recovery 81	MB M esult Q 2.0 U MB M very Q 84	1B Qualifier 1B Qualifier	Limi 66 - Spike Added 10.0 Limits	<u>RL</u> 2.0 120 LC Resu	MD 0.8 S L0	DL Unit 36 ug/L	Unit	D	Pr Pr an	epared epared nple ID <u>%Rec</u> 99	Prep Ty Analy 11/11/21 Analy 11/11/21 Lab Co Prep Ty %Rec. Limits 80 - 122	rpe: To zed 19:04 rzed 19:04 ntrol S rpe: To	Dil Fa Dil Fa Dil Fa
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Eurofins TestAmerica, Canton

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

	MS	MS										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	82		66 - 120									
 Lab Sample ID: 240-1594	18-P-2 MSD					Client	Samn		Aatrix Spil	ke Dun	licate	
Matrix: Water						Unorth	oump		Prep Ty			
Analysis Batch: 512585												
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	-
1,4-Dioxane	2.0	U F1	10.0	10.2		ug/L		102	51 - 153	8	16	
	MSD	MSD										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	83		66 - 120									Ē

QC Association Summary

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

GC/MS VOA

Analysis Batch: 512585

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-159413-2	MW-89S_110321	Total/NA	Water	8260B SIM	
MB 240-512585/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-512585/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-159418-H-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-159418-P-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-159413-1	TRIP BLANK_07	Total/NA	Water	8260B	
240-159413-2	MW-89S_110321	Total/NA	Water	8260B	
MB 240-512817/6	Method Blank	Total/NA	Water	8260B	
LCS 240-512817/4	Lab Control Sample	Total/NA	Water	8260B	
240-159418-E-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-159418-L-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Job ID: 240-159413-1

Matrix: Water

Lab Sample ID: 240-159413-1

Client Sample ID: TRIP BLANK_07 Date Collected: 11/03/21 00:00 Date Received: 11/05/21 08:00

	Туре	Method		Factor	Number	or Analyzed	Analyst	Lab
Total/NA			Run					Lab
-	Analysis	8260B		1	512817	11/13/21 16:31	LEE	TAL CAN
Client Sample	ID: MW	-89S_110321					Lab Sa	mple ID: 240-15941
Date Collected: 11	/03/21 1	5:05						Matrix: W
Date Received: 11	/05/21 08	B:00						
_	Batch	Batch		Dilution	Batch	Prepared		

	Datch	Batch		Dilution	Datch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260B		1	512817	11/13/21 16:54	LEE	TAL CAN	
Total/NA	Analysis	8260B SIM		1	512585	11/11/21 21:27	CS	TAL CAN	

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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

Job ID: 240-159413-1

Laboratory: Eurofins TestAmerica, 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	02-23-22	
Connecticut	State	PH-0590	12-31-21	
Florida	NELAP	E87225	06-30-22	
Georgia	State	4062	02-23-22	
Illinois	NELAP	200004	07-31-22	
owa	State	421	06-01-23	
Kansas	NELAP	E-10336	04-30-22	
Kentucky (UST)	State	112225	02-23-22	
Kentucky (WW)	State	KY98016	12-31-21	
Minnesota	NELAP	OH00048	12-31-21	
Minnesota (Petrofund)	State	3506	08-01-23	
New Jersey	NELAP	OH001	06-30-22	
New York	NELAP	10975	03-31-22	
Ohio VAP	State	CL0024	12-21-23	
Oregon	NELAP	4062	02-23-22	
Pennsylvania	NELAP	68-00340	08-31-22	
Texas	NELAP	T104704517-18-10	08-31-22	
Virginia	NELAP	11570	09-14-22	
Washington	State	C971	01-12-22	
West Virginia DEP	State	210	12-31-21	

Clty/State/Zlp: Novl, MI, 48377 Telephone: 248-994-2240 Phone: 248-994-2240 Email: krittoffer.hinskey Project Name: Ford LTP Off.Site Sampler Name: Project Number: 30080642.402.04 Method of Shipping/Tracking No: PO # 30080642.402.04 Sample Identification Sample Identification Sample Date M Wu - 899 S - 110321 11/3/21 Provisible Hazard Identification Possible Hazard Identification	Barcadis.com Barcadis.com Anteria S Sediment Anteria Matrix Anteria Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Matrix Ma	Telephone: 734-644-5131 Analysis Unreround Time Analysis Unreround Analysis Unreround Time Analysis Unreround An	✓ ✓ 1'1-DCE 85008 C C Combostic=C \ Crap=C Z ✓ Killesced 28mble (X \ N)	× × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × × ×		A Thioride 8260B SiM	1 of 1 COCs For lab use only Walk-in client Lab sampling Job/SDG No: Sample Specific Notes /
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lification 10321	Mumer Guu Solid CS Natri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Ageneri Agene	10 day 2 weeks 2 weeks 2 weeks 2 days 1 day 1	C Composite=C Crab=C				Lab sampling Job/SDG No: Sample Specific Notes /
Sample Identification COT AS-110321 AS-110321 antification		Contrined and the second and the second and	C Composite-C/Grab		X 1CE 85608		Job/SDG No: Sample Specific Notes /
ntification	Alf	Contriner And Contribution Contributica Contributi	C. C. Composite-C		X 1CE 85608		Sample Specific Notes /
10321		- 9	5 5		×	-	Special Instructions:
10321		9	.5			× ×	1 Trip Blank
d dentification					X X	x x	3 VOAs for 8260B 3 VOAs for 8260B SIM
d Identification							
d Identification							
d Identification				540-1	240-159413 Chi	Chain of Custody	
ammable cin Irritant ments & Comments:	Poison B Unknown	Sample Disposal (A fee may be assessed if samples are retained longer than 1 Return to Client 🗢 Disposal By Lab 👘 Archive For	assessed if sampl Disposal By Lab	es are retair Ar	Archive For	an 1 month) Months	
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.	华臣203631						
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Page 17 of 18

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11/19/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Canton Facility	Login # :
lient ARCADIS Site Name	Cooler unpacked by:
poler Received on $11/5/21$ Opened on $11/5/21$	Malshev Suna
edEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courie	
eceipt After-hours: Drop-off Date/Time Storage Location	on
estAmerica Cooler # TA Foam Box Client Cooler Box Other	
	7
COOLANT: Wet Ice Blue Ice Dry Ice Water None Cooler temperature upon receipt See Multiple Coole	r Form
IR GUN# IR-14 (CF +0.1 °C) Observed Cooler Temp. 0.6 °C Corrected Coo	
IR GUN #IR-15 (CF +0.2°C) Observed Cooler Temp°C Corrected Coo	
. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Ves No Tests that are not
	Yes No NA checked for pH by
	Yes No Receiving:
-Were tamper/custody seals intact and uncompromised? (Shippers' packing slip attached to the cooler(s)?	Yes No NA Ves No VOAs
	Yes No VOAs Ves No Oil and Grease
	Yes No TOC
	No No
	Yes No
	Yes No
For each sample, does the COC specify preservatives (\mathcal{D}/N) , # of containers (\mathcal{D}/N) , and	d sample type of grab/comp(Y)N)?
0. Were correct bottle(s) used for the test(s) indicated?	Yes No
1. Sufficient quantity received to perform indicated analyses?	
2. 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.	
	Yes No (NA) pH Strip Lot# <u>HC157842</u> ' Yes No
	Yes No NA
	Yes No
	Yes (No)
	9
ontacted PM by via Verba	1 Voice Mail Other
oncerning	
B. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page	4
TB is not logged for SIM due to Insuf	ficient volume.
	JW2 11-5-21
· · · · · · · · · · · · · · · · · · ·	k
9. SAMPLE CONDITION	
ample(s) were received after the recommended he	
	ved in a broken container.
were received with bubble >6 m	m in diameter. (Notify PM)
). SAMPLE PRESERVATION	
	· · · · · · · · · · · · · · · · · · ·
ample(s) were	further preserved in the laboratory.
me preserved: Preservative(s) added/Lot number(s):	it a
OA Sample Preservation - Date/Time VOAs Frozen:	
1	
	WI-NC-099

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DATA VERIFICATION REPORT



November 19, 2021

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 WA03 OFF-SITE GW Event Specific Scope of Work References: Sample COC Laboratory: TestAmerica - North Canton Laboratory submittal: 159413-1 Sample date: 2021-11-03 Report received by CADENA: 2021-11-19 Initial Data Verification completed by CADENA: 2021-11-19 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 <u>http://clms.cadenaco.com/index.cfm</u>.

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.
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.
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

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton Laboratory Submittal: 159413-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BL/ 2401594 11/3/20	4131			MW-899 2401594 11/3/20	_ 1132	1	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC OSW-8260	JR									
0511-8200	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		1.8	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		0.69	1.0	ug/l	J
<u>OSW-8260</u>)BBSim									
	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 # 240-159413-1 CADENA Verification Report: 2021-11-19

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 43568R Review Level: Tier III Project: 30080642.402.04

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-159413-1 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_07	240-159413-1	Water	11/03/21		Х			
MW-89S_110321	240-159413-2	Water	11/03/21		Х	Х		

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items ReviewedSample receipt conditionRequested analyses and sample resultsMaster tracking listMethods of analysisReporting limitsSample collection dateLaboratory sample received dateSample preservation verification (as applicable)Sample preparation/extraction/analysis datesFully executed Chain-of-Custody (COC) form	Rep	orted		mance ptable	Not
	No	Yes	No	Yes	Required
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		Х		Х	
3. Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		Х	
9. Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
11. 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 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: 8260B/8260B-SIM	Rep	orted		rmance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					
System performance and column resolution		Х		X	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х		Х	
Instrument tune and performance check		Х		Х	
Ion abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD	Х				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		Х	
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:	Bfutzele
DATE:	December 07, 2021

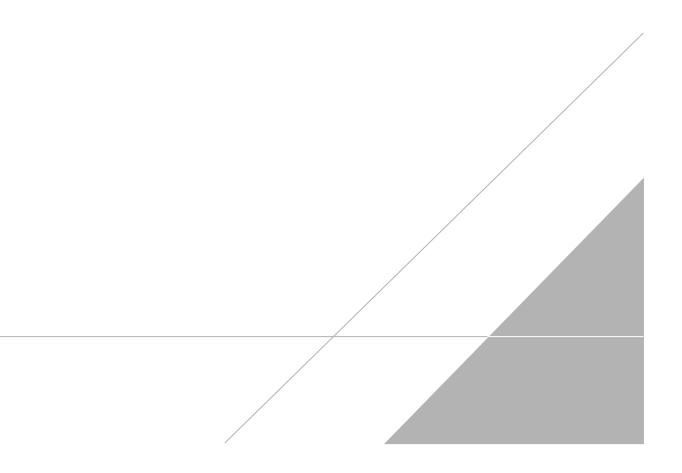
PEER REVIEW: Andrew Korycinski

DATE: December 8, 2021

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

ł	Client Contact Company Name: Arcadis	Regulat	ory program	:		D	w	- N	PDES		- 1	RCRA	-	Oth	er				-			-			
		Client Project	Manager: Kris	Hinsk	iey			Site Co	ntact:	Julia	a McC	lafferty		-	-	Lab (Conta	ct: M	ike De	Mon	nico				FestAmerica Laboratories, In COC No:
1	Address: 28550 Cabot Drive, Suite 500	Telephone: 248	-994-2240					Teleph	one: 7	34-6-	44-513	1				Teler	hone	: 330-	497-9	396					
ľ	City/State/Zip: Novi, MI, 48377	Email: kristoff	ar hinstori@ar	andle								d Time									1000				1 of 1 COCs
Ī	Phone: 248-994-2240		• ••							1411	ar our	G THAC				Analyses							ť	For lab use only	
Ī	Project Name: Ford LTP Off-Site	Sampler Name	Some	~ 0	~	(-))		TATif	lifferent		oelow 3 wee	ks L		2										ľ	Walk-in client
ŀ	Project Number: 30080642.402.04	Method of Ship	ment/Carrier:	r ce	-	90	<u> </u>	10 0	lay	-	2 wee													Į,	Lab sampling
	PO # 30080642.402.04					_		_			2 days	5	(N/)	-de			8260B			8					
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I		1				Matrix			ontaine	ers &	Preser	vatives	Sam	Ĩ	826	SCE 8	50	89	8	oride		aue		- 1	
	Sample Identification	Sample Date	Sample Time	Alr	Aqueous	Sediment	Other:	H2SO4 HNO3	HCI	NaOH	ZaAc/ NaON	Unpres Other:	Filtered Sample (Y / N)	Composite	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE	PCE 8260B	TCE 8260B	Vinvl Chloride 8260B		1.4-DIOXAN6 62605 SIM			Sample Specific Notes / Special Instructions:
	TRIP BLANK_				X			T	1				N	4	X	х	X	X	X	Tx	$\langle \rangle$	x			1 Trip Blank
	MW-895-110321	11/3/21	15'DE		1				6		\square		N	1	N.						Τ.				3 VOAs for 8260B
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ĺ	Possible Hazard Identification	Poise	n B	Unk	nown			Sam	ple Di	sposa	al (A f	ee may	be assess Dispos	sed if	samp	les ar		ined I Archiv			1 mo			_	
-	Special Instructions/QC Requirements & Comments:			Child				-	Notu	111 10	Chem		Dispos	sal D	y Lau	_		Auchiv	C FOI	1		Months			
;	Submit all results through Cadena at jtomalia@cadenaco. Level IV Reporting requested.	.com. Cadena #	E203631																						
	Relinquished by:	Company:	cadis			Time:	3/2	1 16:	OD	Reco	cived t	ovi GVj	(01	cl	S	τoγ	uc	il.	Cor	npany	". P	tread	is	1	Date/Time: 11/3/21 1
L	Relinquished by:	AR	CADES		Date/	Time:	11/4 Far	121 / 1			cived t	~ (Je.	Q				r	Cor	npany	r.				Date/Time: 1041
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Client Sample ID: TRIP BLANK_07 Date Collected: 11/03/21 00:00 Date Received: 11/05/21 08:00

Job ID: 240-159413-1

Lab Sample ID: 240-159413-1 Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/21 16:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/13/21 16:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/21 16:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/13/21 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		62 - 137			-		11/13/21 16:31	1
4-Bromofluorobenzene (Surr)	77		56 - 136					11/13/21 16:31	1
Toluene-d8 (Surr)	106		78 - 122					11/13/21 16:31	1
Dibromofluoromethane (Surr)	94		73 - 120					11/13/21 16:31	1

Client Sample ID: MW-89S_110321 Date Collected: 11/03/21 15:05 Date Received: 11/05/21 08:00

Job	١D·	240-1	15941	3-1
000	ID.	270-	10041	0-1

Lab Sample ID: 240-159413-2 Matrix: Water

later

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/21 21:27	1	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	81		66 - 120					11/11/21 21:27	1	
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)							i.
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/13/21 16:54	1	17
cis-1,2-Dichloroethene	1.8		1.0	0.46	ug/L			11/13/21 16:54	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:54	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/13/21 16:54	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/13/21 16:54	1	
Vinyl chloride	0.69	J	1.0	0.45	ug/L			11/13/21 16:54	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	94		62 - 137					11/13/21 16:54	1	
4-Bromofluorobenzene (Surr)	74		56 - 136					11/13/21 16:54	1	
Toluene-d8 (Surr)	105		78 - 122					11/13/21 16:54	1	
Dibromofluoromethane (Surr)	93		73 - 120					11/13/21 16:54	1	

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Environment Testing America

1

ANALYTICAL REPORT

Eurofins TestAmerica, Canton 4101 Shuffel Street NW North Canton, OH 44720 Tel: (330)497-9396

Laboratory Job ID: 240-159533-1

Client Project/Site: Ford LTP - Off-Site

For:

.....Links

Review your project results through

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Expert

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

Attn: Kristoffer Hinskey

Mole Del your

Authorized for release by: 11/22/2021 9:29:29 AM

Michael DelMonico, Project Manager I (330)497-9396 Michael.DelMonico@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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3

Qualifiers

GC/MS VO	Α	
Qualifier	Qualifier Description	
F1	MS and/or MSD recovery exceeds control limits.	
U	Indicates the analyte was analyzed for but not detected.	5

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

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-159533-1

Case Narrative

Comments

No additional comments.

Receipt

The samples were received on 11/6/2021 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 was 1.1° C.

GC/MS VOA

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

VOA Prep

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

Job ID: 240-159533-1

Method Summary

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

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	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 TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-159533-1	TRIP BLANK_25	Water	11/04/21 00:00	11/06/21 08:00
240-159533-2	MW-193S_110421	Water	11/04/21 10:05	11/06/21 08:00

Dete	ction	Summary	

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

Client Sample ID: TRIP BLANK_25

No Detections.

Client Sample ID: MW-193S_110421

No Detections.

Lab Sample ID: 240-159533-2

Lab Sample ID: 240-159533-1

This Detection Summary does not include radiochemical test results.

Client Sample ID: TRIP BLANK_25 Date Collected: 11/04/21 00:00 Date Received: 11/06/21 08:00

Lab Sample ID: 240-159533-1

Matrix: Water

Job ID: 240-159533-1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/21 02:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/21 02:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/21 02:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/21 02:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/21 02:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/21 02:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137					11/12/21 02:48	1
4-Bromofluorobenzene (Surr)	79		56 - 136					11/12/21 02:48	1
Toluene-d8 (Surr)	109		78 - 122					11/12/21 02:48	1
Dibromofluoromethane (Surr)	97		73 - 120					11/12/21 02:48	1

RL

2.0

RL

1.0

1.0

1.0

1.0

1.0

1.0

Limits

66 - 120

Analyte

1,4-Dioxane

Surrogate

Analyte

1,1-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl chloride

cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

1,2-Dichloroethane-d4 (Surr)

Client Sample ID: MW-193S_110421 Date Collected: 11/04/21 10:05 Date Received: 11/06/21 08:00

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

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

Result Qualifier

Result Qualifier

1.0 U

1.0 U

1.0 U

1.0 U

1.0 U

1.0 U

2.0 U

%Recovery Qualifier

82

Lab Sample ID: 240-159533-2 Matrix: Water

3 4 5

5	
8	
9	

MDL	Unit	D	Prepared	Analyzed	Dil Fac
0.86	ug/L			11/12/21 20:04	1
			Prepared	Analyzed	Dil Fac
		_		11/12/21 20:04	1
MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Unit ug/L	<u>D</u>	Prepared	Analyzed 11/12/21 03:10	Dil Fac
0.49		<u>D</u>	Prepared		
0.49 0.46	ug/L	<u>D</u> _	Prepared	11/12/21 03:10	1
0.49 0.46	ug/L ug/L	<u>D</u>	Prepared	11/12/21 03:10 11/12/21 03:10	1 1
0.49 0.46 0.44	ug/L ug/L ug/L	<u>D</u> _	Prepared	11/12/21 03:10 11/12/21 03:10 11/12/21 03:10 11/12/21 03:10	1 1 1

Surrogate	%Recovery	Qualifier Lin	nits	Prepared	Analyzed	Dil Fa
1,2-Dichloroethane-d4 (Surr)	99	62	- 137		11/12/21 03:10	
4-Bromofluorobenzene (Surr)	82	56	- 136		11/12/21 03:10	
Toluene-d8 (Surr)	115	78	- 122		11/12/21 03:10	
Dibromofluoromethane (Surr)	99	73	- 120		11/12/21 03:10	

Surrogate Summary

Method: 8260B - Volatile Organic Compounds (GC/MS) Matrix: Water

Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) DCA BFB DBFM TOL (62-137) (73-120) Lab Sample ID **Client Sample ID** (56-136) (78-122) 240-159533-1 TRIP BLANK 25 97 96 79 109 240-159533-2 MW-193S_110421 99 82 99 115 240-159539-B-5 MS Matrix Spike 96 94 116 97 240-159539-B-5 MSD Matrix Spike Duplicate 90 87 108 92 LCS 240-512565/4 Lab Control Sample 89 87 107 90 MB 240-512565/6 Method Blank 92 73 102 90 Surrogate Legend DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr) TOL = Toluene-d8 (Surr) DBFM = Dibromofluoromethane (Surr) Method: 8260B SIM - Volatile Organic Compounds (GC/MS) Matrix: Water Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)	
		DCA		13
Lab Sample ID	Client Sample ID	(66-120)		
240-159533-2	MW-193S_110421	82		
240-159543-G-3 MS	Matrix Spike	85		
240-159543-O-3 MSD	Matrix Spike Duplicate	83		
LCS 240-512758/4	Lab Control Sample	83		
MB 240-512758/5	Method Blank	84		
Surrogate Legend				

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

11/22/2021

9

Job ID: 240-159533-1

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

Lab Sample ID: MB 240-512565/6 Matrix: Water

Analysis Batch: 512565

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/21 23:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/21 23:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/21 23:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/21 23:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/21 23:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/21 23:50	1

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		62 - 137		11/11/21 23:50	1
4-Bromofluorobenzene (Surr)	73		56 - 136		11/11/21 23:50	1
Toluene-d8 (Surr)	102		78 - 122		11/11/21 23:50	1
Dibromofluoromethane (Surr)	90		73 - 120		11/11/21 23:50	1

Lab Sample ID: LCS 240-512565/4 Matrix: Water Analysis Batch: 512565

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	10.0	10.4		ug/L		104	63 - 134	
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	77 - 123	
Tetrachloroethene	10.0	10.6		ug/L		106	76 - 123	
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	75 - 124	
Trichloroethene	10.0	8.95		ug/L		90	70 - 122	
Vinyl chloride	10.0	9.56		ug/L		96	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	87		56 - 136
Toluene-d8 (Surr)	107		78 - 122
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-159539-B-5 MS **Matrix: Water** Analysis Batch: 512565

-	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	25	U	250	224		ug/L		90	56 - 135
cis-1,2-Dichloroethene	43		250	285		ug/L		97	66 - 128
Tetrachloroethene	25	U	250	201		ug/L		80	62 - 131
trans-1,2-Dichloroethene	86		250	316		ug/L		92	56 - 136
Trichloroethene	830	F1	250	936	F1	ug/L		41	61 - 124
Vinyl chloride	25	U	250	246		ug/L		99	43 - 157
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	96		62 - 137						
4-Bromofluorobenzene (Surr)	94		56 - 136						
Toluene-d8 (Surr)	116		78 - 122						

Client Sample ID: Method Blank

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

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

Job ID: 240-159533-1

Prep Type: Total/NA

11/22/2021

QC Sample Results

Job ID: 240-159533-1

10

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

Analysis Batch: 512565 Surrogate								mple ID: Matr Prep Type: 1	
Surrogato									
Surrogato	MS	MS							
Junoyale	%Recovery	Qualifier	Limits						
Dibromofluoromethane (Surr)	97		73 - 120						
Lab Sample ID: 240-15953 Matrix: Water	39-B-5 MSD					Client Sa	mple ID: N	latrix Spike D Prep Type: 1	
Analysis Batch: 512565									
	Sample	Sample	Spike	MSD	MSD			%Rec.	RP
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D %Rec	Limits RP	D Lin
1,1-Dichloroethene	25	U –	250	213		ug/L	85	56 - 135	5 2
cis-1,2-Dichloroethene	43		250	272		ug/L	92	66 - 128	5
Tetrachloroethene	25	U	250	210		ug/L	84	62 - 131	4
trans-1,2-Dichloroethene	86		250	297		ug/L	84	56 - 136	6
Trichloroethene	830	F1	250	885	F1	ug/L	21	61 - 124	6 1
Vinyl chloride	25		250	233		ug/L	93	43 - 157	6 2
-				200		0			- •
	MSD								
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	90		62 - 137						
4-Bromofluorobenzene (Surr)	87		56 - 136						
Toluene-d8 (Surr)	108		78 - 122						
Dibromofluoromethane (Surr)	92		73 - 120						
Matrix: Water								Prep Type: 1	
								Prep Type: 1	
Analysis Batch: 512758		MB MB							Fotal/N
Analysis Batch: 512758 Analyte	Re	sult Qualifie	r		MDL Unit	D	Prepared	Analyzed	Total/N Dil Fa
Analysis Batch: 512758 Analyte	Re		r		MDL Unit	<u>D</u>	Prepared		Total/N Dil Fa
Analysis Batch: 512758 Analyte	Re	sult Qualifie	r			<u> </u>	Prepared	Analyzed	Total/N Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane		2.0 Qualifie		2.0		<u>D</u>	Prepared	Analyzed	Total/N
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate		2.0 Qualifie 2.0 U MB MB		2.0		D		Analyzed	Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	%Reco	2.0 U MB MB very Qualifie	r Limi	2.0			Prepared	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51	Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-5	%Reco	2.0 U MB MB very Qualifie	r Limi	2.0			Prepared	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-5 Matrix: Water	%Reco	2.0 U MB MB very Qualifie	r Limi	2.0			Prepared	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51	Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-5 Matrix: Water	%Reco	2.0 U MB MB very Qualifie	r Limi 66 - 1	2.0 ts 120	0.86 ug/L		Prepared	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1	Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-8 Matrix: Water Analysis Batch: 512758	%Reco	2.0 U MB MB very Qualifie	r <u>Limi</u> 66 - 7 Spike	2.0 (20 LCS	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 7 %Rec.	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512758 Analyte	%Reco	2.0 U MB MB very Qualifie	r <u>Limi</u> 66 - 7 Spike Added	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte	%Reco	2.0 U MB MB very Qualifie	r <u>Limi</u> 66 - 7 Spike	2.0 (20 LCS	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 7 %Rec.	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte	%Reco 512758/4	2.0 U MB MB very Qualifie	r <u>Limi</u> 66 - 7 Spike Added	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane	%Reco 512758/4	LCS	r <u>Limi</u> 66 - 7 Spike Added	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits	Total/N Dil Fa Dil Fa Sampl
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate	%Reco 512758/4	LCS	sr <u>Limi</u> 66 - 7 Spike Added 10.0	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits	Dil Fa
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	%Reco 512758/4 	LCS	r Limi 66 - 7 Spike Added 10.0	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID D %Rec 96	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits 80 - 122	Total/N
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-15954	%Reco 512758/4 	LCS	r Limi 66 - 7 Spike Added 10.0	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID D %Rec 96	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits 80 - 122 mple ID: Matr	Total/N
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-15954 Matrix: Water	%Reco 512758/4 	LCS	r Limi 66 - 7 Spike Added 10.0	2.0 ts (20 LCS Result	0.86 ug/L	Client	Prepared Sample ID D %Rec 96	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits 80 - 122	Total/N
Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-15954 Matrix: Water Analysis Batch: 512758	%Reco 512758/4 LCS %Recovery 83 43-G-3 MS	LCS Qualifier	r <u>Limi</u> 66 - 7 Spike Added 10.0 <u>Limits</u> 66 - 120	2.0 ts 120 LCS Result 9.63	LCS Qualifier	Client	Prepared Sample ID D %Rec 96	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits 80 - 122 mple ID: Matr Prep Type: 1	Total/N
Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 512758 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-15954 Matrix: Water	%Reco 512758/4 <i>LCS</i> %Recovery 83 43-G-3 MS Sample	LCS	r Limi 66 - 7 Spike Added 10.0	2.0 ts (20 LCS Result 9.63	0.86 ug/L	Client	Prepared Sample ID D %Rec 96	Analyzed 11/12/21 16:51 Analyzed 11/12/21 16:51 : Lab Control Prep Type: 1 %Rec. Limits 80 - 122 mple ID: Matr	Dil Fa Dil Fa Sampl Total/N

Job ID: 240-159533-1

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

	MS	MS										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	85		66 - 120									5
Lab Sample ID: 240-1595 Matrix: Water	43-O-3 MSD					Client	Samp	le ID: N	latrix Spil Prep Ty			6
Analysis Batch: 512758	.	<u>.</u>	a									
	•	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
1,4-Dioxane	2.0	U F1	10.0	9.71		ug/L		97	51 - 153	3	16	8
	MSD	MSD										
Surrogate	%Recovery	Qualifier	Limits									9
1,2-Dichloroethane-d4 (Surr)	83		66 - 120									
. ,												40

QC Association Summary

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

GC/MS VOA

Analysis Batch: 512565

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-159533-1	TRIP BLANK_25	Total/NA	Water	8260B	
240-159533-2	MW-193S_110421	Total/NA	Water	8260B	
MB 240-512565/6	Method Blank	Total/NA	Water	8260B	
LCS 240-512565/4	Lab Control Sample	Total/NA	Water	8260B	
240-159539-B-5 MS	Matrix Spike	Total/NA	Water	8260B	
240-159539-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 512758

Lab Sample ID 240-159533-2	Client Sample ID MW-193S_110421	Prep Type Total/NA	Matrix Water	Method 8260B SIM	Prep Batch
MB 240-512758/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-512758/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-159543-G-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-159543-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Matrix: Water

Lab Sample ID: 240-159533-1

Client Sample ID: TRIP BLANK_25 Date Collected: 11/04/21 00:00 Date Received: 11/06/21 08:00

	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260B		1	512565	11/12/21 02:48	LEE	TAL CAN	
Client Sam	ple ID: MW	/-193S_11042	1				Lab Sa	mple ID: 2	40-159533-
Date Collecte	d: 11/04/21 1	0:05						-	Matrix: Wate
Date Receive	d: 11/06/21 0	8:00							
	Batch	Batch		Dilution	Batch	Prepared			

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	512565	11/12/21 03:10	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	512758	11/12/21 20:04	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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

Job ID: 240-159533-1

Laboratory: Eurofins TestAmerica, 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	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
lowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-18-10	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

a a Test	TestAmerica Laboratory location: Brighton	tory location:	Brigl	tton		Citatio	Driv 2	Suite	e. Suite 200 /	Bright	10448 Citation Drive. Suite 200 / Brighton, MI 48116 / 810-229-2763	4 8116	/ 810-	72-922	ß							Ű	esiAmenco
Client Contact	Regulat	Regulatory program:					[NPDES			RCRA		Other									~	~
Company Name: Arcadis							•			1	5											Tact	14 morian [aforetaints
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Manager: Kris	Hinsk	cz			Site	ontact	:: Julia	Site Contact: Julia McClafferty	afferty			F	ab Con	tact: M	Lab Contact: Mike DelMonico	Monic	•				COC No:
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	-994-2240					Telep	Telephone: 734-644-5131	734-64	14-5131				F	elepho	le: 330	Telephone: 330-497-9396	96				+	
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	er.hinskey@ar	cadis.	E O			Ľ	malyse	urn ?	Analysis Turnaround Time	Time	H	L	╡┟			Y	Analyses	8			For	1 of 1 COCs For lab use only
Project Name: Ford LTP Off-Site	Sampler Name:		1	1		1	TAT	TAT if different from below 3 w	t from b	clow 3 weeks	μ											Wall	Walk-in client
Project Number: 30080642.402.04	Method of Shipment/Carrier:	ment/Carrier:	1	1			¥	10 day	3	2 weeks 1 week	\$	(\		·····					M			Lab	Lab sampling
PO # 30080642.402.04	Shipping/Tracking No:	ing No:								z days 1 day		[/ Y) əl						80928	S 809			Job/	Job/SDG No:
			Ц	ŕŀ	Matrix		Ĺ	Contain	ers &	Containers & Preservatives	tives	dma T						i ebit	28 er				
Sample Identification	Sample Date	Sample Date Sample Time	414	sucentry	Sediment Solid	Other:	FOSTH	HCI HNO3	HOBN	Vadres Vadres Vadres	Other: Unpres	Filtered S	ileoqmoD	1'1-DCE 8	OD-S,1-sic 	OCE 8560	LCE 8260	vinyl Chio	ısxoiQ-4, I				Sample Specific Notes / Special Instructions:
TRIP BLANK_ 2.5	1	-		×				—		╢───	╟	2	0	×	××	1		×	8	13		╟╴	1 Trip Blank
MMW-1935-110421	1005	(1/4/2)		$\overline{\times}$	 			10	ļ		<u> </u>	2	Q	$\overline{\times}$	$\frac{1}{2}$	$\left \right $		$\left \right $	X		1		3 VOAs for 8260B
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					-		1	1	240-1	5953	240-159533 Chain of Custody	in of	Custo	dy			I		1	┼		+	
				+	1					 	ļ	+		+	+		<u> </u>				1	+	
					1		1	+		+	<u> </u>	+	1	+	+-					+		+	
Possible Hazard Identification	Poison B	a B	Cinkno		1		Sa	nple D.	isposal	1(Afe	Sample Disposal (A fee may be assessed if samples are retained longer	e asses	ssed if s	ample	are re	tained	onger	than I	_ Ē,	- _,		-	
Comments:								2			·	nispc	yea inso			Archiv	C FOL	1	δM	Months			
Submit all results through Cadena at jtomalia@cadenaco com Cadena #E203631 Level IV Reporting requested	com Cadena #	E203631																					
The THRAN	Company R/CORUS	5	F	Date/Time	14/21	1	1500		$\frac{1}{\sqrt{2}}$	Received by		10	l Ì	GULWAD	2		Company	npany ⁻ A C C ~ ~				Date	
Monther HUM	Company ARCANTS	Ants	1	Log /	5 2 2		143	v	Recei	Received by	1.	1		5	X		Com	Company	1	\wedge		Date	
Relinquished by Level of the	Company E7-4		1	Date/Time:	- N		Shh		Per	Z ved in	Received in Laboratory by:	J to J) Set					Company:	H Z				12
2000 Taskinera Lecratore, in: Al right resent Subs Taskinera Lecratore, in: Al right resent Taskinera & Doogn " an tradmans of factinera Leonence, in:			1	1	1		1		1		Ŕ	1					4	1					

11/22/2021

Chain of Custody Record

TestAmerica

с		IFGF77
Eurofins TestAmerica Canton Sample Receipt Form/Narrative Canton Facility	Login # :_	1) (5)2
Chent ARCADIS Site Name	Cooler un	packed by.
Cooler Received on $11/6/21$ Opened on $11/6/21$	PWM	her Sura
edEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Cour	ner Other	
Receipt After-hours: Drop-off Date/TimeStorage Location	ion	
estAmerica Cooler # TA Foam Box Client Cooler Box Other	ſ	
Packing material used: Bubble Wrap Foam Plastic Bag None Other	r	
COOLANT: Wet Ice Blue Ice Dry Ice Water None		
Cooler temperature upon receipt See Multiple Coo		
IR GUN# IR-14 (CF +0.1 °C) Observed Cooler Temp. 1 O °C Corrected Co		_°C
IR GUN #IR-15 (CF +0.2°C) Observed Cooler Temp°C Corrected Co		_°C
Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Ver No	Tests that are not
-Were the seals on the outside of the cooler(s) signed & dated? -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Ves No NA	checked for pH by
-Were tamper/custody seals on the bottle(s) of bottle kits (LLHg/Merig)? -Were tamper/custody seals intact and uncompromised?	Yes No (Yes No NA	Receiving:
Shippers' packing slip attached to the cooler(s)?	Yes No	VOAs
Did custody papers accompany the sample(s)?	Yes No	Oil and Grease
Were the custody papers relinquished & signed in the appropriate place?	(Yes) No D	TOC
Was/were the person(s) who collected the samples clearly identified on the COC?	AS No Struct 1	
Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No	
For each sample, does the COC specify preservatives (YN), # of containers (YN), as	nd sample type of g	rab/comp(Y/N)?
). Were correct bottle(s) used for the test(s) indicated?	Yes No	
. Sufficient quantity received to perform indicated analyses?	Ves No	
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.	_	
3 Were all preserved sample(s) at the correct pH upon receipt?		H Strip Lot# HC157842
Were VOAs on the COC?	Yes No	
5 Were air bubbles >6 mm in any VOA vials? \bigcirc \leftarrow Larger than this \leftarrow Were a VOA true block arrangement to acceler(c)? True Block Let $\#(1)^{d+1} \neq 0$	Yes No NA Yes No	
 6 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #01042016 7. Was a LL Hg or Me Hg trip blank present? 	Yes (No	
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DATA VERIFICATION REPORT



November 22, 2021

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 WA03 OFF-SITE GW Event Specific Scope of Work References: Sample COC Laboratory: TestAmerica - North Canton Laboratory submittal: 159533-1 Sample date: 2021-11-04 Report received by CADENA: 2021-11-22 Initial Data Verification completed by CADENA: 2021-11-22 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:

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 512565.

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.
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: TestAmerica - North Canton Laboratory Submittal: 159533-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401599 11/4/20	5331			MW-193 2401599 11/4/20	5332	21	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-826</u>										
	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	
<u>OSW-826</u>	<u>0BBSim</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 # 240-159533-1 CADENA Verification Report: 2021-11-22

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 43578R Review Level: Tier III Project: 30080642.402.04

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-159533-1 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		Ana	lysis
	Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM
	TRIP BLANK_25	240-159533-1	Water	11/04/21		Х	
-	MW-193S_110421	240-159533-2	Water	11/04/21		Х	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items Reviewed	Rep	orted		mance ptable	Not
	No	Yes	No	Yes	Required
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		Х		Х	
3. Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		Х	
9. Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
11. Narrative summary of Quality Assurance or sample problems provided		х		x	
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 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: 8260B/8260B-SIM	Rep	orted		rmance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					
System performance and column resolution		Х		X	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х		Х	
Instrument tune and performance check		Х		Х	
Ion abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD	Х				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		X	
D. Transcription/calculation errors present		Х		Х	
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:	Bfutzele
DATE:	December 07, 2021

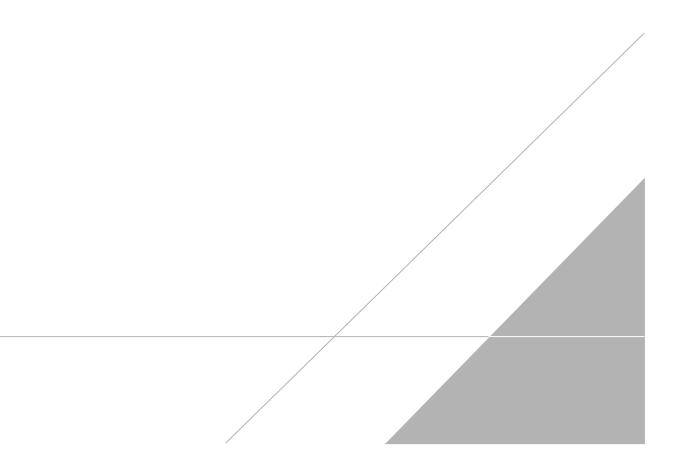
PEER REVIEW: Andrew Korycinski

DATE: December 8, 2021

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 Company Name: Arcadis	Regula	tory program:	:		DW			NPDE	S		RCF	RA		Other							••••••	•						
	Client Project	Manager: Kris	Winebow				C14.								1											TestAmerica Labor	atorie	
Address: 28550 Cabot Drive, Suite 500			пшѕкеу			f	Site	Conta	ct: Ju	lia Mc	Clafi	Terty			P	Lab C	ontac	t: Mil	Mike DelMonico							COC No:		
City/State/Zip: Novi, MI, 48377	Telephone: 24	3-994-2240					Tele	ohone	: 734-	644-51	31				-t	Telep	hone:	330-4	97-93	96								
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Sample Identification	Sample Date	Sample Time	Alt	Sediment	Solid	5	H2SO4	HN03		ZnAc/ NaOJI	Unpr	Other:	Filte	Composite=C / Grab=G	1,1-005 82608	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Special Instruc	tions:	
TRIP BLANK_ 25			X		T	Ī		1		T			N		T	X		X	X	x	4	6	1	1	Ī	1 Trip Blank		
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ubmit all results through Cadena at jtomalia@cadenaco evel IV Reporting requested	o com Cadena#	E203631																										
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Client Sample ID: TRIP BLANK_25 Date Collected: 11/04/21 00:00 Date Received: 11/06/21 08:00

Lab Sample ID: 240-159533-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/21 02:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/21 02:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/21 02:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/21 02:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/21 02:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/21 02:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137					11/12/21 02:48	1
4-Bromofluorobenzene (Surr)	79		56 - 136					11/12/21 02:48	1
Toluene-d8 (Surr)	109		78 - 122					11/12/21 02:48	1
Dibromofluoromethane (Surr)	97		73 - 120					11/12/21 02:48	1

Job ID: 240-159533-1

5 6

RL

2.0

RL

1.0

1.0

1.0

1.0

1.0

1.0

Limits

62 - 137

56 - 136

78 - 122

73 - 120

Limits

66 - 120

MDL Unit

0.86 ug/L

MDL Unit

0.49 ug/L

0.46 ug/L

0.44 ug/L

0.51 ug/L

0.44 ug/L

0.45 ug/L

D

D

Prepared

Prepared

Prepared

Prepared

Analyte

1,4-Dioxane

Surrogate

Analyte

1,1-Dichloroethene

Tetrachloroethene

Trichloroethene

Toluene-d8 (Surr)

Vinyl chloride

Surrogate

cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

1,2-Dichloroethane-d4 (Surr)

4-Bromofluorobenzene (Surr)

Dibromofluoromethane (Surr)

1,2-Dichloroethane-d4 (Surr)

Client Sample ID: MW-193S 110421 Date Collected: 11/04/21 10:05 Date Received: 11/06/21 08:00

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

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

Result Qualifier

Result Qualifier

1.0 U

1.0 U

1.0 U

1.0 U

1.0 U

1.0 U

99

82

115

99

Qualifier

%Recovery

Qualifier

2.0 U

82

%Recovery

Lab Sample ID: 240-159533-2 **Matrix: Water**

		4
Analyzed	Dil Fac	5
11/12/21 20:04	1	
Analyzed	Dil Fac	6
11/12/21 20:04	1	7
Analyzed	Dil Fac	8
11/12/21 03:10	1	
11/12/21 03:10	1	9
11/12/21 03:10	1	
11/12/21 03:10	1	10
11/12/21 03:10	1	
11/12/21 03:10	1	11
Analyzed	Dil Fac	40
11/12/21 03:10	1	
11/12/21 03:10	1	40
11/12/21 03:10	1	13
11/12/21 03:10	1	4 /

11/22/2021