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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 240-166636-1

Client Project/Site: Ford LTP - Off Site

For:

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

Attn: Kristoffer Hinskey

Meara

Authorized for release by: 5/26/2022 10:58:41 PM Patrick O'Meara, Manager of Project Management (330)966-5725 Patrick.O'Meara@et.eurofinsus.com

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Ask— The Expert Michael DelMonico, Project Manager I (330)497-9396 Michael.DelMonico@et.eurofinsus.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

TNTC

Too Numerous To Count

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
U	Indicates the analyte was analyzed for but not detected.	
Glossary		5
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	0
CNF	Contains No Free Liquid	0
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	9
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 Audit (Dioxin)	

Job ID: 240-166636-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-166636-1

Case Narrative

Comments

No additional comments.

Receipt

The samples were received on 5/14/2022 @ 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 3.0° C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) for analytical batch 527301 exceeded control criteria for 1,1-Dichloroethene. The following samples associated with this CCV were non-detect for the affected analyte. In accordance with the laboratory SOP, a low level CCV at the reporting limit (labeled as an MRL) was analyzed and the affected compounds were detected; therefore the data has been reported. No further corrective action was required: TRIP BLANK_109 (240-166636-1) and MW-163S_051122 (240-166636-2).

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

VOA Prep

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

Method Summary

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

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

Protocol References:

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

Laboratory References:

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

Sample Summary

Job ID: 240-166636-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166636-1	TRIP BLANK_109	Water	05/11/22 00:00	05/14/22 08:00
240-166636-2	MW-163S_051122	Water	05/11/22 15:30	05/14/22 08:00

Detection Summary

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

Client Sample ID: TRIP BLANK_109

No Detections.

Client Sample ID: MW-163S_051122

No Detections.

Job ID: 240-166636-1

Lab Sample ID: 240-166636-1

Lab Sample ID: 240-166636-2

This Detection Summary does not include radiochemical test results.

Client Sample ID: TRIP BLANK_109 Date Collected: 05/11/22 00:00 Date Received: 05/14/22 08:00

Lab Sample ID: 240-166636-1

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			05/20/22 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 17:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 17:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 17:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		62 - 137					05/20/22 17:54	1
4-Bromofluorobenzene (Surr)	85		56 - 136					05/20/22 17:54	1
Toluene-d8 (Surr)	83		78 - 122					05/20/22 17:54	1
Dibromofluoromethane (Surr)	91		73 - 120					05/20/22 17:54	

Toluene-d8 (Surr)

Dibromofluoromethane (Surr)

Client Sample ID: MW-163S_051122 Date Collected: 05/11/22 15:30 Date Received: 05/14/22 08:00

Method: 8260D SIM - Volatile	e Organic Co	mpounds ((GC/MS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 22:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120					05/17/22 22:56	1
Method: 8260D - Volatile Org	ganic Compo	unds by G	C/MS						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 18:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 18:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		62 - 137					05/20/22 18:19	1
4-Bromofluorobenzene (Surr)	84		56 - 136					05/20/22 18:19	1

78 - 122

73 - 120

81

90

Job ID: 240-166636-1	
JOD ID. 240-100030-1	

Lab Sample ID: 240-166636-2 Matrix: Water

05/20/22 18:19

05/20/22 18:19

water

5

8

1

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Surrogate Summary

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

					Prep Type: Total/N
		Pe	rcent Surro	ogate Recovery (Ac	ceptance Limits)
	DCA	BFB	TOL	DBFM	
Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)	
TRIP BLANK_109	83	85	83	91	
MW-163S_051122	82	84	81	90	
Matrix Spike	79	90	81	93	
Matrix Spike Duplicate	80	90	81	92	
Lab Control Sample	78	90	82	93	
Method Blank	83	87	82	93	
ne-d4 (Surr)					
izene (Surr)					
nethane (Surr)					
	TRIP BLANK_109 MW-163S_051122 Matrix Spike Matrix Spike Duplicate Lab Control Sample Method Blank me-d4 (Surr) Izene (Surr)	Client Sample ID(62-137)TRIP BLANK_10983MW-163S_05112282Matrix Spike79Matrix Spike Duplicate80Lab Control Sample78Method Blank83	Client Sample ID DCA (62-137) BFB (56-136) TRIP BLANK_109 83 85 MW-163S_051122 82 84 Matrix Spike 79 90 Matrix Spike Duplicate 80 90 Lab Control Sample 78 90 Method Blank 83 87	Client Sample ID DCA (62-137) BFB (56-136) TOL (78-122) TRIP BLANK_109 83 85 83 MW-163S_051122 82 84 81 Matrix Spike 79 90 81 Matrix Spike Duplicate 80 90 81 Lab Control Sample 78 90 82 Method Blank 83 87 82	Client Sample ID (62-137) (56-136) (78-122) (73-120) TRIP BLANK_109 83 85 83 91 MW-163S_051122 82 84 81 90 Matrix Spike 79 90 81 93 Matrix Spike Duplicate 80 90 81 92 Lab Control Sample 78 90 82 93 Method Blank 83 87 82 93

DBFM = Dibromofluoro	omethane (Surr)			
Method: 8260D SI	IM - Volatile Organic	Compounds (GC/MS)	
Matrix: Water			Prep Type: Total/NA	12
			Percent Surrogate Recovery (Acceptance Limits)	
		DCA		13
Lab Sample ID	Client Sample ID	(66-120)		
240-166505-H-3 MS	Matrix Spike	105		14
240-166505-N-3 MSD	Matrix Spike Duplicate	105		
240-166636-2	MW-163S_051122	105		
LCS 240-526826/3	Lab Control Sample	106		
MB 240-526826/4	Method Blank	105		
Surrogate Legend				

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

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Job ID: 240-166636-1

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

Lab Sample ID: MB 240-527301/8

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

Matrix: Water Analysis Batch: 527301

MB	MB							
Analyte Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene1.0	U	1.0	0.49	ug/L			05/20/22 12:28	1
cis-1,2-Dichloroethene 1.0	U	1.0	0.46	ug/L			05/20/22 12:28	1
Tetrachloroethene 1.0	U	1.0	0.44	ug/L			05/20/22 12:28	1
trans-1,2-Dichloroethene 1.0	U	1.0	0.51	ug/L			05/20/22 12:28	1
Trichloroethene 1.0	U	1.0	0.44	ug/L			05/20/22 12:28	1
Vinyl chloride 1.0	U	1.0	0.45	ug/L			05/20/22 12:28	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		62 - 137		05/20/22 12:28	1
4-Bromofluorobenzene (Surr)	87		56 - 136		05/20/22 12:28	1
Toluene-d8 (Surr)	82		78 - 122		05/20/22 12:28	1
Dibromofluoromethane (Surr)	93		73 - 120		05/20/22 12:28	1

Lab Sample ID: LCS 240-527301/5 Matrix: Water Analysis Batch: 527301

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	16.3		ug/L		81	63 - 134	
cis-1,2-Dichloroethene	20.0	19.4		ug/L		97	77 - 123	
Tetrachloroethene	20.0	18.4		ug/L		92	76 - 123	
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	75 - 124	
Trichloroethene	20.0	20.1		ug/L		101	70 - 122	
Vinyl chloride	20.0	12.0		ug/L		60	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	82		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

81

Lab Sample ID: 240-166637-D-2 MS **Matrix: Water** Analysis Batch: 527301

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	20.0	17.7		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.8		ug/L		99	66 - 128
Tetrachloroethene	1.0	U	20.0	18.8		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.9		ug/L		99	56 - 136
Trichloroethene	1.0	U	20.0	20.3		ug/L		102	61 - 124
Vinyl chloride	1.0	U	20.0	13.8		ug/L		69	43 - 157
	MS	MS							
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	79		62 - 137						
4-Bromofluorobenzene (Surr)	90		56 - 136						

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

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

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78 - 122

QC Sample Results

Job ID: 240-166636-1

10

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

											ample ID: Prep Ty		
Analysis Batch: 527301													
	MS	MS											
Surrogate	%Recovery	Qualif	lier	Limits									
Dibromofluoromethane (Surr)	93			73 - 120									
Lab Sample ID: 240-1666 Matrix: Water	37-E-2 MSD							Client	Sam	ole ID: I	Matrix Spi Prep Ty		
Analysis Batch: 527301													
	Sample	Samp	le	Spike	MS	DМ	SD				%Rec		RP
Analyte	Result	•		Added	Res	lt Q	ualifier	Unit	D	%Rec	Limits	RPD	Lim
1,1-Dichloroethene	1.0	U		20.0	18	.3		ug/L		92	56 - 135	3	2
cis-1,2-Dichloroethene	1.0	U		20.0	18	.9		ug/L		94	66 - 128	5	1
Tetrachloroethene	1.0	U		20.0	19	.1		ug/L		95	62 - 131	1	2
trans-1,2-Dichloroethene	1.0	U		20.0	19	.5		ug/L		97	56 - 136	2	1
Trichloroethene	1.0			20.0	19			ug/L		98	61 - 124	3	1
Vinyl chloride	1.0			20.0	14			ug/L		73	43 - 157	6	2
,								0				2	_
		MSD											
Surrogate	%Recovery		ïer	Limits									
1,2-Dichloroethane-d4 (Surr)	80			62 - 137									
4-Bromofluorobenzene (Surr)	90			56 - 136									
Toluene-d8 (Surr)	81			78_122									
Dibromofluoromethane (Surr)	92			73 - 120									
Lab Sample ID: MB 240-5 Matrix: Water		ganic	: Com	pound	s (GC/I	<u>/IS)</u>			Cli	ent Sar	nple ID: M Prep Ty		
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826	526826/4	MB N	18	ipound							Prep Ty	pe: To	tal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte	526826/4	MB M esult C	1B Qualifier	ipound	RL	MD	L Unit			ent Sar Prepared	Prep Ty Analy	zed	tal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte	526826/4	MB N esult C 2.0 U	1B Qualifier	ipound		MD	1 <mark>L Unit</mark> 36 ug/L				Prep Ty	zed	tal/N Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane	26826/4	MB N esult C 2.0 U MB N	1B Qualifier J 1B		RL	MD			<u>D</u> _F	Prepared	Prep Ty 	zed 20:01	tal/N Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate	26826/4	MB N esult C 2.0 U MB N	1B Qualifier		RL	MD			<u>D</u> _F		Prep Ty Analy: 05/17/22 Analy:	zed 20:01	tal/N Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate	26826/4	MB N esult C 2.0 U MB N	1B Qualifier J 1B		RL	MD			<u>D</u> _F	Prepared	Prep Ty 	zed 20:01	tal/N Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-	526826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B		RL	MD			D _ F	Prepared Prepared	Prep Ty <u>Analy:</u> 05/17/22 <u>Analy:</u> 05/17/22 D: Lab Cor	zed 20:01 <u>zed</u> 20:01	tal/N Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water	526826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B		RL	MD			D _ F	Prepared Prepared	Prep Ty 	zed 20:01 <u>zed</u> 20:01	tal/N Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water	526826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B		RL 2.0	MD 0.8	36 ug/L		D _ F	Prepared Prepared	Prep Ty 	zed 20:01 <u>zed</u> 20:01	tal/N Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826	526826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B	<i>Limi</i> 66^	RL 2.0 120	<u>MD</u> 0.8	36 ug/L		D _ F	Prepared Prepared	Prep Ty <u>Analy:</u> 05/17/22 <u>Analy:</u> 05/17/22 D: Lab Cor	zed 20:01 <u>zed</u> 20:01	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826	526826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B	 <u>Limi</u> 66 - 7 Spike Added	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L		D _ F	Prepared Prepared	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Example: 05/17/22 Yes Prep Ty %Rec Limits	zed 20:01 <u>zed</u> 20:01	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte	26826/4 Re %Reco	MB N esult C 2.0 U MB N	1B Qualifier J 1B	<i>Limi</i> 66^	RL 2.0 120	MD 0.8 S LC	36 ug/L	Clie	D_F _/	Prepared Prepared	Prep Ty <u>Analy</u> 05/17/22 <u>Analy</u> 05/17/22 0: Lab Cor Prep Ty %Rec	zed 20:01 <u>zed</u> 20:01	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte	526826/4	MB N esult C 2.0 U MB N	1B Qualifier J 1B	 <u>Limi</u> 66 - 7 Spike Added	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D_F _/	Prepared Prepared Imple IE %Rec	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Example: 05/17/22 Yes Prep Ty %Rec Limits	zed 20:01 <u>zed</u> 20:01	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane	526826/4 	MB N esult G 2.0 U MB N very G 105	1B Qualifier 1 Dualifier	<u>Limi</u> 66 - 7 Spike 	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D_F _/	Prepared Prepared Imple IE %Rec	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Example: 05/17/22 Yes Prep Ty %Rec Limits	zed 20:01 <u>zed</u> 20:01	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i>	526826/4	MB N esult C 2.0 U MB N very C 105	1B Qualifier 1 Dualifier	 <u>Limi</u> 66 - 7 Spike Added	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D_F _/	Prepared Prepared Imple IE %Rec	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Example: 05/17/22 Yes Prep Ty %Rec Limits	zed 20:01 <u>zed</u> 20:01	tal/N Dil Fa Dil Fa
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr)	26826/4 	MB N esult C 2.0 U MB N very C 105	1B Qualifier 1 Dualifier	Limi 66 - ⁻ Spike Added 10.0 Limits	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D F /	Prepared Prepared Imple II <u>%Rec</u> 97	Prep Ty Analy: 05/17/22 Analy: 05/17/22 C: Lab Cor Prep Ty %Rec Limits 80 - 122	zed 20:01 zed 20:01	tal/N Dil Fa Dil Fa ampl tal/N
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-1665	26826/4 	MB N esult C 2.0 U MB N very C 105	1B Qualifier 1 Dualifier	Limi 66 - ⁻ Spike Added 10.0 Limits	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D F /	Prepared Prepared Imple II <u>%Rec</u> 97	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Lab Cor Prep Ty %Rec Limits 80 - 122	pe: Tot zed 20:01 20:01 20:01 ntrol Sa pe: Tot Matrix	tal/N/ Dil Fa Dil Fa ampl tal/N/
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-1665 Matrix: Water	26826/4 	MB N esult C 2.0 U MB N very C 105	1B Qualifier 1 Dualifier	Limi 66 - ⁻ Spike Added 10.0 Limits	RL 2.0 120 LC Rest	MD 0.8 S LC	36 ug/L	Clie	D F /	Prepared Prepared Imple II <u>%Rec</u> 97	Prep Ty Analy: 05/17/22 Analy: 05/17/22 C: Lab Cor Prep Ty %Rec Limits 80 - 122	pe: Tot zed 20:01 20:01 20:01 ntrol Sa pe: Tot Matrix	tal/N/ Dil Fa Dil Fa ampl tal/N/
Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-1665 Matrix: Water	526826/4 	MB N esult Q 2.0 U MB N vvery Q 105	1B Qualifier 1B Qualifier		RL 2.0 its 120 LC Resi 9.1	$\frac{MD}{0.8}$	CS ualifier	Clie	D F /	Prepared Prepared Imple II <u>%Rec</u> 97	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Lab Cor Prep Ty %Rec Limits 80 - 122 ample ID: Prep Ty	pe: Tot zed 20:01 20:01 20:01 ntrol Sa pe: Tot Matrix	tal/N/ Dil Fa Dil Fa ample tal/N/
Aethod: 8260D SIM - N Lab Sample ID: MB 240-5 Matrix: Water Analysis Batch: 526826 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240- Matrix: Water Analysis Batch: 526826 Analyte 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-1665 Matrix: Water Analysis Batch: 526826 Analysis Batch: 526826 Analysis Batch: 526826	526826/4 	MB N esult Q 2.0 U MB N vvery Q 105	IB Qualifier IB Qualifier	Limi 66 - ⁻ Spike Added 10.0 Limits	RL 2.0 its 120 LC Rest 9.	MD 0.8 S L(11 73 S M	CS ualifier	Clie	D F /	Prepared Prepared Imple IE <u>%Rec</u> 97	Analy: 05/17/22 Analy: 05/17/22 Analy: 05/17/22 Lab Cor Prep Ty %Rec Limits 80 - 122	pe: Tot zed 20:01 20:01 20:01 ntrol Sa pe: Tot Matrix	tal/N/ Dil Fa Dil Fa ample tal/N/

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

	MS	MS										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	105		66 - 120									
Lab Sample ID: 240-1665	05-N-3 MSD					Client	Samn		latrix Spi	ko Dun	licato	
Matrix: Water						onent	oamp	10 ID. 1	Prep Ty			
Analysis Batch: 526826												
-	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	6	16	
	MSD	MSD										ī
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	105		66 - 120									Ē

QC Association Summary

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

GC/MS VOA

Analysis Batch: 526826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166636-2	MW-163S_051122	Total/NA	Water	8260D SIM	
MB 240-526826/4	Method Blank	Total/NA	Water	8260D SIM	
_CS 240-526826/3	Lab Control Sample	Total/NA	Water	8260D SIM	
40-166505-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166505-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
240-166636-1	TRIP BLANK_109	Total/NA	Water	8260D		
240-166636-2	MW-163S_051122	Total/NA	Water	8260D		
MB 240-527301/8	Method Blank	Total/NA	Water	8260D		
LCS 240-527301/5	Lab Control Sample	Total/NA	Water	8260D		
240-166637-D-2 MS	Matrix Spike	Total/NA	Water	8260D		
240-166637-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D		-

Job ID: 240-166636-1

Eurofins Canton

Matrix: Water

Lab Sample ID: 240-166636-1

Client Sample ID: TRIP BLANK_109 Date Collected: 05/11/22 00:00 Date Received: 05/14/22 08:00

Date Receive	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527301	05/20/22 17:54	LEE	TAL CAN
Client Sam	ple ID: MW	-163S_05112	22				Lab Sa	ample ID: 240-166636-2
Date Collecte	d: 05/11/22 1	5:30						Matrix: Water
Date Receive	d: 05/14/22 0	8:00						

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527301	05/20/22 18:19	LEE	TAL CAN
Total/NA	Analysis	8260D SIM		1	526826	05/17/22 22:56	CS	TAL CAN

Laboratory References:

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

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

Laboratory: Eurofins Canton

aboratory: Eurofins C		······		
accreditations/certifications held b	y this laboratory are listed. Not all ac	ccreditations/certifications are applicable to	o this report.	
Authority	Program	Identification Number	Expiration Date	
California	State	2927	02-27-23	
Connecticut	State	PH-0590	12-31-23	
Florida	NELAP	E87225	06-30-22	
Georgia	State	4062	02-23-22 *	
Illinois	NELAP	200004	07-31-22	
Iowa	State	421	06-01-23	
Kentucky (UST)	State	112225	02-27-23	
Kentucky (WW)	State	KY98016	12-31-22	
Minnesota	NELAP	039-999-348	12-31-22	
Minnesota (Petrofund)	State	3506	08-01-23	
New Jersey	NELAP	OH001	06-30-22	
New York	NELAP	10975	04-01-23	
Ohio	State	8303	02-23-23	
Ohio VAP	State	CL0024	05-24-22	
Oregon	NELAP	4062	05-24-22	
Pennsylvania	NELAP	68-00340	08-31-22	
Texas	NELAP	T104704517-22-16	08-31-22	
Virginia	NELAP	11570	09-14-22	,
Washington	State	C971	01-12-23	
West Virginia DEP	State	210	12-31-22	

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

Otole Comparies Nationality Contract Options York Total contract Nationality Total contend Natinget Nationality Total contract Nati	Implementation Implementation Implementation Implementation <	Client Contact	Regulatory program: C DW C NPDES	DW _ NPDES _ RCRA _ Other		
	Mode/Instruction Mode/Instruction<	Company Name: Arcadis				TestAmerica Laboratories, Inc.
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П. Информации П. ИнфopMatrix П. Инфop	Instruction Instruction <thinstruction< th=""> <thinstruction< th=""></thinstruction<></thinstruction<>	ine: 248-94-2240		I urnaround 11me	Analyses	
With Contrast Matter Life Contrast	Miller Administration Administration<	oject Name: Ford LTP Off-Site	allo	t from below		Walk-in client
EX Закры Плании 1.5.0	Lit Japanet Transmission Lit Lit <thlit< th=""> <thlit< th=""> Lit</thlit<></thlit<>	oject Number: 30080642.402.04		2 weeks		Lab sampling
Sensitivitient Matrix Construct Procession Activity Construct Procession <	Single function Mint Constant of Processing Constant)# 30080642.402.04	ShippingTracking No:	560D D (Ctap= (X /)		Job/SDG No:
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MMK_10P1 5/11/12 5/11/12 5/11/12 5/11/12 5/12 1	MMK_LIVM 5/III/2 - X	Sample Identification	Sample Time Atrona Sediment Atr	Trans-1 Gis-1,2- Compo T,1-DCi Compo C	Vinyl CI	Sample Specific Notes / Special Instructions:
Wo 35 — 051/12 5/11/12 15:30 X 16 N/17 X X X 3 '000a tor R80 Wo 30 = 100 100	WG3C_051122 5111121 15130 15 10 10 15 10 <	TRIP BLANK_ 100	(X X X 4	┣───	1 Trip Blank
a. a	370A6002 1 1 </td <td>04117</td> <td>Nr.25</td> <td>XXX</td> <td>7</td> <td>3 VOAs for 8260D</td>	04117	Nr.25	XXX	7	3 VOAs for 8260D
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of Telamable Skin Irritati Poison B Unknown Sample Disposal (A fer may be assessed if samples ar ertained longer than 1 month) an UC Requirements & Comments Stin Irritati Poison B Lunch Return to Client Disposal By Lab Archive For Months an UC Requirements & Comments Stin Irritati Pair (Irritation 1 month) Return to Client Disposal By Lab Archive For Months an Uncough Company: Date/Time: Date/Time: Return to Client Disposal By Lab Archive For Months M M Company: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: M M Company: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: M M Company: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: M M Company: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: M M Company: Company: Company: Company: Company: Date/Time: Date/Time: M M M M Company: Company:	and Tammable Skin Intiant Diston B Unknown and Flammable Skin Intiant Diston B Unknown Skin Intiant Diston B and/C Requirements & Comments A Stance For Menty Andruce For Menty and/C Requirements & Comments A Stance For Menty Andruce For Ments and/C Requirements & Comments A Stance For Andruce For Ments and Ments Company Stance For Ments Menty Company Stance For Ments Diston Menty Company Stance For Ments Diston Menty Company Stance For Ments Diston Menty Company Stance Ments Diston Diston Menty Company Stance Ments Diston Diston Menty Company Stance Menty Diston Diston Menty Company Stance Menty Diston Diston Menty Company Stance Menty Diston Diston Menty Company Company Menty Diston Diston Menty Company <t< td=""><td>booking through the states of</td><td></td><td></td><td></td><td></td></t<>	booking through the states of				
and Requirements & comments, 3 24591 Bed CM St 18 through Cadema at Jonnalia@eadema@com. Cadema #E203631 18 through Cadema at Jonnalia@eadema@com. Company: 19 requested. 19 requested. 19 requested. 10 Monte Company: 10 Monte Company: 10 Monte Company: 10 Monte Company: 11 22 1250 Received by: 12 12 1250 Received by: 12 12 1250 Received by: 12 12 1250 Received by: 12 12 12 1250 Received by: 12 12 12 12 1250 Received by: 12 12 12 12 12 12 12 12 12 12 12 12 12 1	in through a denner at Commens. In through a denner at Domain Reaction of the through a denner of thr	Vosione razard Lenningle Sk.	Unknown	Visposal (A fee may be assessed if samples are retained lo urn to Client & Disposal By Lab Archive	nger than 1 month) For Months	
H. W. Company: Company SJU/22 16:50 Received by U.U. C. Company. Company. 3111/22 11/22 16:50 Received by U.U. C. Company. 313/22 12/22 12/20 Received by U.C. Company. Date Time: Date T	H. W. Company. Company. Barctime: 16:50 Received by: UV CUE Stored. Company. 3611122 11/22 16:50 Received by: UPU CUE Stored. 3611122 12/22 12:50 Received by: UPU COMPAN. Barctime: Date Time: Date	ctal Instruction/OC Requirements & Comments, mile Address: 34591 B bmit all results through Cadena at itomalia@cso well'V Reporting requested.	Lá Curr St Ideneto.com. Cadena #E203631			
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		000). TestAmerca Laboratoria, Inc. Al rights www.mil. elitoratora & Descri ^{or} ao tadorato, of TestAmerca Laboratores, Inc.				4

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # :	66634
Client ALC C AL S Site Name Cooler unpa	ocked by:
Chem She Want She Want	
Cooler Received on <u>5-14-12</u> Opened on <u>5-16-22</u> FedEx: 1 st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other	my ion
Receipt After-hours: Drop-off Date/Time Storage Location	
TestAmerica Cooler # Foam Box Client Cooler Box Other	
Packing material used: Bubble Wrap Foam Plastic Bag None Other	
COOLANT: Wet Ice Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.0 °C	
IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp°C Corrected Cooler Temp°	C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity No	Tests that are not
-Were the seals on the outside of the cooler(s) signed & dated?	checked for pH by
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? -Were tamper/custody seals intact and uncompromised?	Receiving:
-Were tamper/custody seals intact and uncompromised? 3. Shippers' packing slip attached to the cooler(s)? Yes No NA Yes No	VOAs
4. Did custody papers accompany the sample(s)?	Oil and Grease
5. Were the custody papers relinquished & signed in the appropriate place?	тос
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes No	
 7. Did all bottles arrive in good condition (Unbroken)? 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No 	•
9. For each sample, does the COC specify preservatives (Y/N) , # of containers (Y/N) , and sample type of gradients of the type of gradient states and the	ab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated?	\bigcirc
11. Sufficient quantity received to perform indicated analyses?	
12. Are these work share samples and all listed on the COC? Yes No If yes, Questions 13-17 have been checked at the originating laboratory.	
	Strip Lot# HC157842
14. Were VOAs on the COC?	-
15. Were air bubbles >6 mm in any VOA vials?	
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #Yes No 17. Was a LL Hg or Me Hg trip blank present?Yes No 	
Contacted PM Date by via Verbal Voice Mail Other	r
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples proce	essed by:
19. SAMPLE CONDITION Sample(s) were received after the recommended holding time had exp	ired.
Sample(s) were received in a broken con	
Sample(s) were received with bubble >6 mm in diameter. (Not	ify PM)
20. SAMPLE PRESERVATION	
Sample(s)	n the laboratory.
I ime preservea: Preservative(s) added/Lot number(s):	
VOA Sample Preservation - Date/Time VOAs Frozen:	

5/26/2022

4.5%

WI-NC-099

DATA VERIFICATION REPORT



May 28, 2022

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

CADENA project ID: E203631 Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater Project number: 30080642.402.04 Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Barberton Laboratory submittal: 166636-1 Sample date: 2022-05-11 Report received by CADENA: 2022-05-26 Initial Data Verification completed by CADENA: 2022-05-28 Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

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

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

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

Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Barberton Laboratory Submittal: 166636-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401666 5/11/20	5361)		MW-163 2401666 5/11/20	5362	22	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-826</u>	<u>0D</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>ODSIM</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 # 240-166636-1 CADENA Verification Report: 2022-05-28

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 45753R Review Level: Tier III Project: 30080642.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-166636-1 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:

O annual a ID	L-F ID		Sample Collection	Devent Occursio	Ana	ysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	VOC	VOC SIM
TRIP BLANK_109	240-166636-1	Water	05/11/2022		Х	
MW-163S_051122	240-166636-2	Water	05/11/2022		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		Х		Х	
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 8260D and 8260D 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 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

3. Calibration

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

3.1 Initial Calibration

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

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

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

3.2 Continuing Calibration

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

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_109 MW-163S_051122	Continuous Calibration Verification %D	1,1-Dichloroethene	-22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
		Non-detect	R
	RRF <0.05	Detect	J
Initial and Continuing	RRF <0.01 ¹	Non-detect	R
Calibration	KRF <0.01	Detect	J
		Non-detect	No. Action
	RRF >0.05 or RRF >0.01 ¹	Detect	No Action
Initial Calibration		Non-detect	UJ

Initial/Continuing	Criteria	Sample Result	Qualification		
	%RSD > 20% or a correlation coefficient <0.99	Detect	J		
	%RSD > 90%	Non-detect	R		
	%RSD > 90%				
		Non-detect	No Action		
	%D >20% (increase in sensitivity)	Detect	J		
O section size of O slithers time		Non-detect	UJ		
Continuing Calibration	%D >20% (decrease in sensitivity)	Detect	J		
	%D > 90% (increase/decrease in	Non-detect	R		
	sensitivity)	Detect	J		

Note:

¹RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

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

All internal standard responses were within control limits.

5. Field Duplicate Analysis

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

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

6. Compound Identification

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

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

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

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM		orted		rmance eptable	Not Required	
	No	Yes	No	Yes	Required	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	iC/MS)					
Tier II Validation						
Holding times/Preservation		Х		Х		
Tier III Validation					1	
System performance and column resolution		Х		Х		
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

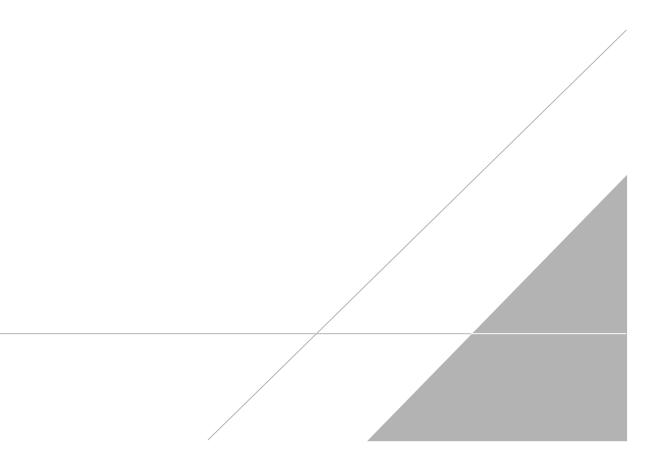
%D Percent difference

VALIDATION PERFORMED BY:	Hareesha Naik
SIGNATURE:	Hahil
DATE:	June 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: June 12, 2022

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record



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

3.0/3.0

Client Contact	Regulat	tory program			DW	- 1	NPDES	5	1	RCRA		Ot	her [
Company Name: Arcadis	Client Project !	Managan Kais				1214 - 4					_										TestAmerica Laboratories
ddress: 28550 Cabot Drive, Suite 500	Chem Project	vianager: Kris	TINSK	cy		Site	oniac	t: Chi	ristina	Weave	r			Lab	Contact: Mike DelMonico			0		COC No:	
Ste. (Co.o. /71	Telephone: 269	elephone: 269-832-7478 Telephone: 248-994-2329						Telephone: 330-966-9783													
ity/State/Záp: Novi, MI, 48377	Email: Kristof	fer.Hinskev@:	arcadis	.com			Inalysi	s Tur	narou	nd Time			-	_	-		A	nalys	es		1 of 1 COCs For lab use only
hone: 248-994-2240														Τ							Tor lab use only
roject Name: Ford LTP Off-Site	Sampler Name					TAT	if differe		below 3 we	eks	_										Walk-in client
	Jam H	JAM. Hy Aul Method of Shipment/Carrier:		10) day		2 we												Lab sampling		
roject Number: 30080642.402.04	Method of Ship						I we			2 9							W				
O # 30080642.402.04	Shipping/Track	ting No:							2 day 1 day		1 1 1 1	/ Grab=	0	260D	E 8260			8260D	8260D SIM		Job/SDG No:
				N	Intrix		Contai	ners &	Prese	vatives		due O	3260	E E	à	0	0	oride	De 8		
Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment Solid Other:	FOS2H	HN03	NaOH	ZaAc/ NaOH	Unpres Other:	Classed	Futered Sample (Y/N) Composite=C/Grab=G	1.1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1.4-Dioxane		Sample Specific Notes / Special Instructions:
TRIP BLANK_ 109	5/11/22	~	Π	Х			1	Τ			,	NE		X	X	X	Х	X			1 Trip Blank
MW-1635-051122	5/11/22	15:30		X			6					NI	X	X	X	K	K	X	X		3 VOAs for 8260D 3 VOAs for 8260D SI
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Possible Hazard Identification												_						Ĺ			
 Non-Hazard Flammable Skin I 	rritant Poise	on B	Unkr	iown		52			o Clien	fee may	be ass Disp					ined lo archive		han 1	month) Months		
Special Instructions/QC Requirements & Comments Sample Address: 34591 BLC Submit all results through Cadena at itomalia@caden Level IV Reporting requested.	LUN ST	Æ203631																			
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Jei Hae	Company: EETA	L		5/1	Time/ 3/22	124	56	- Contraction	Centre	In Labo		DÀ:		K	219	F	Com	EE	TUC		Date/Tine: 5-14-22 80
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Qualifiers

TNTC

Too Numerous To Count

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
U	Indicates the analyte was analyzed for but not detected.	
Glossary		5
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	0
CNF	Contains No Free Liquid	0
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	9
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)	

Client Sample ID: TRIP BLANK_109 Date Collected: 05/11/22 00:00 Date Received: 05/14/22 08:00

Lab Sample ID: 240-166636-1

Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	<u>M nn</u>	1.0	0.49	ug/L			05/20/22 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 17:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 17:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 17:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		62 - 137					05/20/22 17:54	1
4-Bromofluorobenzene (Surr)	85		56 - 136					05/20/22 17:54	1
Toluene-d8 (Surr)	83		78 - 122					05/20/22 17:54	1
Dibromofluoromethane (Surr)	91		73 - 120					05/20/22 17:54	1

Client Sample ID: MW-163S_051122 Date Collected: 05/11/22 15:30 Date Received: 05/14/22 08:00

Lab Sample ID:

Job ID: 240-166636-1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 22:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120					05/17/22 22:56	1
Method: 8260D - Volatile O	rganic Compo	unds by G	C/MS						
Analyte	· ·	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	N N UJ	1.0	0.49	ug/L			05/20/22 18:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 18:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82	,	62 - 137					05/20/22 18:19	1
4-Bromofluorobenzene (Surr)	84		56 - 136					05/20/22 18:19	1
Toluene-d8 (Surr)	81		78 - 122					05/20/22 18:19	1
Dibromofluoromethane (Surr)	90	/	73 - 120					05/20/22 18:19	1