

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS US Inc 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 8/24/2023 11:36:52 AM

# JOB DESCRIPTION

Ford LTP - Off Site

# **JOB NUMBER**

240-189957-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203





# **Eurofins Cleveland**

# Job Notes

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

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

# Authorization

n Mlp

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Authorized for release by Ann Maddux, Project Management Assistant I <u>ann.maddux@et.eurofinsus.com</u> Designee for Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396

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Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Relative Percent Difference, a measure of the relative difference between two points

RPD

TEF

TEQ

TNTC

,		
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)	

### Job ID: 240-189957-1

#### Laboratory: Eurofins Cleveland

#### Narrative

Job Narrative 240-189957-1

#### Receipt

The samples were received on 8/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were  $1.1^{\circ}$ C and  $1.3^{\circ}$ C

#### GC/MS VOA

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

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

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

#### Protocol References:

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

#### Laboratory References:

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

**Eurofins Cleveland** 

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-189957-1	TRIP BLANK_119	Water	08/09/23 00:00	08/11/23 08:00
240-189957-2	MW-184S_080923	Water	08/09/23 12:39	08/11/23 08:00

# **Detection Summary**

Job ID: 240-189957-1

Lab Sample ID: 240-189957-1

Lab Sample ID: 240-189957-2

No Detections.

Client: ARCADIS US Inc

Project/Site: Ford LTP - Off Site

# Client Sample ID: MW-184S\_080923

Client Sample ID: TRIP BLANK\_119

No Detections.

# Client Sample ID: TRIP BLANK\_119

Date Collected: 08/09/23 00:00 Date Received: 08/11/23 08:00

Method: SW846 8260D - Volati	le Organic Comp	ounds by G	C/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 14:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 14:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 14:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 14:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 14:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 14:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137			-		08/19/23 14:38	1
4-Bromofluorobenzene (Surr)	101		56 - 136					08/19/23 14:38	1
Toluene-d8 (Surr)	101		78 - 122					08/19/23 14:38	1
Dibromofluoromethane (Surr)	107		73 - 120					08/19/23 14:38	1

Matrix: Water

Lab Sample ID: 240-189957-1

# 2 3 4 5 6 7 8 9

### Client Sample ID: MW-184S\_080923

Date Collected: 08/09/23 12:39 Date Received: 08/11/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/17/23 13:49	1	÷.
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	90		66 - 120			-		08/17/23 13:49	1	
Method: SW846 8260D - Volat	ile Organic Comp	ounds by G	C/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			08/19/23 19:49	1	
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 19:49	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 19:49	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 19:49	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 19:49	1	
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 19:49	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	116		62 - 137			-		08/19/23 19:49	1	
4-Bromofluorobenzene (Surr)	104		56 - 136					08/19/23 19:49	1	
Toluene-d8 (Surr)	102		78 - 122					08/19/23 19:49	1	
Dibromofluoromethane (Surr)	112		73 - 120					08/19/23 19:49	1	

8/24/2023

Job ID: 240-189957-1

# Lab Sample ID: 240-189957-2 Matrix: Water

5 6

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

### Matrix: Water

Prep Type: Total/NA

# 2 3 4 5 6 7 8 9 10

Prep Type: Total/NA

				Percent Su	rrogate Red
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-189957-1	TRIP BLANK_119	107	101	101	107
240-189957-2	MW-184S_080923	116	104	102	112
240-189966-G-3 MSD	Matrix Spike Duplicate	113	99	99	113
240-189966-H-3 MS	Matrix Spike	111	102	102	103
CS 240-584461/5	Lab Control Sample	99	100	103	101
MB 240-584461/9	Method Blank	117	103	108	116
Surrogate Legend					
DCA = 1,2-Dichloroethan	e-d4 (Surr)				

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

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

#### Matrix: Water

			Percent Surrogate Recovery (Acceptance Limits)
		DCA	
_ab Sample ID	Client Sample ID	(66-120)	
40-189957-2	MW-184S_080923	90	
40-189966-B-3 MS	Matrix Spike	97	
240-189966-B-3 MSD	Matrix Spike Duplicate	93	
CS 240-584182/5	Lab Control Sample	99	
MB 240-584182/7	Method Blank	100	

#### Surrogate Legend

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

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

## Lab Sample ID: MB 240-584461/9

#### Matrix: Water Analysis Batch: 584461

	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 13:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 13:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 13:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 13:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 13:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 13:47	1

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		62 - 137		08/19/23 13:47	1
4-Bromofluorobenzene (Surr)	103		56 <sub>-</sub> 136		08/19/23 13:47	1
Toluene-d8 (Surr)	108		78 - 122		08/19/23 13:47	1
Dibromofluoromethane (Surr)	116		73 - 120		08/19/23 13:47	1

#### Lab Sample ID: LCS 240-584461/5 Matrix: Water Analysis Batch: 584461

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	24.5		ug/L		123	63 - 134	
cis-1,2-Dichloroethene	20.0	19.2		ug/L		96	77 - 123	
Tetrachloroethene	20.0	20.6		ug/L		103	76 - 123	
trans-1,2-Dichloroethene	20.0	21.5		ug/L		107	75 - 124	
Trichloroethene	20.0	20.1		ug/L		101	70 - 122	
Vinyl chloride	20.0	19.8		ug/L		99	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

### Lab Sample ID: 240-189966-G-3 MSD Matrix: Water Analysis Batch: 584461

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	1.0	U	20.0	23.3		ug/L		116	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	66 - 128	6	14
Tetrachloroethene	1.0	U	20.0	19.5		ug/L		98	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	20.0	21.0		ug/L		105	56 - 136	6	15
Trichloroethene	1.0	U	20.0	19.4		ug/L		97	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	18.4		ug/L		92	43 - 157	6	24
	MED	MOD									

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	113		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	99		78 - 122

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

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

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Job ID: 240-189957-1

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

Matrix: Water	-G-3 MSD						Client	Sample IE	): Matrix Spike D Prep Type:	-
Analysis Batch: 584461										
	MSD	MSD								
Surrogate	%Recovery	Qualifier	Limits							
Dibromofluoromethane (Surr)	113		73 - 120							
Lab Sample ID: 240-189966	-H-3 MS							Client	Sample ID: Mat	rix Spik
Matrix: Water									Prep Type:	
Analysis Batch: 584461										
	Sample	•	Spike		MS				%Rec	
Analyte		Qualifier	Added		Qualifier	Unit		D %Rec	Limits	
1,1-Dichloroethene	1.0		20.0	22.3		ug/L		112	56 - 135	
cis-1,2-Dichloroethene	1.0		20.0	18.8		ug/L		94	66 - 128	
Tetrachloroethene	1.0		20.0	20.3		ug/L		101	62 - 131	
trans-1,2-Dichloroethene	1.0		20.0	19.7		ug/L		99	56 - 136	
Trichloroethene	1.0		20.0	20.0		ug/L		100	61 - 124	
Vinyl chloride	1.0	U	20.0	17.4		ug/L		87	43 - 157	
	MS	MS								
Surrogate	%Recovery	Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	111		62 - 137							
4-Bromofluorobenzene (Surr)	102		56 - 136							
Toluene-d8 (Surr)	102		78 - 122							
Lab Sample ID: MB 240-584		Compour	nds (GC/MS)					Client S	ample ID: Metho Prep Type:	
Lab Sample ID: MB 240-584 Matrix: Water			nds (GC/MS)					Client S	ample ID: Metho Prep Type:	
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182	182/7	мв мв			MDL Unit				Prep Type:	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 <sup>Analyte</sup>	182/7	MB MB sult Qualifier			MDL Unit		D	Client S	Prep Type: Analyzed	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 <sup>Analyte</sup>	182/7	MB MB sult Qualifier			MDL Unit		_ D		Prep Type:	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane	182/7 Re	MB MB sult Qualifier 2.0 U MB MB	RL 2.0				_ D	Prepared	Analyzed           08/17/23 10:38	Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier					_ D		Analyzed 08/17/23 10:38 Analyzed	Total/N Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	182/7 	MB MB sult Qualifier 2.0 U MB MB	RL 2.0				_ <u>D</u>	Prepared	Analyzed           08/17/23 10:38	Total/N Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier						Prepared Prepared	Analyzed 08/17/23 10:38 Analyzed	Total/N Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier						Prepared Prepared	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           ElD: Lab Control	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier						Prepared Prepared	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier						Prepared Prepared	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           ElD: Lab Control	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier	RL 2.0 2.0 66 - 120		0.86 ug/L	Unit	Clie	Prepared Prepared	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           08/17/23 10:38           Prep Type:	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier			0.86 ug/L	- Unit ug/L	Clie	Prepared Prepared	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           BID: Lab Control Prep Type:           %Rec	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte	182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier 100	RL 2.0 <i>Limits</i> 66 - 120 Spike Added	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 DE Lab Control Prep Type: %Rec Limits	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane	1182/7 	MB MB sult Qualifier 2.0 U MB MB rery Qualifier 100	RL 2.0 <i>Limits</i> 66 - 120 Spike Added	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 DE Lab Control Prep Type: %Rec Limits	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate	1182/7 	MB MB sult Qualifier 2.0 U MB MB very Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 DE Lab Control Prep Type: %Rec Limits	Total/N Dil Fa Dil Fa
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	LCS %Recov	MB MB sult Qualifier 2.0 U MB MB very Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0           Limits	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           ID: Lab Control Prep Type:           %Rec           Limits           80 - 122	Total/N Dil Fa I Samp Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966	LCS %Recov	MB MB sult Qualifier 2.0 U MB MB very Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0           Limits	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           Prep Type:           %Rec           Limits           80 - 122           Sample ID: Math	Total/N Dil Fa Dil Fa I Sampl Total/N
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966 Matrix: Water	LCS %Recov	MB MB sult Qualifier 2.0 U MB MB very Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0           Limits	Result	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           ID: Lab Control Prep Type:           %Rec           Limits           80 - 122	Total/N Dil Fa Dil Fa I Sampl Total/N
Iethod: 8260D SIM - Vol         Lab Sample ID: MB 240-584         Matrix: Water         Analysis Batch: 584182         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: LCS 240-58         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: LCS 240-58         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         1,2-Dichloroethane-d4 (Surr)         Lab Sample ID: 240-189966         Matrix: Water         Analysis Batch: 584182	LCS %Recov	MB MB sult Qualifier 2.0 U MB MB rery Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0           Limits	Result 9.77	0.86 ug/L	-	Clie	Prepared Prepared ent Sample	Analyzed           08/17/23 10:38           Analyzed           08/17/23 10:38           08/17/23 10:38           Prep Type:           %Rec           Limits           80 - 122           Sample ID: Math	Total/N,   Dil Fa  Sampl Total/N, 
Lab Sample ID: MB 240-584 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-58 Matrix: Water Analysis Batch: 584182 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-189966 Matrix: Water	E182/7 Re %Recov 4182/5 LCS %Recovery 99 -B-3 MS Sample	MB MB sult Qualifier 2.0 U MB MB rery Qualifier 100	RL           2.0           Limits           66 - 120           Spike           Added           10.0           Limits           66 - 120	Result 9.77	0.86 ug/L LCS Qualifier	-	Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 08/17/23 10:38 Analyzed 08/17/23 10:38 DELab Control Prep Type: %Rec Limits 80 - 122 Sample ID: Matu Prep Type:	Total/N,   Dil Fa  Sampl Total/N, 

**Eurofins Cleveland** 

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	97		66 - 120								
Lab Sample ID: 240-189966-	B-3 MSD					c	Client Sa	ample IC	): Matrix Sp	oike Dur	olicate
Matrix: Water								-	Prep 1	Type: To	tal/NA
Analysis Batch: 584182											
	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	10.0	9.51		ug/L		95	51 _ 153	3	16
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	93		66 - 120								

8260D

Water

# GC/MS VOA

240-189966-H-3 MS

Matrix Spike

Analysis	Batch:	584182	
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-189957-2	MW-184S_080923	Total/NA	Water	8260D SIM	
MB 240-584182/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-584182/5	Lab Control Sample	Total/NA	Water	8260D SIM	
240-189966-B-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-189966-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
nalysis Batch: 58446					
		Ргер Туре	Matrix	Method	Prep Batch
nalysis Batch: 58446 Lab Sample ID	1	Prep Type Total/NA	Matrix Water	Method 8260D	Prep Batch
nalysis Batch: 58446 <sup>,</sup>	1 Client Sample ID				Prep Batch
nalysis Batch: 58446 Lab Sample ID 240-189957-1 240-189957-2	1 Client Sample ID TRIP BLANK_119	Total/NA	Water	8260D	Prep Batch
nalysis Batch: 58446 Lab Sample ID 240-189957-1	1 Client Sample ID TRIP BLANK_119 MW-184S_080923	Total/NA Total/NA	Water Water	8260D 8260D	Prep Batch

Total/NA

#### Client Sample ID: TRIP BLANK\_119 Lab Sample ID: 240-189957-1 Date Collected: 08/09/23 00:00 Matrix: Water Date Received: 08/11/23 08:00 Dilution Batch Batch Batch Prepared Prep Type Туре Method Run Factor Number Analyst Lab or Analyzed Total/NA 8260D 584461 AJS EET CLE 08/19/23 14:38 Analysis 1 Client Sample ID: MW-184S\_080923 Lab Sample ID: 240-189957-2 Date Collected: 08/09/23 12:39 Matrix: Water Date Received: 08/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Ргер Туре	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	584461	AJS	EET CLE	08/19/23 19:49
Total/NA	Analysis	8260D SIM		1	584182	MRL	EET CLE	08/17/23 13:49

#### Laboratory References:

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

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**Eurofins Cleveland** 

# **Accreditation/Certification Summary**

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

#### Laboratory: Eurofins Cleveland

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

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

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

MICHIGAN 190	<b>Chair</b> TestAmerica Laboratory location: <u>Brighton 10448 Citat</u> i	Chain of Custody Record 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763	9-2763	
Client Contact	Regulatory program:	F NPDES F RCRA F Other		
( onpany Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	LestAmerica Laboratories, Inc. COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
CHY/State(Zap: SOV), 511, 40577	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240 Project Name: Ford LTP ()ff-Site	Sampler Name:	TAT if different from below 3 weeks		Walk-in client
Project Number: 30167538,402.04	rrier:	()		Lab sampling
PO# 30167538.402.04	Shipping/Tracking No:	(Grab	8560E E 8560	Job/SDG No:
Sample Identification	Sample Date Sample Time Sample Care Sample	Composite Composite Elifeted Samp Elifeted S	cis-1,2-DCE 8 Trans-1,2-DCE PCE 8260D TCE 8260D Vinyl Chloride Vinyl Chloride 1,4-Dioxane 8	Sample Specific Notes / Special Instructions:
و TRIP BLANK_ ۱۱ م			××	1 Trip Blank
" MW-1845_080923	08/09/23 12 39 00	N CU X		3 VOAs for 8260D 3 VOAs for 8260D SIM
Page 18 of 2				
23		240-189957 Chain of Custody	r Custody	
Possible Hazard Identification	Irritant F Poison B L Unknown	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) Return to Client   Disposal By Lab Mo	npics are retained longer than 1 month) b Archive For Months	
s/QC Requirements & Commen s through Cadena at jtomalia( g requested.	181 BURNEN PORT ST naco.com. Cadena #E203631			
Relinguished by:	well3	1800 Novicerid and and a		Date/Time: 08/04/23 1800
Relinquisibility: Relinquistation:	Company THCAUTS Day 10/23 Company KT7A 3/10/23	1239 Received by Color	( ompany:	But/Time: But/Time: 2.11-23 Br.C
2008 Testimera Ligoratore, inc. All region resonant of Testimera Laboratore, inc. 80108				

8/24/2023

14

Eurofins - Cleveland Sample Receipt Form/Narrative	Login # :
Barberton Facility	Cooler unpacked by:
Client ARCADISSite Name	
Cooler Received on 8-11-23 Opened on 8-11-23	
FedEx: 1st Grd Exp) UPS FAS Waypoint Client Drop Off Eurofine	
	e Location
	ther
Packing material used Bubble Wrap Foam Plastic Bag None	Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None	ltiple Cooler Form
IR GUN # (CF°C) Observed Cooler Temp	C Corrected Cooler Temp.
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_	Yes No Tests that are not
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA checked for pH by
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No Receiving:
-Were tamper/custody seals intact and uncompromised?	YES NO NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No VOAs Oil and Grease
4. Did custody papers accompany the sample(s)?	TOC TOC
5. Were the custody papers relinquished & signed in the appropriate place?	Tes No
6. Was/were the person(s) who collected the samples clearly identified on the C	
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Ves)No
9. For each sample, does the COC specify preservatives (Y)N), # of containers(	
<ul><li>10. Were correct bottle(s) used for the test(s) indicated?</li><li>11. Sufficient quantity received to perform indicated analyses?</li></ul>	Cor No Cor No
12. Are these work share samples and all listed on the COC?	Ves No
If yes, Questions 13-17 have been checked at the originating laboratory.	rescribe
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC312502
14. Were VOAs on the COC?	(Yes No
15. Were air bubbles >6 mm in any VOA vials? 🛑 🖕 Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No
Contacted PM Date by v	via Verbal Voice Mail Other
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional	next page Samples processed by:
19. SAMPLE CONDITION	
Sample(s) were received after the recomm	
	vere received in a broken container.
Sample(s) were received with bub	ble >6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s)	were further preserved in the laboratory.
Sample(s) Time preserved: Preservative(s) added/Lot number(s):	
VOA Sample Preservation - Date/Time VOAs Frozen:	

14

Login #: \_

14

<b>Cooler Description</b>	Eurofins - Canton IR Gun #	Observed	Corrected	Coolant
(Circle)	(Circle)	Temp °C	Temp °C	- (Circle)
EC Client Box Other	IR GUN 0; 22	- 12	- 1.1	Wellice' Blue Ice In Water None
Client Box Other		1.4	1.3	Notice Blue ice by
C Client Box Other	IR GUN #:			Wet ice Bive ice by Water None
C Client Box Other	IR GUN #:			Wellice Blue Ice By Weller None
C Client Box Other	IR GUN #:			Wet Ice Blue Ice By Weter Blone
C Client Bes Other	IR GUN #:			Wellice Blue Ico by Weller Mone
C Clent Box Other	IR GUN #:	, ,		Wellice Blue Ice By Water Need
C Client Bex Other	IR GUN #:			Welice Sive Ice by Weley Mane
C Client Ben Other	IR GUN #:			Wellice Dive Ice By
IC Client Bes: Office	IR GUN #:			Wetter Sheeter By
IC Clent Bex Oller	IR GIN #:	•		Wellice Musice By
C Clent Bax Other	R GIN #:			Wet too She too by
IC Client Bex Other	IR GUN #:			Wellice Shee Sco By
C Cleat Jac Other	R GWI f:			Wellice Shee Sco Byl
IC Client Ben Other	R 011 f:			Wet too Blue too Byt
IC Client Box Other	IR GON #:			Welles Sheeles Byt
IC Clent Bax Other	IR GUN #:			Wellice Sheelice Byt
IC Client Bax Other	R BUH #:			Welse Non Ico Byk
IC Clent Bex Other	IR GUN #:			Wettee Sheetee Byte
IC Client Sex Other	11: CON #:			Wulles She les Byk
IC Client Bex Other	IR GUN #:			Wellce She ice Dyk
IC Client Box Other	IR GUN #:			Water Hone Watice Blue Ice Bry Ic
IC Client Bex Other	IR GIN #:			Weise Near Weitco She Ico By Ic
IC Client Bex Other	IR GUN #:			Weier Nese Weilce Divelice Drylo
C Client Ben Other	R CUN 6:			Weltce Blue Ice By Ic
C Client Sex Other	IR GUN #:			Wellice Blue Ice Bry Ice
C Client Ben Other	IR GUN #:			Water Name Water Storics By Ice
C Client Box Other	IR GUN #:			Weier Nene Weijce Steelice Bryks
	IR GUN #:			Water None Wetto She Ice Dry Ice
C Client Bax Other	IR GUN #:			Weler Nese Wellice She lee Bryks
C Client Box Other	IR GUN #:			Water Mane Wet ice Blue fee Bry ice
C Clent Ben Ölher	IR GUN #:			Weier Hear Weilco She too Bryton
Client Ben Other				Water_Hene
Client Box Other	IR GUN #:			Wellice Bluelice Brylice Water Near
Client Box Other	IR GUN #:			Wellice Blue lice Bry Ice

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

Clast clast         Clast clast         Clast clast         Destination         Destination <thdestination< th=""> <thdestination< th=""></thdestination<></thdestination<>	MICHIGAN 190	<b>Chai</b> TestAmerica Laboratory location: <u>Brighton 10448</u> Citat	Chain of Custody Record 1048 Citation Drive, Suite 2007 Brighton, MI 48116 7810-229-2763	9.2763	
(6.06)         Свят Радуст Изваду, Пала, Пала	Client Contact	-	RCRA		
Technic:::::::::::::::::::::::::::::::::::	Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	TestAmerica Laboratories, Inc. [COC No:
Institution	Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
Support Vani:         Путивностити:         Путивно	City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskev@arcadis.com	Analysis Turnaround Time	Analyses	_
Половни при при при при при при при при при пр	Phone: 248-994-2240		TAT some state		(1110 APPA APPA APPA APPA APPA
Nature Contract         Low Manual Contract <thlow contract<="" manual="" th="">         Low Manual Contract</thlow>	Project Name: Ford LTP Off-Site	o'n L	1.4.1.1. different nom perov 3. weeks 10. dav 2. weeks		Walk-in client
Napping Tracking, Ni:         Name         Fig         Fig         Fig         Fig         Non-         Descond         Boston is	Project Number: 30167538.402.04	Method of Shipnent/Carrier:	1 week 2 dave Z	0	Lao sampung
Minin         Contraction         Contrecteol         Contraction <th< td=""><td>PO#30167538.402.04</td><td>Shipping/Tracking No:</td><td>Crab</td><td>8560C</td><td>Job/SDG No:</td></th<>	PO#30167538.402.04	Shipping/Tracking No:	Crab	8560C	Job/SDG No:
Support Inte         Ammer Time         JA         Rest and a firm         JA         Support         Rest and a firm         JA         Support		Matrix	sampi len (	ouide i 0D 5-DCE CE 83	
1       1 </td <td>Sample Identification</td> <td>Sample Time Advent Sediment Sediment</td> <td>Сомрозі Filtered ; Ларси: Халсе Халсе Халсе НлОз Н2ОЗ Н2ОЗ</td> <td>Vinyl Chli TCE 8261 PCE 8261 2.1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-</td> <td>Sample Specific Notes / Special Instructions:</td>	Sample Identification	Sample Time Advent Sediment Sediment	Сомрозі Filtered ; Ларси: Халсе Халсе Халсе НлОз Н2ОЗ Н2ОЗ	Vinyl Chli TCE 8261 PCE 8261 2.1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-	Sample Specific Notes / Special Instructions:
2       08/04/25       1/2       34       (L0       1       (L0       1       (L1       3/0045 for 1       3/0045 for 1 <t< td=""><td></td><td>1</td><td>U Z</td><td>XXXX</td><td>1 Trip Blank</td></t<>		1	U Z	XXXX	1 Trip Blank
OCONVESTION     State     30064 fbr       Image: State     30064 fbr     30064 fbr       Image: State     200.189957 Chain of Custody     30064 fbr       Image: State     200.18957 Chain of Custody     30064 fbr       Image: State     State     200.1800 fbr       Image: State     State     State       Image: State     State     State  <	MILLIQUS 084072	96 61		× × × ×	3 VOAs for 8260D
Market Handler     Market Handler       1     20:13937 Chan of Custory       2     20:13937 Chan of Custory       1     20:1397 Chan of Custory       1     20:1397 Chan of Custory       1     20:137 Chan of Custory       1     20:1077 Chan of Custory       1     20:1077 Chan of Custory       1     20:1077 Chan of Custory       1     20:1076 Chan of Custory	(71000-C101-MI-1				3 VOAs for 8260D SIM
all     Image: Constraint of the constra					
4 definition     2.00-189557 Chain of Custody       1 definition     2.00-189557 Chain of Custody       2 definition     2.00-189557 Chain of Custody       1 definition     2.00-189577 Chain of Custody       1 definition     2.00					
Allertitietion     240-189957 Channel of Custody       allertitietion     Skint Intani       allertitieti					
Image: State of the state o			240-189957 Chain o	r Custody	
Image: Stantistic Comments     Common Comments     Stantistic     Common Comments       d derification     - Filamable     Skin Irritant     Paison B       d dia     - Filamable     Skin Irritant     Paison B       d dia     - Filamable     Skin Irritant     Paison B       ad     - Filamable     - Skin Irritant     - Archive Fila     Markin       ad     - Filamable     - Skin Irritant     - Archive Fila     Markin       ad     - Comments     - Common     - Skin Irritant     - Archive Fila     Markin       ad     - Common     - Common     - Skin Irritant     - Archive Fila     - Archive Fila     - Archive Fila       ad     - Common     - Common     - DBACI Instruction     - DBACI Instruction     - DBACI Instruction     - DBACI Instruction       ad     - DBACI Instruction     - DBACI Instruction     - DBACI Instruction					
definitiention     definitiention       did     Elammable       avolt     Return to Cheni       strough Cadena at Jonnatia@eadenaco.cm. Cadena #E20383       its through Cadena at Jonnatia@eadenaco.cm. Cadena #E20383       its equastid.       M       Company.       M       Company.       M       Company.       M       Company.       M       M       M       M       M       M       M       M       M       M       M       M       M       M        M					
Image: Contraction     Company:     Company:     Company:     Company:     Company:       Image: Contraction     Company:     Company:     Company:     Company:     Company: <td></td> <td></td> <td></td> <td></td> <td></td>					
d duritification     d duritification       d =					
mrVC Requirements & Comments: II a B I Borstrer Port St Its through Cadena at jonalia@cadenaco.com. Cadena #E203631 Ing requested. M Company: M C	ammable	Poison B	Sample Disposal ( A fee may be assessed if san Return to Client -> Disnosal By Lat	uples are retained longer than 1 month) b Creditive For Months	
W Company: C	Special Instructions/QC Requirements & Comments: 5   5   5   6   6   6   6   6   6   6				
ALL LA COMPANY DAVITS DAVITION: Company Dave Time. Dave		Date/	800		23
Add Childrens Date/Jane: Date/Jan	Relinquisibili by:	FUTS 10/13	1239 Received	Company.	82
	Relinquity de de	4	Reteived	N N	Date/Time
	COND. TestAmeneo			, ))	

8/24/2023

Eurofins – Cleveland Sample Receipt Form/Narrative Barberton Facility	Login # :	
	Cooler un	packęd by:
	-100	Que.
Cooler Received on O-1 - 2 Opened on		Ach
Receipt After-hours: Drop-off Date/Time Storage L		
	r	
	Other	
COOLANT: Wet Ice Blue Ice Dry Ice Water None		
1. Cooler temperature upon receipt	e Cooler Form	
IR GUN # (CF°C) Observed Cooler Temp	°C Corrected Cool	er Temp°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity		
-Were the seals on the outside of the cooler(s)? If it is Quantity	Yes No NA	Tests that are not
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No	checked for pH by Receiving:
-Were tamper/custody seals intact and uncompromised?	Yes No NA	Receiving.
3. Shippers' packing slip attached to the cooler(s)?	Tes No	VOAs
4. Did custody papers accompany the sample(s)?	Yes No	Oil and Grease
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No	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)?	No No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No	
9. For each sample, does the COC specify preservatives (YN), # of containers (YA	-	grab/comp(P/N)?
10. Were correct bottle(s) used for the test(s) indicated?	No See No	
<ol> <li>Sufficient quantity received to perform indicated analyses?</li> <li>Are these work share samples and all listed on the COC?</li> </ol>	Yes No	
If yes, Questions 13-17 have been checked at the originating laboratory.	rescivo	
13. Were all preserved sample(s) at the correct pH upon receipt?	Ves No NA n	H Strip Lot# HC312502
14. Were VOAs on the COC?	Yes No	in ourp not in or the second
15. Were air bubbles >6 mm in any VOA vials? 🚺 🖕 Larger than this.	Yes No NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No	
17. Was a LL Hg or Me Hg trip blank present?	Yes No	
Contacted PM Date by via	Verbal Voice Mail Oth	er
Concerning		
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional nex	t page Samples pro	cessed by:
19. SAMPLE CONDITION	4 . 4 1 . 1 4	- ind
Sample(s) were received after the recommend		
Sample(s)    were       Sample(s)    were received with bubble	received in a broken co	
20. SAMPLE PRESERVATION		
Sample(s)	were further preserved	in the laboratory.
Time 1 D		
VOA Sample Preservation - Date/Time VOAs Frozen:		

Login #:\_

			Sample Receipt Mu		
	escription	IR Gun #	Observed	Corrected	Coolant
(C	ircle)	(Circle)	Temp °C	Temp °C	(Circle)
EC Client	Box Other	IR GUN 0; 22	1.2	- 1.1	Wellice' Blue Ice Dy Ic Water None
to Client	Box Other		1.4	1.3	Maike) Sive Ice by Ic
IC Clent	Box Other	IR GUN #:			Welice Blue Ice By Ic Water Mone
IC Clent	Bex Ölher	IR GUN #:			Wellice Blue Ico Bylo Water Blane
tC Client	Box Other	IR GUN #:			Weitce Blue Ice Bylo Water None
IC Client	Box Other	R GUN #:			Wellice Blue Ice Bylce Weller Mone
IC Client	Box Other	IR GUN #:			Weltice Sive too Bylos Weley Mene
EC Client	Bex Ölher	R GUN #:			Weilice Sheelice Bytes
tC Client	Ben Other	IR GUN #:			Weilice Sheelice By to
IC Clent	Ben Olher	IR GUN #:			Wette She to tyte
EC Clent	Bex Other	IR CUN #:			Wellice She lee Byle
EC Clent	Bex Other	R OUN #:			Wet ice Blue ice Byte
EC Clent	Ben Other	IR GUN #:			Wet too Shee Sto By to
IC Cleat	Ben Other	IR CON 4:			Wet too the too by to
BC Client	Bex Other	IR COM #:			Wet too Die Doe Dyte
EC Clent	Ben Other	IR GUN #:			Wellice Neo Ico Bryte Water Name
EC Client	Bex Other	IR GUN #:			Wellice Sheelice Brytes Weller Mane
EC Client	Ben Ölher	IR GUN #:			Weltce the Ice Byte
BC Clent	Ben Other	IR GUN #:			Wellice Sheelice Byles
SC Client	Sex Olher	11: GUN #:			Welles She les Byte
BC Client	Box Other	IR GUN #:			Wellco She Ice Byte Wells None
BC Client	Box Other	R CON #:			Wellice Blue Ice Byte Water Hage
IC Clent	Ben Ölher	R GUN #:			Welter New Dyte
IC Cleat	Box Other	IR GUN #:			Wellice Neelice Byte
BC Client	Box Other	IR GUN #:			Wellice Nee Ice Byles Water Mage
IC Clent	Box Other	R CUN F:			Well too Blue too Bry too Mader Mane
EC Clent	Box Other	R CUN #:			Wellice She loe By to Water Mane
IC Client	Box Other	IR GUN #:			Wel Joo Blue Ice By to
tC Client	Nex Other	R CON 6:			Weit too Bhro too Bry too
	Jex Other	IR COM #:			Wellice She lee Bryles
IC Cleat	Ben Ölher	IR CUN #:			Weller Nee Bry Ice
EC Clent		IR GIM #:			Wellice Blue Ico Bry Ico
	Sex Other	IR GUN #:			Water Name Wellice Shielice Bryto
	Box Other	IR GUN F:			Wellice Blue Ice Brytce
				D See Temp	rature Excursion Form

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

# **DATA VERIFICATION REPORT**



August 24, 2023

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

CADENA project ID: E203631 Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater Project number: 30167538.402.04 off-site Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory submittal: 189957-1 Sample date: 2023-08-09 Report received by CADENA: 2023-08-24 Initial Data Verification completed by CADENA: 2023-08-24 Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

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

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

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

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

# **CADENA Valid Qualifiers**

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

# Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory Submittal: 189957-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401899 8/9/202	9571	)		MW-184S_080923 2401899572 8/9/2023				
				Report		Valid		Report		Valid	
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC	_										
<u>OSW-8260</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-8260</u>	DSIM										
	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 # 240-189957-1 CADENA Verification Report: 2023-08-24

Analyses Performed By: Eurofins Cleveland Barberton, Ohio

Report # 51128R Review Level: Tier III Project: 30167538.402.02

# **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-189957-1 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:

Somalo ID	Lab ID	Matrix	Sample	Parant Sampla	Ana	ysis
Sample ID		Matrix	Collection Date	Parent Sample	VOC	VOC SIM
TRIP BLANK_119	240-189957-1	Water	08/09/2023		Х	
MW-184S_080923	240-189957-2	Water	08/09/2023		Х	Х

# ANALYTICAL DATA PACKAGE DOCUMENTATION

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

	Items Reviewed	Rep	orted		mance otable	Not Required
		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		X	
6.	Sample collection date		Х		Х	
7.	Laboratory sample received date		Х		X	
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 Methods 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

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

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

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

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

### VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

### 1. Holding Times

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

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

All samples were analyzed within the specified holding time criteria.

### 2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

### 3. Calibration

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

### 3.1 Initial Calibration

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

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

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

### 3.2 Continuing Calibration

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

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

### 4. Internal Standard Performance

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

All internal standard responses were within control limits.

### 5. Field Duplicate Analysis

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

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

### 6. Compound Identification

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

All identified compounds met the specified criteria.

# 7. System Performance and Overall Assessment

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

## DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Rep	orted		rmance eptable	Not Required	
	No	Yes	No	Yes	Required	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GO	C/MS)					
Tier II Validation						
Holding times/Preservation		Х		X		
Tier III Validation					1	
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		X		
Field Duplicate RPD	Х				Х	
Internal standard		Х		X		
Compound identification and quantitation						
A. Reconstructed ion chromatograms		Х		Х		
B. Quantitation Reports		Х		Х		
C. RT of sample compounds within the established RT windows		Х		Х		
D. Transcription/calculation errors present		Х		X		
E. Reporting limits adjusted to reflect sample dilutions		Х		Х		
Notes:						

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

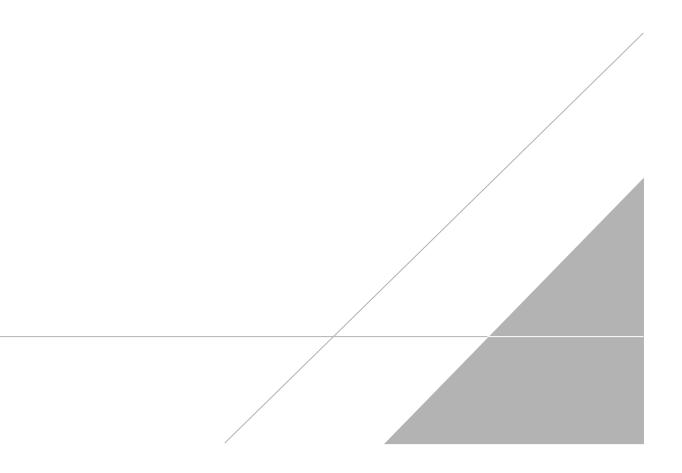
%D Percent difference

VALIDATION PERFORMED BY:	Pruthvi Kumar C
SIGNATURE:	Open
DATE:	September 12, 2023
PEER REVIEW:	Andrew Korycinski

DATE: September 12, 2023

# NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





# **Chain of Custody Record**

# TestAmerica

INCOL TESTING

THE LEADER IN ENVIRO

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

Client Contact	Regulat	ory program:	:		D	W		NPD	ES	1	R	CRA	1	Ot	her									
Company Name: Arcadis							la.	0							1									TestAmerica Laboratorie
address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey					Site Contact: Christina Weaver								Lab	Conta	ct: Mi	ke De	Monie	0			COC No:		
ity/State/Zip: Novi, MI, 48377	Telephone: 248	-994-2240					Telephone: 248-994-2240						Tele	phone	: 330-	497-9.	396							
	Email: kristoff	er.hinskey@ar	cadis.	com				Analy	sis T	urnar	ound	Time		T	T	L	_		- /	naly	ses	_		For lab use only
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PO # 30167538.402.04	Shipping/Track	ing No:									day		Sample (V / N)	/Grab	8	cis-1,2-DCE 8260D	E 82			8260D	8260D			Job/SDG No:
				N	Matrix			Cont	ainer	s & Pre	serv	atives			8260D	CE	Trans-1,2-DCE	8	9	Vinyl Chloride	ne 8			
				sno	acht	Ľ	3			-		5 c	1	sod	UN N	.2-D	s-1.5	8260D	8260D	CP	1,4-Dioxane			Sample Specific Notes
Sample Identification	Sample Date	Sample Time	Air	anby	Sedime	Others	H2SO4	HNO3	HCI	NaOH ZaAci	NeOI	Unpres Other:	Filts		1,1-DCE	cis-1	Tran	PCE	TCE	Viny	1.4-[			Special Instructions:
TRIP BLANK_ 119				1					1		Τ		IN	N G	x	X	X	X	X	X				1 Trip Blank
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Sample Address: [1] 9 Submit all results through Cadena at jtomalia@cadena	81 Bosh		T	St	-																			
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	KAA	-	- 1	9	Inl	12	123	54		1	V	<b>K</b>	$\bigcirc$						10	1	1 N			1211.72160

# Client Sample ID: TRIP BLANK\_119

# Date Collected: 08/09/23 00:00

Date Received: 08/11/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 14:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 14:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 14:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 14:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 14:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 14:38	1
0	0/ <b>D</b>						<b>D</b>	<b>A</b>	D# 5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137		08/19/23 14:38	1
4-Bromofluorobenzene (Surr)	101		56 - 136		08/19/23 14:38	1
Toluene-d8 (Surr)	101		78 - 122		08/19/23 14:38	1
Dibromofluoromethane (Surr)	107		73 - 120		08/19/23 14:38	1

# Client Sample ID: MW-184S\_080923 Date Collected: 08/09/23 12:39 Date Received: 08/11/23 08:00

Dibromofluoromethane (Surr)

Lab Sample ID: 240-189957-2

**Matrix: Water** 

Analyte	Result	Qualifier	ounds (GC/N RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/17/23 13:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120					08/17/23 13:49	1

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

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/23 19:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/23 19:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 19:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/23 19:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/23 19:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/23 19:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		62 - 137			-		08/19/23 19:49	1
4-Bromofluorobenzene (Surr)	104		56 - 136					08/19/23 19:49	1
Toluene-d8 (Surr)	102		78 - 122					08/19/23 19:49	1

73 - 120

08/19/23 19:49

1

# Lab Sample ID: 240-189957-1 Matrix: Water