

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS US Inc 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 5/22/2023 6:14:06 AM

# JOB DESCRIPTION

Ford LTP - Off Site

# **JOB NUMBER**

240-185400-1

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.

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Authorization

low

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0		
Qualifiers		<b>—</b> 3
GC/MS VOA		
Qualifier	Qualifier Description	4
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.	6
¤	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	Ο
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)	13
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
MPN	Most Probable Number	
MQL	Method Quantitation Limit	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
NEG	Negative / Absent	
POS	Positive / Present	
PQL	Practical Quantitation Limit	
PRES	Presumptive	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	

- TEQ Toxicity Equivalent Quotient (Dioxin)
- TNTC Too Numerous To Count

# Job ID: 240-185400-1

### Laboratory: Eurofins Cleveland

#### Narrative

Job Narrative 240-185400-1

#### Receipt

The samples were received on 5/16/2023 9:45 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 1.7°C and 1.8°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 EDI
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET EDI
5030C	Purge and Trap	SW846	EET EDI

#### Protocol References:

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

#### Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

# Sample Summary

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-185400-1	TRIP BLANK_138	Water	05/11/23 00:00	05/16/23 09:45
240-185400-2	MW-117S_051123	Water	05/11/23 09:50	05/16/23 09:45

# **Detection Summary**

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

# Client Sample ID: TRIP BLANK\_138

No Detections.

# Client Sample ID: MW-117S\_051123

No Detections.

**Eurofins Cleveland** 

Lab Sample ID: 240-185400-1

Lab Sample ID: 240-185400-2

Job ID: 240-185400-1

# Client Sample ID: TRIP BLANK\_138 Date Collected: 05/11/23 00:00

Date Received: 05/16/23 09:45

- Method: SW846 8260D - Volatile Organic Compounds by GC/MS										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/23 20:10	1	
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/23 20:10	1	
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/23 20:10	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/23 20:10	1	
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/23 20:10	1	
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/23 20:10	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	111		70 - 128			-		05/20/23 20:10	1	
Dibromofluoromethane (Surr)	83		77 - 124					05/20/23 20:10	1	
Toluene-d8 (Surr)	104		80 - 120					05/20/23 20:10	1	
4-Bromofluorobenzene	97		76 - 120					05/20/23 20:10	1	

Job ID: 240-185400-1

Lab Sample ID: 240-185400-1

# 5

Matrix: Water

**8** 9

# Client Sample ID: MW-117S\_051123

Date Collected: 05/11/23 09:50 Date Received: 05/16/23 09:45

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/21/23 02:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		75 - 133			-		05/21/23 02:25	1
Method: SW846 8260D - Vola	atile Organic Comp	ounds 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			05/21/23 01:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/21/23 01:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/21/23 01:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/21/23 01:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/21/23 01:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/21/23 01:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		70 - 128			-		05/21/23 01:05	1
Dibromofluoromethane (Surr)	88		77 _ 124					05/21/23 01:05	1
Toluene-d8 (Surr)	101		80 - 120					05/21/23 01:05	1
4-Bromofluorobenzene	97		76 - 120					05/21/23 01:05	1

5/22/2023

# Lab Sample ID: 240-185400-2 Matrix: Water

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

### Matrix: Water

Prep Type: Total/NA

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID Client Sample ID (70-128) (77-124) (80-120) (76-120)
240-185150-D-5 MSD         Matrix Spike Duplicate         110         82         103         97
240-185150-F-5 MS Matrix Spike 112 81 103 96
240-185400-1 TRIP BLANK_138 111 83 104 97
240-185400-2 MW-117S_051123 118 88 101 97
LCS 460-910451/3 Lab Control Sample 108 78 103 97
MB 460-910451/8 Method Blank 109 84 102 96
Surrogate Legend
DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene

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

### Matrix: Water

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB		
Lab Sample ID	Client Sample ID	(75-133)		
240-185400-2	MW-117S_051123	101		
LCS 460-910494/3	Lab Control Sample	100		
LCSD 460-910494/4	Lab Control Sample Dup	97		
MB 460-910494/7	Method Blank	97		

#### Surrogate Legend

BFB = 4-Bromofluorobenzene

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

# Lab Sample ID: MB 460-910451/8

### Matrix: Water Analysis Batch: 910451

MB	МВ							
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1.0	U	1.0	0.49	ug/L			05/20/23 19:02	1
1.0	U	1.0	0.46	ug/L			05/20/23 19:02	1
1.0	U	1.0	0.44	ug/L			05/20/23 19:02	1
1.0	U	1.0	0.51	ug/L			05/20/23 19:02	1
1.0	U	1.0	0.44	ug/L			05/20/23 19:02	1
1.0	U	1.0	0.45	ug/L			05/20/23 19:02	1
	Result 1.0 1.0 1.0 1.0 1.0 1.0	MB         MB           Result         Qualifier           1.0         U           1.0         U	Result         Qualifier         RL           1.0         U         1.0           1.0         U         1.0	Result         Qualifier         RL         MDL           1.0         U         1.0         0.49           1.0         U         1.0         0.46           1.0         U         1.0         0.44           1.0         U         1.0         0.51           1.0         U         1.0         0.44	Result         Qualifier         RL         MDL         Unit           1.0         U         1.0         0.49         ug/L           1.0         U         1.0         0.46         ug/L           1.0         U         1.0         0.44         ug/L           1.0         U         1.0         0.51         ug/L           1.0         U         1.0         0.44         ug/L	Result         Qualifier         RL         MDL         Unit         D           1.0         U         1.0         0.49         ug/L         -           1.0         U         1.0         0.49         ug/L         -           1.0         U         1.0         0.44         ug/L         -           1.0         U         1.0         0.51         ug/L         -           1.0         U         1.0         0.44         ug/L         -           1.0         U         1.0         0.51         ug/L         -	Result         Qualifier         RL         MDL         Unit         D         Prepared           1.0         U         1.0         0.49         ug/L         ug	Result         Qualifier         RL         MDL         Unit         D         Prepared         Analyzed           1.0         U         1.0         0.49         ug/L         05/20/23 19:02         05/20/23 19:02           1.0         U         1.0         0.46         ug/L         05/20/23 19:02           1.0         U         1.0         0.44         ug/L         05/20/23 19:02           1.0         U         1.0         0.44         ug/L         05/20/23 19:02           1.0         U         1.0         0.51         ug/L         05/20/23 19:02           1.0         U         1.0         0.51         ug/L         05/20/23 19:02           1.0         U         1.0         0.44         ug/L         05/20/23 19:02

	МВ	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		70 - 128		05/20/23 19:02	1
Dibromofluoromethane (Surr)	84		77 _ 124		05/20/23 19:02	1
Toluene-d8 (Surr)	102		80 - 120		05/20/23 19:02	1
4-Bromofluorobenzene	96		76 - 120		05/20/23 19:02	1

# Lab Sample ID: LCS 460-910451/3 Matrix: Water Analysis Batch: 910451

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	18.0		ug/L		90	68 - 133	
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	78 - 121	
Tetrachloroethene	20.0	17.3		ug/L		87	70 - 127	
trans-1,2-Dichloroethene	20.0	18.0		ug/L		90	74 - 126	
Trichloroethene	20.0	18.6		ug/L		93	71 - 121	
Vinyl chloride	20.0	23.0		ug/L		115	55 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		70 - 128
Dibromofluoromethane (Surr)	78		77 - 124
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene	97		76 - 120

# Lab Sample ID: 240-185150-D-5 MSD Matrix: Water Analysis Batch: 910451

	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	17.2		ug/L		86	68 - 133	2	30
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	78 - 121	0	30
Tetrachloroethene	1.0	U	20.0	17.0		ug/L		85	70 - 127	5	30
trans-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	74 - 126	1	30
Trichloroethene	1.0	U	20.0	17.2		ug/L		86	71 - 121	1	30
Vinyl chloride	1.0	U	20.0	24.7		ug/L		123	55 - 144	3	30
	MSD	MSD									

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 128
Dibromofluoromethane (Surr)	82		77 - 124
Toluene-d8 (Surr)	103		80 - 120

# Job ID: 240-185400-1

Prep Type: Total/NA

**Client Sample ID: Method Blank** 

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

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

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Project/Site: Ford LTP - Off Site

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

Matrix: Water Analysis Batch: 910451	)-D-5 MSD						Sherit		D: Matrix Spike I Prep Type:	
Surrogate	MSD M %Recovery (	MSD Qualifier	Limits							
4-Bromofluorobenzene	<u>97</u>		76 - 120							
Lab Sample ID: 240-185150 Matrix: Water	9-F-5 MS							Client	Sample ID: Mat Prep Type:	
Analysis Batch: 910451	O-mula (		Onillin						0/ D	
A	Sample S		Spike		MS	11		D 0/ D	%Rec	
Analyte 1,1-Dichloroethene	Result 0		Added	16.9	Qualifier	Unit ug/L		D %Rec 84	Limits 68 - 133	
cis-1,2-Dichloroethene	1.0 L		20.0	18.2		ug/L		04 91	78 - 121	
Tetrachloroethene	1.0 L 1.0 L		20.0	16.1		-		91 81	70 - 121	
						ug/L				
trans-1,2-Dichloroethene	1.0 L		20.0	17.7		ug/L		88 95	74 - 126	
Trichloroethene	1.0 L		20.0	17.0		ug/L		85	71 - 121	
Vinyl chloride	1.0 l	J	20.0	24.1		ug/L		120	55 - 144	
	MS M	ИS								
Surrogate	%Recovery (	Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	112		70 - 128							
Dibromofluoromethane (Surr)	81		77 - 124							
Toluene-d8 (Surr)	103		80 - 120							
4-Bromofluorobenzene	96		76 - 120							
Lab Sample ID: MB 460-910		compot	inds (GC/MS)					Client S	Sample ID: Meth	
Lab Sample ID: MB 460-910 Matrix: Water		Compou	inds (GC/MS)					Client \$	Sample ID: Meth Prep Type:	
Lab Sample ID: MB 460-91( Matrix: Water Analysis Batch: 910494	)494/7	MB MB							Prep Type:	Total/N
Lab Sample ID: MB 460-91( Matrix: Water Analysis Batch: 910494 Analyte	)494/7	MB MB	r RL		MDL Unit		<u>D</u>	Client S	Prep Type: Analyzed	Total/N
Lab Sample ID: MB 460-91( Matrix: Water Analysis Batch: 910494 <sup>Analyte</sup>	)494/7 Res	MB MB ult Qualifie 2.0 U			MDL Unit 0.86 ug/L		<u>D</u>		Prep Type:	Total/N
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane	)494/7	MB MB Jult Qualifie 2.0 U MB MB	or <u>RL</u> 2.0				<u>D</u>	Prepared	Analyzed           05/20/23 22:49	Total/N
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate	)494/7 	MB MB ault Qualifie 2.0 U MB MB ery Qualifie	er Limits				<u> </u>		Analyzed 05/20/23 22:49 Analyzed	Total/N
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate	)494/7 	MB MB Jult Qualifie 2.0 U MB MB	or <u>RL</u> 2.0				_ <u>D</u>	Prepared	Analyzed           05/20/23 22:49	Total/N
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91	)494/7 	MB MB ault Qualifie 2.0 U MB MB ery Qualifie	er Limits					Prepared Prepared	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49           05/20/23 22:49           05/20/23 22:49           05/20/23 22:49	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water	)494/7 	MB MB ault Qualifie 2.0 U MB MB ery Qualifie	er Limits					Prepared Prepared	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water	)494/7 	MB MB ault Qualifie 2.0 U MB MB ery Qualifie	er <u>Limits</u> 75 - 133		0.86 ug/L			Prepared Prepared	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49           05/20/23 22:49           05/20/23 22:49           Prep Type:	Total/N Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494	)494/7 	MB MB Jult Qualifie 2.0 U MB MB ery Qualifie	r <u>RL</u> 2.0 2.0 2.0 Spike		0.86 ug/L	Unit	Clie	Prepared Prepared	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49           05/20/23 22:49           e ID: Lab Contro           Prep Type:           %Rec	Total/N Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte	)494/7 	MB MB Jult Qualifie 2.0 U MB MB ery Qualifie	r <u>RL</u> 2.0 2.0 2.0 Spike Added	Result	0.86 ug/L	Unit ua/L	Clie	Prepared Prepared	Prep Type: Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 PID: Lab Contro Prep Type: %Rec Limits	Total/N Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte	)494/7 	MB MB Jult Qualifie 2.0 U MB MB ery Qualifie	r <u>RL</u> 2.0 2.0 2.0 Spike		0.86 ug/L	- Unit ug/L	Clie	Prepared Prepared ent Sample	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49           05/20/23 22:49           e ID: Lab Contro           Prep Type:           %Rec	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 Spike Added	Result	0.86 ug/L		Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 PID: Lab Contro Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 2.0 2.0 2.0 2.0 75 - 133 75 - 133 75 - 133 75 - 133 20 20 20 20 20 20 20 20 20 20 20 20 20	Result	0.86 ug/L		Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 PID: Lab Contro Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 2.0 2.0 2.0 2.0 75 - 133 75 - 133 75 - 133 75 - 133	Result	0.86 ug/L		Clie	Prepared Prepared ent Sample	Prep Type: Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 PID: Lab Contro Prep Type: %Rec Limits	Dil Fa Dil Fa Dil Fa
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 2.0 2.0 2.0 2.0 75 - 133 75 - 133 75 - 133 75 - 133 20 20 20 20 20 20 20 20 20 20 20 20 20	Result	0.86 ug/L	ug/L	Clie	Prepared Prepared ent Sample D <u>%Rec</u> 98	Prep Type: Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 PID: Lab Contro Prep Type: %Rec Limits	Total/N Dil Fa Dil Fa I Sampi Total/N
Lab Sample ID: MB 460-910 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCS 460-91 Matrix: Water Analysis Batch: 910494 Analyte 1,4-Dioxane Surrogate 4-Bromofluorobenzene Lab Sample ID: LCSD 460-5	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 2.0 2.0 2.0 2.0 75 - 133 75 - 133 75 - 133 75 - 133 20 20 20 20 20 20 20 20 20 20 20 20 20	Result	0.86 ug/L	ug/L	Clie	Prepared Prepared ent Sample D <u>%Rec</u> 98	Analyzed           05/20/23 22:49           Analyzed           05/20/23 22:49           e ID: Lab Contro           Prep Type:           %Rec           Limits           57 - 124	Total/N Dil Fa Dil Fa Dil Fa
Iethod: 8260D SIM - Vo         Lab Sample ID: MB 460-910         Matrix: Water         Analysis Batch: 910494         Analyte         1,4-Dioxane         Surrogate         4-Bromofluorobenzene         Lab Sample ID: LCS 460-91         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         4-Bromofluorobenzene         Lab Sample ID: LCS 460-91         Matrix: Water         Analyte         1,4-Dioxane         Surrogate         4-Bromofluorobenzene         Lab Sample ID: LCSD 460-5         Matrix: Water         Analysis Batch: 910494	0494/7 	MB MB ult Qualifie 2.0 U MB MB ery Qualifie 97	r <u>RL</u> 2.0 2.0 2.0 2.0 2.0 2.0 2.0 75 - 133 75 - 133 75 - 133 75 - 133 20 20 20 20 20 20 20 20 20 20 20 20 20	Result	0.86 ug/L	ug/L	Clie	Prepared Prepared ent Sample D <u>%Rec</u> 98	Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 Analyzed 05/20/23 22:49 EID: Lab Contro Prep Type: %Rec Limits 57 - 124 Lab Control Sam	Total/N. Dil Fa Dil Fa I Sampl Total/N.
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# Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	97		75 - 133

# Analysis Batch: 910451

**GC/MS VOA** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-185400-1	TRIP BLANK_138	Total/NA	Water	8260D	
240-185400-2	MW-117S_051123	Total/NA	Water	8260D	
MB 460-910451/8	Method Blank	Total/NA	Water	8260D	
LCS 460-910451/3	Lab Control Sample	Total/NA	Water	8260D	
240-185150-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-185150-F-5 MS	Matrix Spike	Total/NA	Water	8260D	
Analysis Batch: 91049	4 Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-185400-2	MW-117S_051123	Total/NA	Water	8260D SIM	
MB 460-910494/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 460-910494/3	Lab Control Sample	Total/NA	Water	8260D SIM	
LCSD 460-910494/4	Lab Control Sample Dup	Total/NA	Water	8260D SIM	

Matrix: Water

Lab Sample ID: 240-185400-1

# Client Sample ID: TRIP BLANK\_138 Date Collected: 05/11/23 00:00

Date Received: 05/16/23 09:45	Date	<b>Received:</b>	05/16/23	09:45
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	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D			910451	SZD	EET EDI	05/20/23 20:10

# Client Sample ID: MW-117S\_051123 Date Collected: 05/11/23 09:50 Date Received: 05/16/23 09:45

Lab Sample	ID: 240-185400-2
	Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	910451	SZD	EET EDI	05/21/23 01:05
Total/NA	Analysis	8260D SIM		1	910494	KLB	EET EDI	05/21/23 02:25

#### Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

# Accreditation/Certification Summary

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

## Laboratory: Eurofins Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0818	01-30-24
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-24
Georgia	State	12028 (NJ)	06-30-23
Massachusetts	State	M-NJ312	06-30-23
New Jersey	NELAP	12028	06-30-23
New York	NELAP	11452	04-01-24
Pennsylvania	NELAP	68-00522	03-01-24
Rhode Island	State	LAO00376	12-30-23
USDA	US Federal Programs	P330-20-00244	11-03-23

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Mathematical         Land         Land <thland< th="">         Land         Land</thland<>	Mainton         Mainton <t< td=""><td>Dial         Late And the Andread Stream Stream</td><td>dress: 28550 Cabot Drive, Suite 500 </td><td>Telephone: 248-994-2240</td><td>Telephone: 248-994-2240</td><td>Telephone: 330-497-9396</td><td></td></t<>	Dial         Late And the Andread Stream	dress: 28550 Cabot Drive, Suite 500 	Telephone: 248-994-2240	Telephone: 248-994-2240	Telephone: 330-497-9396	
Hu         Weather Hu         Weather Hu         Weather Hu         Weather Hu           (11/10/13)	131         131 <td>Mathematical     Andre Name       11     11    <tr< td=""><td>y/state/zap: : vovi, wit, 40377</td><td>Email: kristoffer.hinskey@arcadis.com</td><td>Analysis Turnaround Time</td><td>Analyses</td><td></td></tr<></td>	Mathematical     Andre Name       11     11 <tr< td=""><td>y/state/zap: : vovi, wit, 40377</td><td>Email: kristoffer.hinskey@arcadis.com</td><td>Analysis Turnaround Time</td><td>Analyses</td><td></td></tr<>	y/state/zap: : vovi, wit, 40377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	
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5/22/2023

Eurofins - Canton Sample Receipt Form/Narrative	Login # :	8540
Barberton Facility		
Client ARCADIS Site Name		Cooler unpacked by:
Cooler Received on SILe 23 Opened on SILe	23 K	Achelle HA.det
FedEx: 1 <sup>st</sup> Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins (	Courier Other	
	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 $+ \rightarrow$ °C) Observed Cooler Temp.	1	
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity		I Tosts that are not I
-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	
-Were tamper/custody seals intact and uncompromised?		VOAs
<ol> <li>Shippers' packing slip attached to the cooler(s)?</li> <li>Did custody papers accompany the sample(s)?</li> </ol>	Yes No	Oil and Greese
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No	TOC
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?	Yes No	
9. For each sample, does the COC specify preservatives (X), # of containers		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	Ves No	
12. Are these work share samples and all listed on the COC? If yes, Questions 13-17 have been checked at the originating laboratory.	Yes e	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes (No	NA pH Strip Lot# HC208070
14. Were VOAs on the COC?	Yes, No	7-51637
15. Were air bubbles >6 mm in any VOA vials? 🛑 🖕 Larger than this.	Yes No	JNA RA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #		
17. Was a LL Hg or Me Hg trip blank present?	Yes No	V
Contacted PM Date by	via Verbal Voice	Mail Other
Concerning		
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional	next page Sa	mples processed by:
	L	
19. SAMPLE CONDITION		
Sample(s) were received after the recom	mended holding ti	me had expired.
Sample(s)	were received in a	broken container.
Sample(s) were received with bu	bble >6 mm in dia	meter. (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:		



<b>Cooler Description</b>	IR Gun #	Observed	Corrected	Coolant
(Circle)	(Circle)	Temp °C	Temp °C	(Circle)
Client Box Othe		1.6	1.8	Welke Sive Ice Dy Water None
Client Box Other		1.5	1.7	Wetice Sive ice Dry Water None
C Client Box Other	IR GUN #:			Wetice Blue ice Dry Water None
C Client Box Othe	IR GUN #:			Wetice Blue Ice Dy Water None
C Client Box Other				Wetice Blue ice Dyl Water None
C Client Box Other	1 1			Wet ice Blue ice by i Water None
C Client Box Other				Wet Ice Blue Ice Dry I Water None
C Client Box Other	1 1			Wet ice Blue ice Dy i Water None
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C Client Box Other				Wellice Bluelice Dry le Water None
C Client Box Othe				Wellice Blue Ice Dys Water None
C Client Box Othe				Wet Ice Blue Ice Dyte Water None
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EC Client Box Other				Wet ice Blue ice Dry ic Water None
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C Client Box Other				Wet Ice Blue Ice . Dry ice Water None
C Client Box Other				Wellice Sivelice Dry Ici Water None
C Client Sox Other	IR GUN #:			Wet Ice Blue Ice Dry Ice Water None

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

Eurofins Cleveland									261.H	ഷ		•		-	
180 S. Van Buren Avenue Barberton OH 44203 Phone: 330.407.4306 Fay: 330.447.4772	D	Chain o	n of Custody Record	ody Re	scord	_				108808		Y		Environment Tes⁴	22 1
	Sampler			Lab PM	Lab PM:				Carrier	Carrier Tracking No(s):	(s):		COC No:		
Client Information (Sub Contract Lab)				DelMo	nico, Mic	inael			Cinto of	- the second			Z4U-1001/4.1 Dace:		
Client Contact: Shipping/Receiving	Phone:			E-Mail: Micha	el.DelMo	nico@et	E-mail: Michael.DelMonico@et.eurofinsus.com	is.com	Nichigan	an			Page 1 of 1		
Company: Eurofins Environment Testing Northeast,				<	ccreditation	is Require	Accreditations Required (See note):						Job #: 240-185400-1		
	Due Date Requested: 5/29/2023						Ana	Analysis Re	Requested	p			Preservation Codes		
	TAT Requested (days):	s):		<u>, Cumunë</u>	and the first of the								B NaOH C Zh Acetate	N None O AsNaO2 P Na204S	
State. Zp: NJ, 08817	1											eren sangerge Atrest (tittel			
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	F0#											anna an Andrea		o ⊢ =	te
Email:	₩0 ₩				(on							(B):	I Ice J DI Water		
Project Name: Ford LTP Off Site	Project #: 24015353				10 89								k euia L eda	Y Trizma Z other (specify)	
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			Sample Type	INAUTIX (Newatar Sesolid. Oeversteicilt,	onsoco (M (orm MS/M Fillered :	00-SIMIS_0						redmuN ls:			
Sample Identification - Client ID (Lab ID)	Sample Date	Time			104	100		2				ютХ	Special	Special Instructions/Note	
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TRIP BLANK_138 (240-185400-1)	5/11/23	Eastern		Water	×							2			Τ
MW-117S_051123 (240-185400-2)	5/11/23	09:50 Eastern		Water	×	×						ω			
												(1777) Geograf			
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the Note: Since laboratory accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central. LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central. LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting Environment Testing North Central. LLC aboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central. LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central. LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance.	art Testing North Central bove for analysis/tests/n entral, LLC attention imm	I, LLC places natrix being a nediately. If a	the ownership on nalyzed, the sar	of method, analy mples must be a reditations are	te & accre thipped bac current to c	ditation col sk to the E late, return	mpliance up urofins Envi	on pur subc ronment Te Chain of Cl	ontract lab sting North istody atte	oratories. Central, LI tting to sai	This sampl C laborato f complian	e shipmen ary or othe ce to Euro	tt is forwarded un r instructions will sfins Environment	der chain-of-custody. If the be provided. Any changes Testing North Central, LLC	,
Possible Hazard Identification					Sampl	e Dispo	sal (A fe	e may be	assess	ed if san	ples ar	e retaine	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	n 1 month)	
Unconfirmed					<u>]</u>	Return To Client	o Client		Dispose	Disposal By Lab		Arch	Archive For	Months	T
Deliverable Requested. I, II, II, IV Other (specify)	Primary Deliverable Rank:	ole Rank: 2			Specia	i Instruct	ions/QC	Special Instructions/QC Requirements:							
Empty Kit Relinquished by	<u> </u>	Date:		1	Time:				M.	Method of Shipment:	ipment:	L C	cder		Τ
	tons.	- ~		SPE IN	<u>م</u> ال	Received by:	- Marina	Me-				2	10 40	Company	T
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Relinquished by	Date/Time:		<u>ð</u>	Company	Rec	Received by:					Date/Time:			Company	
Custody Seals Intact: Custody Seal No.					8 í	ler Tempe	rature(s) °C	Cooler Temperature(s) °C and Other Remarks:	kemarks:						
D 120 D 100			1	H R: 4	.14 ∤	<b>‡</b> 13	<b>¥</b> 12	11	10	9	8		5	2 3 4	1

#### Client: ARCADIS US Inc

# Login Number: 185400 List Number: 2

Creator: Armbruster, Chris

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

List Source: Eurofins Edison

List Creation: 05/17/23 12:25 PM

# **DATA VERIFICATION REPORT**



May 30, 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: 185400-1 Sample date: 2023-05-11 Report received by CADENA: 2023-05-30 Initial Data Verification completed by CADENA: 2023-05-30 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, LCS/LCD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

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

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

# Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory Submittal: 185400-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401854 5/11/20	4001			MW-117 2401854 5/11/20	- 1002	23	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260D</u>										
1	L,1-Dichloroethene	75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	
C	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	
Т	Tetrachloroethene	127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
t	rans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	
Т	<b>Trichloroethene</b>	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	
١	/inyl chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	
<u>OSW-8260D</u>	SIM									
1	L,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 # 240-185400-1 CADENA Verification Report: 2023-05-30

Analyses Performed By: Eurofins North Canton, Ohio

Report # 49935R Review Level: Tier III Project: 30167538.402.02

# **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-185400-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample Collection		Ana	lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM
TRIP BLANK_138	240-185400-1	Water	05/11/23		х	
MW-117S_051123	240-185400-2	Water	05/11/23		Х	Х

# DATA REVIEW

# 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	

# **DATA REVIEW**

# **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 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 HCI

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
MW-117S_051123	Initial Calibration Verification %D	1,4-Dioxane	+28.1%

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
	RRF <0.05	Non-detect	R
	KKF <0.05	Detect	J
Initial and Continuing	DDE (0.041	Non-detect	R
Calibration	RRF <0.01 <sup>1</sup>	Detect	J
	RRF >0.05 or RRF >0.01 <sup>1</sup>	Non-detect	No Action
		Detect	NO ACION

# DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
		Non-detect	UJ
Initial Calibratian	%RSD > 20% or a correlation coefficient <0.99	Detect	J
Initial Calibration		Non-detect	R
	%RSD > 90%	Detect	J
		Non-detect	UJ
	%D >20% (increase in sensitivity)	Detect	J
		Non-detect	UJ
Continuing Calibration	%D >20% (decrease in sensitivity)	Detect	J
		Non-detect	R
	%D > 90% (increase/decrease in sensitivity)	Detect	J

Note:

<sup>1</sup>RRF 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.

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 REVIEW

# DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Rep	orted		rmance ptable	Not Required
	No	Yes	No	Yes	Requireu
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		X	
Tier III Validation					
System performance and column resolution		Х		X	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х	Х		
Instrument tune and performance check		Х		Х	
lon 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:	Dilip Kumar
SIGNATURE:	Pertmit
DATE:	June 16, 2023

PEER REVIEW: Andrew Korycinski

DATE: June 19, 2023

# NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS



# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



# **Chain of Custody Record**





THE LEADER IN ENVIRONMENTAL TESTING

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

Client Contact	Regula	tory program:		Γ.	DW	E	NPD	ES	. 0	RC	RA	Г	Oth	er 🗌						a di segunda						
Company Name: Arcadis	Client Project	Manager: Kris H	inskey			Site	Cont	act: C	hristi	na We	eaver		-	-	Lab (	Conta	et: Mi	ke De	Moni	cu				TestAmeri COC No:	ca Labora	tories, li
Address: 28550 Cabot Drive, Suite 500	Telephone: 248	-994-2240				Tel	ephon	ie: 248	3-994-	240				- 22.0	Teler	ohone:	: 330-4	497-9	396							
City/State/Zip: Novi, MI, 48377	Part India II	the black in the						ysis Ti			lime								Analy					1 of		COCs
Phone: 248-994-2240	Email: Kriston	fer.hinskey@arca	ais.com								- mile							́	vnary 	362	1	ТТ		For lab use	only	
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Sample Identification	Sample Date	Sample Time	Air Aqueous	Sediment	Solid	H2SO4	HN03	НС	VaOH ZnAc	Unpres	Other:	Filtered S	Composit	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE	PCE 8260B	TCE 8260B	Vinyl Chloride	1.4-Dioxane 8260B SIM					le Specific N rial Instruct	
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Possible Hazard Identification		<u> </u>	-			1 9						e asses			les arc	i e retai	ined k	onger	i than 1	mon	th)			-		
Non-Hazard Flammable Skin Irrit. Special Instructions/QC Requirements & Comments: Sample Address: 12089 1305 Submit all results through Cadena at itomalia@cadenacc	0		Jnknowi	n			Г	Return	to Cli	ent	19	Dispos	sal By	Lab			archive	e For			Months	_				
Level IV Reporting requested. Relinquished by: Kent Kozper	Company:	In		e/Time	1		53	R	eceive		. ,	01		~	-/			Com	pany: 20	_	1.			Date/Time:	/	
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# 14

## Eurofins Cleveland 180 S. Van Buren Avenue

Chain of Custody Record



	Barberton OH 44203 Phone: 330-497-9396 Fax: 330-497-0772				louy I								- 5	<u> </u>							Environmen	rt 'es" ng
	Client Information (Sub Contract Lab)	Sampler			Lab P Dell		co, Mi	ichae	əl				Can	rier Tra	icking i	No(s):				OC No: 40-168174.1		
	Client Contact: Shipping/Receiving	Phone:	E-Ma	il:				aurofir	nsus.c	com	State of Origin: Michigan							age: Page 1 of 1				
	Company: Eurofins Environment Testing Northeast,							(See no			-							ab #: 40-185400-1				
	Address: 777 New Durham Road,	Due Date Request 5/29/2023	ed:							Ar	alvs	is Re	aue	sted			······			reservation Coo	les: M Hexane	
	City:	TAT Requested (d	iys):			с. С.С. С. С. С.			Τ		T							547-2490	៊ុំ) ខ	A HCL 3 NaOH 2 Zn Acetate	N None O AsNaO2	
	Edison State, Zip: NJ, 08817																	materialities		Nitric Acid NaHSO4 MeOH	P Na2O4S Q Na2SO3 R Na2S2O3	
	Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO#:				0	() ()	5										Strange of Carl	G	Arnchlor Ascorbic Acid	S H2SO4 T TSP Dodec	ahydrate
	Email:	WO #:				N IO	No)									r			l J	ice DI Water	U Acetone V MCAA W pH 4-5	
	Project Name: Ford LTP Off Site	Project #: 24015353				<u>e (Ye</u>	es or DCa (S													( EDTA . EDA	Y Trizma Z other (speci	ify)
	Site:	SSOW#:				amp			,										花服的	ther		
		Coursels Dots	Sample	Sample Type (C=comp,	BT=Tissue,	Field Fillered Sample (Yes or No)	Perform MS/MSD (Yes or No) 8260D/5036C (MOD) VOCs (Short List)	SPROD SIMIS030C										Tatal Mumbay		Special In	structions/N	ote <sup>.</sup>
Page	Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab) Preserva	A*Air) tion Code:	凤	X			18-1			12			6.1		5	Ł	opcold in		2
je 21	TRIP BLANK_138 (240-185400-1)	5/11/23	Eastern		Water		>	<										3	1			
<u>o</u> f	MW-117S_051123 (240-185400-2)	5/11/23	09:50 Eastern		Water		>	<	<										6			
22						Ш											_		1			
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						Ш												line of the second s	_		<u></u>	
						Ш																
	Note: Since laboratory accreditations are subject to change, Eurofins Environmen laboratory does not currently maintain accreditation in the State of Origin listed at accreditation status should be brought to Eurofins Environment Testing North Ce	ave ter peokers toot	imetriv heires i	analyzed the	eamalae must a	un entre	nood ha	ack to	the Pup	cohos E	INVITORI	ment le	stina N	orrn Ce	ennal. I		oorato	rv or or	TIELI	Instructions will be p	DIOVIDED, MILY CIT	ၾကပ္သင့္ရသည္
	Possible Hazard Identification					ŀ						ay be	asse	essed	if sa	mple	s are			d longer than 1		
	Unconfirmed Deliverable Requested. I, II, IV, Other (specify)	Primary Deliver	able Rank: 2	2		-				Clien		quirem	Disp Disp	osaí E	By La	b		<u> </u>	Chiv	/e For	Months	
	Empty Kyt Relinquished by	-	Date:			Tim	ie:							Meth	od of \$	Shipm	ent:	Ύ	ر آر ح	e ~		
(	Relinguisticador Lella Haurle D	Part Pol	2 1		Company EE/						١.					Date/	lime:			,	Company	
5/2	Relinquisher by:	Date/Time:	ل ت	an	Company	<u>v</u> c				in		<u></u>				Date/		<u> </u>		1040	Company	
5/22/2023	Relinquished ly:	Date/Time:			Company		Re	ceive	d by:							Date/	lime:				Company	
23	Custody Seals Intact: Custody Seal No.	1					- 00	oler T	empera	ature(s)	°C and	d Other	Remark	us:	1						I	
	ΔYes ΔNo				ER: a	ر د	14		$\frac{\omega}{L}$	<u>∖                                    </u>		2	6	6		00		4	0	4 r0	<b>ω</b> Ι	N -

# Client Sample ID: TRIP BLANK\_138 Date Collected: 05/11/23 00:00

Date Received: 05/16/23 09:45

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			05/20/23 20:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/23 20:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/23 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/23 20:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/23 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/23 20:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 128			-		05/20/23 20:10	1
Dibromofluoromethane (Surr)	83		77 - 124					05/20/23 20:10	1
Toluene-d8 (Surr)	104		80 - 120					05/20/23 20:10	1
4-Bromofluorobenzene	97		76 - 120					05/20/23 20:10	1

Job ID: 240-185400-1

Matrix: Water

Lab Sample ID: 240-185400-1

> **8** 9

# Client Sample ID: MW-117S\_051123

Date Collected: 05/11/23 09:50 Date Received: 05/16/23 09:45

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	<del>Գ</del> ՍՂ	2.0	0.86	ug/L			05/21/23 02:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		75 - 133			-		05/21/23 02:25	1
Method: SW846 8260D - Vola	atile Organic Comp	ounds 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			05/21/23 01:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/21/23 01:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/21/23 01:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/21/23 01:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/21/23 01:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/21/23 01:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		70 - 128			-		05/21/23 01:05	1
Dibromofluoromethane (Surr)	88		77 - 124					05/21/23 01:05	1
Toluene-d8 (Surr)	101		80 - 120					05/21/23 01:05	1
4-Bromofluorobenzene	97		76 - 120					05/21/23 01:05	1

5/22/2023

# Lab Sample ID: 240-185400-2 Matrix: Water