

**Environment Testing** 

# **ANALYTICAL REPORT**

## PREPARED FOR

Attn: Kristoffer Hinskey ARCADIS US Inc 28550 Cabot Drive Suite 500 Novi, Michigan 48377 Generated 11/13/2023 4:55:24 AM

## JOB DESCRIPTION

Ford LTP - Off Site

## **JOB NUMBER**

240-194751-1

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

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Authorized for release by Michael DelMonico, Project Manager I <u>Michael.DelMonico@et.eurofinsus.com</u> (330)497-9396

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## Qualifiers

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
F1	MS and/or MSD recovery exceeds control limits.	
F2	MS/MSD RPD exceeds control limits	5
S1+	Surrogate recovery exceeds control limits, high biased.	
U	Indicates the analyte was analyzed for but not detected.	
Glossary		
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	0
%R	Percent Recovery	0
CFL	Contains Free Liquid	
CFU	Colony Forming Unit	9
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Detection (DoD/DOE)	13
LOQ	Limit of Quantitation (DoD/DOE)	
MCL	EPA recommended "Maximum Contaminant Level"	
MDA	Minimum Detectable Activity (Radiochemistry)	

## Glossary

Glussaly	
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
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DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

## Job ID: 240-194751-1

### Laboratory: Eurofins Cleveland

### Narrative

Job Narrative 240-194751-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

### Receipt

The samples were received on 11/3/2023 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 3 coolers at receipt time were 1.8°C, 2.2°C and 2.9°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

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-194751-1	TRIP BLANK_5	Water	11/01/23 00:00	11/03/23 08:00
240-194751-2	MW-180SR_110123	Water	11/01/23 13:04	11/03/23 08:00

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## **Detection Summary**

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

## Client Sample ID: TRIP BLANK\_5

No Detections.

## Client Sample ID: MW-180SR\_110123

No Detections.

Job ID: 240-194751-1

Lab Sample ID: 240-194751-1

Lab Sample ID: 240-194751-2

## Client Sample ID: TRIP BLANK\_5

Date Collected: 11/01/23 00:00 Date Received: 11/03/23 08:00

	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			11/09/23 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137			-		11/09/23 17:01	1
4-Bromofluorobenzene (Surr)	95		56 - 136					11/09/23 17:01	1
Toluene-d8 (Surr)	98		78 - 122					11/09/23 17:01	1
Dibromofluoromethane (Surr)	101		73 - 120					11/09/23 17:01	1

11/13/2023

**Eurofins Cleveland** 

Job ID: 240-194751-1

Lab Sample ID: 240-194751-1

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## Client Sample ID: MW-180SR\_110123

Date Collected: 11/01/23 13:04 Date Received: 11/03/23 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			11/10/23 12:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120			-		11/10/23 12:31	1
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			11/09/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
rans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137			-		11/09/23 18:38	1
4-Bromofluorobenzene (Surr)	94		56 - 136					11/09/23 18:38	1
Toluene-d8 (Surr)	97		78 - 122					11/09/23 18:38	1
Dibromofluoromethane (Surr)	100		73 - 120					11/09/23 18:38	1

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Job ID: 240-194751-1

## Lab Sample ID: 240-194751-2 Matrix: Water

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

## Matrix: Water

Prep Type: Total/NA

# Prep Type: Total/NA

_				Percent Su	rogate Rec
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-194751-1	TRIP BLANK_5	101	95	98	101
240-194751-2	MW-180SR_110123	101	94	97	100
240-194858-C-5 MS	Matrix Spike	98	98	98	101
240-194858-C-5 MSD	Matrix Spike Duplicate	93	94	97	99
LCS 240-594032/5	Lab Control Sample	97	95	95	100
MB 240-594032/9	Method Blank	100	91	94	100
Surrogate Legend					
DCA = 1,2-Dichloroetha	ne-d4 (Surr)				
BFB = 4-Bromofluorobe	nzene (Surr)				
TOL = Toluene-d8 (Surr	)				

DBFM = Dibromofluoromethane (Surr)

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

### Matrix: Water

			Percent Surrogate Recovery (Acceptance Limits)	
		DCA		
Lab Sample ID	Client Sample ID	(66-120)		
240-194709-B-1 MS	Matrix Spike	81		
240-194709-B-1 MSD	Matrix Spike Duplicate	153 S1+		
240-194751-2	MW-180SR_110123	105		
LCS 240-594170/4	Lab Control Sample	101		
MB 240-594170/6	Method Blank	89		

### Surrogate Legend

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

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

	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			11/09/23 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 14:12	1

	MB	MВ					
Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137	-		11/09/23 14:12	1
4-Bromofluorobenzene (Surr)	91		56 - 136			11/09/23 14:12	1
Toluene-d8 (Surr)	94		78 - 122			11/09/23 14:12	1
Dibromofluoromethane (Surr)	100		73 - 120			11/09/23 14:12	1

### Lab Sample ID: LCS 240-594032/5 Matrix: Water Analysis Batch: 594032

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	19.7		ug/L		99	63 - 134	
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123	
Tetrachloroethene	20.0	19.5		ug/L		97	76 - 123	
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124	
Trichloroethene	20.0	18.1		ug/L		91	70 - 122	
Vinyl chloride	20.0	21.9		ug/L		110	60 - 144	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	95		78 - 122
Dibromofluoromethane (Surr)	100		73 - 120

98

98

## Lab Sample ID: 240-194858-C-5 MS Matrix: Water Analysis Batch: 594032

4-Bromofluorobenzene (Surr)

Toluene-d8 (Surr)

### Sample Sample Spike MS MS %Rec Result Qualifier Added Result Qualifier Analyte %Rec Limits Unit D 200 4000 3990 1,1-Dichloroethene U ug/L 100 56 - 135 cis-1,2-Dichloroethene 2700 4000 66 - 128 6590 ug/L 97 Tetrachloroethene 2000 4000 6000 ug/L 100 62 - 131 trans-1,2-Dichloroethene 200 U 4000 3770 ug/L 94 56 - 136 Trichloroethene 4000 61 - 124 6200 9820 ug/L 91 Vinyl chloride 200 U 4000 4530 ug/L 113 43 - 157 MS MS %Recovery Qualifier Limits Surrogate 62 - 137 1,2-Dichloroethane-d4 (Surr) 98

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

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

56 - 136

78 - 122

10

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

Matrix: Water Analysis Batch: 594032	C-5 MS							Clier	nt Sample ID: Prep T	: Matrix ype: To	
	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
Dibromofluoromethane (Surr)	101		73 - 120								
Lab Sample ID: 240-194858- Matrix: Water	C-5 MSD						Client	Sample	ID: Matrix Sp Prep T	oike Dup Type: To	
Analysis Batch: 594032											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte		Qualifier	Added		Qualifier	Unit	!	D %Rec		RPD	Limit
1,1-Dichloroethene	200	U	4000	4200		ug/L		105	56 - 135	5	26
cis-1,2-Dichloroethene	2700		4000	6520		ug/L		96	66 - 128	1	14
Tetrachloroethene	2000		4000	6400		ug/L		110	62 - 131	6	20
trans-1,2-Dichloroethene	200	U	4000	4050		ug/L		101	56 - 136	7	15
Trichloroethene	6200		4000	9810		ug/L		91	61 - 124	0	15
Vinyl chloride	200	U	4000	4840		ug/L		121	43 - 157	6	24
-						U					
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	93		62 - 137								
4-Bromofluorobenzene (Surr)	94		56 - 136								
Toluene-d8 (Surr)	97		78 - 122								
Dibromofluoromethane (Surr)	99		73 - 120								
Nethod: 8260D SIM - Vol Lab Sample ID: MB 240-594		: Compoun	ds (GC/MS)					Client	Sample ID: I	Method	Blan
Lab Sample ID: MB 240-594 Matrix: Water		: Compoun	ds (GC/MS)					Client		Method ype: To	
Lab Sample ID: MB 240-594			ds (GC/MS)					Client			
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170	170/6	МВ МВ			MDI Unit		D		Prep T	уре: То	tal/NA
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte	170/6	MB MB esult Qualifier	RL		MDL Unit		<u>D</u>	Client	Prep T Analyz	ype: To	tal/NA Dil Fac
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170	170/6	МВ МВ			MDL Unit 0.86 ug/L		<u>D</u>		Prep T	ype: To	
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte	170/6	MB MB esult Qualifier	RL				<u>D</u>		Prep T Analyz	ype: To	tal/NA Dil Fac
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte	170/6	MB MB esult Qualifier 2.0 U MB MB	RL				D		Prep T Analyz 11/10/23 1	<b>ed</b> 10:32	tal/NA Dil Fac
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 R	MB MB esult Qualifier 2.0 U MB MB	RL 2.0				D	Prepared	Prep T Analyz 11/10/23 1	<b>ed</b> 10:32	<b>tal/NA</b> Dil Fac
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier					<u>D</u>	Prepared	Analyz           11/10/23 f           Analyz	<b>ed</b> 10:32	<b>Dil Fac</b> 1 Dil Fac
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier						Prepared Prepared	Analyz           11/10/23 f           Analyz	<b>ed</b> 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier						Prepared Prepared	Prep T 	<b>ed</b> 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier						Prepared Prepared	Prep T 	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier		LCS				Prepared Prepared	Prep T 	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier	RL 2.0 66 - 120		0.86 ug/L	Unit	Clie	Prepared Prepared	Prep T 	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170	170/6 R	MB MB esult Qualifier 2.0 U MB MB every Qualifier	<u>RL</u> 2.0 <u>Limits</u> 66 - 120 Spike		0.86 ug/L	- Unit ug/L	Clie	Prepared Prepared	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte	170/6 	MB MB esult Qualifier 2.0 U MB MB every Qualifier 89	RL 2.0 <i>Limits</i> 66 - 120 Spike Added	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0 <i>Limits</i>	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed 10:32 - 10:32 - 10:32 -	tal/NA Dil Fac 1 Dil Fac 1 ample
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0 <i>Limits</i>	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Ile ID: Lab Cc           Prep T           %Rec           Limits	ed	tal/NA Dil Fac 1 Dil Fac 1 ample tal/NA
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0 <i>Limits</i>	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           Analyz           11/10/23 f           Analyz           11/10/23 f           Int D: Lab Cc           Prep T           %Rec           Limits           80 - 122	ed ed 10:32 - ed 10:32 - ontrol Sa ype: To 	tal/NA Dil Fac 1 Dil Fac 1 ample tal/NA Spike
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709- Matrix: Water	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0 <i>Limits</i>	Result	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           4nalyz           11/10/23 f           4nalyz           11/10/23 f           11/10/23 f           11/10/23 f           Nec           Limits           80 - 122	ed	tal/NA Dil Fac 1 Dil Fac 1 ample tal/NA Spike
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709-	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89 Cualifier	RL 2.0 <i>Limits</i> 66 - 120 Spike Added 10.0 <i>Limits</i>	Result 11.4	0.86 ug/L		Clie	Prepared Prepared ent Samp	Analyz           11/10/23 f           4nalyz           11/10/23 f           4nalyz           11/10/23 f           11/10/23 f           11/10/23 f           Nec           Limits           80 - 122	ed ed 10:32 - ed 10:32 - ontrol Sa ype: To 	tal/NA Dil Fac 1 Dil Fac 1 ample tal/NA Spike
Lab Sample ID: MB 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-594 Matrix: Water Analysis Batch: 594170 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-194709- Matrix: Water	170/6 	MB MB esult Qualifier 2.0 U MB MB overy Qualifier 89	RL 2.0 2.0 2.0 	Result 11.4	0.86 ug/L LCS Qualifier		Clie	Prepared Prepared ent Samp	Prep T Analyz 11/10/23 f Analyz 11/10/23 f 11/10/23 f 11/10/23 f 11/10/23 f 11/10/23 f 11/10/23 f Nrep T %Rec Limits 80 - 122 ht Sample ID; Prep T %Rec	ed ed 10:32 - ed 10:32 - ontrol Sa ype: To 	tal/NA Dil Fac 1 Dil Fac 1 ample tal/NA Spike

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

	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	81		66 - 120								
- Lab Sample ID: 240-194709-	B-1 MSD					c	Client Sa	ample IC	): Matrix Sp	oike Dup	olicate
Matrix: Water									Prep T	ype: To	tal/NA
Analysis Batch: 594170											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	35	F1 F2	10.0	67.3	F1 F2	ug/L		320	51 - 153	51	16
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	153	S1+	66 - 120								

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## GC/MS VOA

240-194709-B-1 MSD

Matrix Spike Duplicate

## Analysis Batch: 594032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-194751-1	TRIP BLANK_5	Total/NA	Water	8260D	
240-194751-2	MW-180SR_110123	Total/NA	Water	8260D	
MB 240-594032/9	Method Blank	Total/NA	Water	8260D	
LCS 240-594032/5	Lab Control Sample	Total/NA	Water	8260D	
240-194858-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-194858-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
Analysis Batch: 59417	0				
Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-194751-2	MW-180SR_110123	Total/NA	Water	8260D SIM	
MB 240-594170/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-594170/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-194709-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Total/NA

Water

8260D SIM

## Client Sample ID: TRIP BLANK\_5

Lab Sample	ID: 240-194751-1
	Matrix: Water

### Date Collected: 11/01/23 00:00 Date Received: 11/03/23 08:00

		Batch	Batch	D	ilution	Batch			Prepared
Prep Type Type Method Run Factor Number Analyst Lab or Analyz	р Туре	Туре	Method	Run I	Factor	Number	Analyst	Lab	or Analyzed
Total/NA         Analysis         8260D         1         594032         HMB         EET CLE         11/09/23 173	al/NA	Analysis	8260D		1	594032	НМВ	EET CLE	11/09/23 17:01

## Client Sample ID: MW-180SR\_110123 Date Collected: 11/01/23 13:04 Date Received: 11/03/23 08:00

Lab	Sample	ID:	240-194751-2	
			Matrix: Water	

	Batch	Batch		Dilution	Batch			Prepared
Ргер Туре	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	594032	НМВ	EET CLE	11/09/23 18:38
Total/NA	Analysis	8260D SIM		1	594170	CS	EET CLE	11/10/23 12:31

### Laboratory References:

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

## Accreditation/Certification Summary

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

### Laboratory: Eurofins Cleveland

aboratory: Eurofins Clevel accreditations/certifications held by the		ions/certifications are applicable to this report	t	
Authority	Program	Identification Number	Expiration Date	
California	State	2927	02-27-24	
Georgia	State	4062	02-27-24	
llinois	NELAP	200004	07-31-24	
owa	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	
Vinnesota	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	08-31-24	
Virginia	NELAP	460175	09-14-24	
West Virginia DEP	State	210	12-31-23	

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

INILCHIGAN 190		Chain of Custody Record	20	<b>TestAmerica</b>
Client Contact	Regulatory program: Program: DW	Allion Urive, Suite 2007 Brighton, MI 46116 / 810-229-	(103	THE LEADER IN ENVIRONMENTAL TESTING
Company Name: Arcadis	Client Project Manager: Kris Hinchov	Rita Contact. Christing Warner.		TestAmerica Laboratories, Inc.
Address: 28550 Cabot Drive, Suite 500			LAU COMACT. MIKE DELVIORICO	((M. N0:
City/State/Zip: Novi, MI, 48377	1 cicphone: 248-994-2240	l clephone: 24 <del>8-</del> 994-2240	Telephone: 330-497-9396	1 of 1 COCs
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis I urnaround 11me	Analyses	For lab use only
Project Name: Ford LTP OII-Site	Sampler Name: NO(CV SchR26	TAT if distant from below 3 weeks 10 days 2 weeks		Walk-in client
Project Number: 30167538.402.04	Method of Shipment/Carrier:	1 week Z) dave		Lab sampling
PO# 30167538.402.04	Shipping/Tracking No:	vie (Y /	8560C E 8560	Job/SDG No:
		-DCE 8560 outrites (outrites) bubosite=C vo3 vo3 vo3 vo3 vo3 vo3 vo3 vo3 vo3 vo3	-1,2-DCE 8 976-1,2-DCE E 8260D E 8260D -Dioxane 8 -Dioxane 8	Sample Specific Notes / Scoreda Environment
Sample Identification TRIP BLANK	°S		х К РС К ТС К ТС	4 Trio Block
		2	< 2	
11WW-12051-10123	11/01/23 1304 6	6 N 6 X	XXXXXX	3 VOAs for 8260D 3 VOAs for 8260D SIM
Pac				
ue 18				
of 20				
		240-194751 C	240-194751 Chain of Custody	
Possible Navard Identification		Common Diversed ( A fear much hear and 16		
🗸 Non-Hazard 🛛 🛛 Flammable 🔤 Ski	Skin Irritant Poison B Unknown	Return to Client V Disposal By Lab Archive For Month	es are retained longer (han 1 month) Archive For Months	
Special Instructions.0C. Requirements & <u>Comments</u> : Sample Address: 13 イタタートレベムシャットャー Submit all results through Cadena at ftomalia@cadenaco.com. Cadena #E203631	anaco.com. Cadena #E203631			
Refineducing requested.		Received by:	Company:	
Relinquished by:	Company: Company: An 2 21 1 11/2/22	11.17 NUV CO LO 770 410	Company:	Date/Time; 1715
Relinquished by	TA- Date Time:	1023	Companye FLOC	3.23
2008. Teldynynca Laconatons, Inc. Af ryks veervet Asilvinensa 6 Deepr 16 ae trademana of feulymansa Laboratoras, Inc.				

1/13/2023

	16.10 01
	Login # :
Barberton Facility	No. 1 Jullion
Client Hrcadi Site Name	Cooler unpacked by:
Cooler Received on $1-3-23$ Opened on $1-3-23$	Varm fight
FedEx: 1st Grd Exp UPS FAS Waypoin Client Drop Off Eurofins Cou	rier Other
Receipt After-hours: Drop-off Date/ThmeStorage Loc	
Eurofins Cooler # Foam Box Client Cooler Box Other	
	her
COOLANT: Wet Ice Blue Ice Dry Ice Water None 1. Cooler temperature upon receipt See Multiple C	
IR GUN # $AA$ (CF $+1.1$ °C) Observed Cooler Temp.	
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) signed & dated?	Yes No NA Yes No Receiving:
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? -Were tamper/custody seals intact and uncompromised?	Yes to NA Receiving:
3. Shippers' packing slip attached to the cooler(s)?	Yes 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 TOC
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)?	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 (Y/N), # of containers (Y/N) 10. Were correct bottle(s) used for the test(s) indicated?	
11. Sufficient quantity received to perform indicated analyses?	Ve No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Xes No (NA) pH Strip Lot# HC316719
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 # 17. Was a LL Hg or Me Hg trip blank present?	Yes No
· · · · · · · · · · · · · · · · · · ·	- <sup>1</sup> <sup>es</sup> (19
Contacted PM Date by via Ve	erbal Voice Mail Other
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next p	bage Samples processed by:
19. SAMPLE CONDITION	
Sample(s) were received after the recommende	d holding time had expired.
	ceived in a broken container.
Sample(s) were received with bubble >6	5 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s)	ere further preserved in the laboratory.
Sample(s)w Time preserved:Preservative(s) added/Lot number(s):w	ere function preserved in the meeting.
VOA Sample Preservation - Date/Time VOAs Frozen:	

Login #: 194751

(Ed) Client Box Other       IR GUN #:       // // // // // // // // // // // // //		Eurofins - Canto	n Sample Receipt M	uitiple Cooler Form	
CE       Cleant       Box       Other       III GUN 6:       Cleant       Annother       Well CA       Box       <	Cooler Description	the second se			
(F)       Cleant       box       Other       III GUN 6:	(Circle)	(Circie)	Temp °C	Temp °C	the second s
(F)       Cleant       box       Other       III GUN 6:	(EC) Client Box Oth		[]	2.2	Water None
EEC       Client Box Other       III GUN P:	EQ Client Box Oth		).8	2.9	Water None
EC       Client Box Other       III GUN 8:       Weize       Weize </td <td>(EC Client Box Oth</td> <td>IR GUN #:</td> <td>(7.7</td> <td>1.8</td> <td></td>	(EC Client Box Oth	IR GUN #:	(7.7	1.8	
EC       Client       Sox       Other       IR GUN #:       Weiler	EC Client Box Oth	IR GUN #:			
EC       Client       Sox       Other       IF GUN #       Weilles       We	EC Client Box Oth	er IR GUN #:			
EC       Client       Box       Other       IR GUN #:       Weiger       Monte         EC       Client       Box       Other       IR GUN #:       Weiger       Weige	EC Client Box Oth	er IR GUN #:			
EC       Client Box       Other       IR GUN 8:       Weiger       None         EC       Client Box       Other       IR GUN 9:       Weiger       Weiger       Weiger         EC       Client Box       Other       IR GUN 9:       Weiger       Weiger       Weiger       Weiger         EC       Client Box       Other       IR GUN 9:       Weiger	EC Client Box Oth	er IR GUN #:			
EC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       EC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice Work       BC     Client     Box     Other     IR GUN 6:     Work Ex Bine ice Bry ice W	EC Client Box Oth	IR GUN #:			
EC     Client     Box     Other     III GUN 9:	EC Client Box Oth	IR GUN #:			Wet ice Blue ice Dry ice
BC       Cleant       Boart       Model at an analysis       Model at analysis         BC       Cleant       Boart       Other       IR GUN #:	EC Client Box Oth	IR GUN #:			
BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Buel to:     Dry Loc       BC     Client     Ben     Other     IR GUN #:     Well to:     Buel to:     Dry Loc       BC     Client     Ben     Other     IR GUN #:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Buel to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Dry Loc       BC     Client     Box     Other     IR GUN #:     Well to:     Well to:     Dry Loc       BC     Client & Box     Other     IR GUN #:     Well to:     Well to:     Dry Loc       BC <td>IC Client Box Oli</td> <td>IR GUN #:</td> <td></td> <td></td> <td></td>	IC Client Box Oli	IR GUN #:			
BC       Client       Box       Other       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:       IN GUN 0:       IN GUN 0:       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:         EC       Client       Box       Other       IN GUN 0:	tC Client Box Of	IR GUN #:			
IC       Client       Bear       Other       IR GUN 6:       Weil res       Weil res	IC Client Box Oli	IR GUN #:			
EC       Client       Box       Other       IN GUN 6:	. IC Client Box Oli	IR GUN #:			Water None
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EC       Client       Box       Other       IR GUN #:	EC Client Box Off	NET			Water None
EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client       Box       Other       III GUN #:       Weitz       Weitz       None         EC       Client Box       Other       III GUN #:       Weitz       Weitz       None	EC Client Box Oil	NOT IR GUN #:			Water None
EC       Client       Box       Other       IR GUN 6:       Weitze       Weitze       Neitze       Weitze       Neitze       Dy Lee         EC       Client       Box       Other       IR GUN 6:       Weitze       Weitze       Neitze       Dy Lee       Weitze       Neitze       Dy Lee         EC       Client       Box       Other       IR GUN 6:       Weitze       Weitze       Dy Lee       Dy Lee       Weitze       Dy Lee	EC Client Box Off	Ner i			Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Off				Water None
It C       Under       Weak	EC Client Box Oli				Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Olt				Water None
BC       Client       Box       Other       IR GUN #:	EC Client Box Oli	IR GUN #:	#	-	Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Oli	Her			Water None
EC       Client       Box       Other       IR GUN #:	BC Client Box Oli	IR GUN #:			Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Olh	INT			Water None
EC       Client       Box       Other       IR GUN #:       Weiling       Weiling       Weiling       Weiling       Weiling       Weiling       Weiling       Weiling       Dave       Dave       Weiling       Dave       Weiling       Dave       Dave       Dave       Weiling       Weiling       Dave       Dave       Weiling       Weiling       Dave       Dave       Dave       Weiling       Weiling       Dave	EC Client Box Oth	IOF		-	Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Oth				Water None
EC       Client       Box       Other       IR GUN #:	EC Client Box Oth	er			Water None
EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Bry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Bry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bive Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:	EC Client Box Oth	er IR GUN #:			Wet ice Blue ice Dry ice
EC       Client       Box       Other       IR GUN #:       Wellice       Buy Ice       Wellice       Buy Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Buy Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Buy Ice       Dry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bry Ice         EC       Client       Box       Other       IR GUN #:       Wellice       Bry Ice	EC Client Box Oth	er IR GUN #:			Wellice Bluelice Drylice Water None
EC     Client     Box     Other     IR GUN #:	EC Client Box Oth	er R GUN #:			Wellice Bluelice Drylice
EC     Client     Box     Other     III: GUN #:       EC     Client     Box     Other     III: GUN #:	EC Client Box Oth	er IR GUN #:			Wet Ice Blue Ice Dry Ice
EC Client Box Other IR GVN #: Wellice Brue Ice Dry Ice Water None	EC Client Box Oth	er IR GUN #:			Wet Ice Blue Ice Dry Ice
See Temperature Excursion Form	EC Client Box Oth	er IR GUN #:			Wefice Sivelice Drylice
				See Temp	erature Excursion Form

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

## **DATA VERIFICATION REPORT**



November 16, 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: 194751-1 Sample date: 2023-11-01 Report received by CADENA: 2023-11-16 Initial Data Verification completed by CADENA: 2023-11-16 Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

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

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

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

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

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

**Project Scientist** 

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

## **CADENA Valid Qualifiers**

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

## Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland Laboratory Submittal: 194751-1

		Sample Name: TRIP BLANK_5 Lab Sample ID: 2401947511 Sample Date: 11/1/2023							MW-180SR_110123 2401947512 11/1/2023				
			D It	Report		Valid		Report		Valid			
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier			
GC/MS VOC													
<u>OSW-8260</u>	<u>D(</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>	DDSIM												
	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 # 240-194751-1 CADENA Verification Report: 2023-11-16

Analyses Performed By: Eurofins Cleveland Barberton, Ohio

Report # 52284R Review Level: Tier III Project: 30167538.402.02

## **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-194751-1 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 ID	Lab ID	Matrix	Sample	Barant Sampla	Analysis			
Sample ID		Matrix	Collection Date	Parent Sample	VOC	VOC SIM		
TRIP BLANK_5	240-194751-1	Water	11/01/2023		Х			
MW-180SR_110123	240-194751-2	Water	11/01/2023		Х	X		

## DATA REVIEW

## 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		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		X	
5.	Reporting limits		Х		Х	
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 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 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.

### DATA REVIEW

## 6. Compound Identification

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

No compounds were detected in the samples within this SDG.

## 7. System Performance and Overall Assessment

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

## DATA REVIEW

## DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Rep	orted		rmance ptable	Not Required	
	No	Yes	No	Yes	Nequireu	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	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		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		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:	Dilip Kumar
SIGNATURE:	Dintes
DATE:	December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

## NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS



# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





**Chain of Custody Record** 



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

Client Contact Company Name: Arcadis	Regula	tory program:		Ī	DW	/	Ľ	NP	DES		F	RCRA		0	Other				-							
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address: 28550 Cabot Drive, Suite 500	Telephone: 248	-994-2240		_	_		Te	lepho	one: 2	48-99	94-22	40				T	elepho	me: 3	30-49	7-930	96					
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## Client Sample ID: TRIP BLANK\_5

## Date Collected: 11/01/23 00:00

Date Received: 11/03/23 08:00

Method: SW846 8260D - Ve	olatile Organic Com	pounds 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			11/09/23 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 17:01	1
<b>2</b>	0/ <b>D</b>	0	1				<b>D</b>	A	D# 5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137	11.	/09/23 17:01	1
4-Bromofluorobenzene (Surr)	95		56 - 136	11.	/09/23 17:01	1
Toluene-d8 (Surr)	98		78 - 122	11.	/09/23 17:01	1
Dibromofluoromethane (Surr)	101		73 - 120	11.	/09/23 17:01	1

## Client Sample ID: MW-180SR\_110123 Date Collected: 11/01/23 13:04 Date Received: 11/03/23 08:00

Dibromofluoromethane (Surr)

## Lab Sample ID: 240-194751-2

**Matrix: Water** 

1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/10/23 12:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		66 - 120			-		11/10/23 12:31	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/23 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/23 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/23 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/23 18:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/23 18:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137					11/09/23 18:38	1
4-Bromofluorobenzene (Surr)	94		56 - 136					11/09/23 18:38	1
Toluene-d8 (Surr)	97		78 - 122					11/09/23 18:38	1

73 - 120

100

11/09/23 18:38

## Lab Sample ID: 240-194751-1 **Matrix: Water**