

# ANALYTICAL REPORT

## PREPARED FOR

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Generated 11/24/2023 7:01:57 AM

## JOB DESCRIPTION

Ford LTP - Off Site

## JOB NUMBER

240-195398-1

# Eurofins Cleveland

## Job Notes

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## Authorization



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# Definitions/Glossary

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

Job ID: 240-195398-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

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

Job ID: 240-195398-1

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**Job ID: 240-195398-1**

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**Laboratory: Eurofins Cleveland**

## Narrative

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### Job Narrative 240-195398-1

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 11/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2°C and 3.4°C

### GC/MS VOA

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

# Method Summary

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

Job ID: 240-195398-1

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



# Sample Summary

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

Job ID: 240-195398-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-195398-1	TRIP BLANK_91	Water	11/08/23 00:00	11/14/23 10:00
240-195398-2	MW-136S_110823	Water	11/08/23 13:45	11/14/23 10:00
240-195398-3	DUP_13	Water	11/08/23 00:00	11/14/23 10:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Detection Summary

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

Job ID: 240-195398-1

## Client Sample ID: TRIP BLANK\_91

Lab Sample ID: 240-195398-1

No Detections.

## Client Sample ID: MW-136S\_110823

Lab Sample ID: 240-195398-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.91	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.84	J	1.0	0.45	ug/L	1		8260D	Total/NA

## Client Sample ID: DUP\_13

Lab Sample ID: 240-195398-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.85	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

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

Job ID: 240-195398-1

**Client Sample ID: TRIP BLANK\_91**

**Lab Sample ID: 240-195398-1**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

**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			11/20/23 12:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 12:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137		11/20/23 12:04	1
4-Bromofluorobenzene (Surr)	89		56 - 136		11/20/23 12:04	1
Toluene-d8 (Surr)	108		78 - 122		11/20/23 12:04	1
Dibromofluoromethane (Surr)	99		73 - 120		11/20/23 12:04	1

# Client Sample Results

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

Job ID: 240-195398-1

**Client Sample ID: MW-136S\_110823**

**Lab Sample ID: 240-195398-2**

Date Collected: 11/08/23 13:45

Matrix: Water

Date Received: 11/14/23 10:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.86	ug/L			11/22/23 05:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		66 - 120					11/22/23 05:12	1

**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			11/20/23 12:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
Vinyl chloride	0.84	J	1.0	0.45	ug/L			11/20/23 12:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137					11/20/23 12:28	1
4-Bromofluorobenzene (Surr)	95		56 - 136					11/20/23 12:28	1
Toluene-d8 (Surr)	102		78 - 122					11/20/23 12:28	1
Dibromofluoromethane (Surr)	82		73 - 120					11/20/23 12:28	1

# Client Sample Results

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

Job ID: 240-195398-1

**Client Sample ID: DUP\_13**

**Lab Sample ID: 240-195398-3**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		66 - 120					11/22/23 05:36	1

**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			11/19/23 23:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 23:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 23:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
<b>Vinyl chloride</b>	<b>0.85</b>	<b>J</b>	1.0	0.45	ug/L			11/19/23 23:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		62 - 137					11/19/23 23:10	1
4-Bromofluorobenzene (Surr)	98		56 - 136					11/19/23 23:10	1
Toluene-d8 (Surr)	99		78 - 122					11/19/23 23:10	1
Dibromofluoromethane (Surr)	96		73 - 120					11/19/23 23:10	1

# Surrogate Summary

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

Job ID: 240-195398-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (62-137)	BFB (56-136)	TOL (78-122)	DBFM (73-120)
240-195260-A-5 MS	Matrix Spike	106	100	100	103
240-195260-B-5 MSD	Matrix Spike Duplicate	107	101	98	103
240-195398-1	TRIP BLANK_91	98	89	108	99
240-195398-2	MW-136S_110823	96	95	102	82
240-195398-3	DUP_13	105	98	99	96
240-195494-A-9 MS	Matrix Spike	84	100	106	86
240-195494-B-9 MSD	Matrix Spike Duplicate	87	106	104	89
LCS 240-595149/4	Lab Control Sample	103	98	97	101
LCS 240-595193/4	Lab Control Sample	88	107	107	98
MB 240-595149/7	Method Blank	103	95	99	96
MB 240-595193/7	Method Blank	95	102	103	95

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
TOL = Toluene-d8 (Surr)  
DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCA (66-120)
240-195206-K-2 MS	Matrix Spike	98
240-195206-O-2 MSD	Matrix Spike Duplicate	101
240-195398-2	MW-136S_110823	100
240-195398-3	DUP_13	99
LCS 240-595505/4	Lab Control Sample	97
MB 240-595505/6	Method Blank	97

**Surrogate Legend**

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

# QC Sample Results

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

Job ID: 240-195398-1

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

Lab Sample ID: MB 240-595149/7

Matrix: Water

Analysis Batch: 595149

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/19/23 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/19/23 14:57	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	103		62 - 137		11/19/23 14:57	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/19/23 14:57	1
Toluene-d8 (Surr)	99		78 - 122		11/19/23 14:57	1
Dibromofluoromethane (Surr)	96		73 - 120		11/19/23 14:57	1

Lab Sample ID: LCS 240-595149/4

Matrix: Water

Analysis Batch: 595149

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1,1-Dichloroethene	25.0	25.7		ug/L		103	63 - 134
cis-1,2-Dichloroethene	25.0	25.4		ug/L		102	77 - 123
Tetrachloroethene	25.0	24.1		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	25.1		ug/L		100	75 - 124
Trichloroethene	25.0	25.4		ug/L		102	70 - 122
Vinyl chloride	12.5	10.2		ug/L		81	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	103		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: 240-195260-A-5 MS

Matrix: Water

Analysis Batch: 595149

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
1,1-Dichloroethene	0.74	J	25.0	22.2		ug/L		86	56 - 135
cis-1,2-Dichloroethene	120	E	25.0	143	E 4	ug/L		98	66 - 128
trans-1,2-Dichloroethene	4.0		25.0	26.6		ug/L		90	56 - 136
Trichloroethene	41		25.0	61.4		ug/L		81	61 - 124
Vinyl chloride	1.3		12.5	10.4		ug/L		73	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	106		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

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# QC Sample Results

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

Job ID: 240-195398-1

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

Lab Sample ID: 240-195260-B-5 MSD

Matrix: Water

Analysis Batch: 595149

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1-Dichloroethene	0.74	J	25.0	24.7		ug/L		96	56 - 135	11	26
cis-1,2-Dichloroethene	120	E	25.0	145	E 4	ug/L		105	66 - 128	1	14
trans-1,2-Dichloroethene	4.0		25.0	27.6		ug/L		94	56 - 136	4	15
Trichloroethene	41		25.0	63.4	E	ug/L		88	61 - 124	3	15
Vinyl chloride	1.3		12.5	12.1		ug/L		86	43 - 157	15	24
<b>MSD MSD</b>											
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>								
1,2-Dichloroethane-d4 (Surr)	107		62 - 137								
4-Bromofluorobenzene (Surr)	101		56 - 136								
Toluene-d8 (Surr)	98		78 - 122								
Dibromofluoromethane (Surr)	103		73 - 120								

Lab Sample ID: MB 240-595193/7

Matrix: Water

Analysis Batch: 595193

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/20/23 10:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 10:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 10:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 10:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 10:52	1
<b>MB MB</b>									
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>			
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/20/23 10:52	1			
4-Bromofluorobenzene (Surr)	102		56 - 136		11/20/23 10:52	1			
Toluene-d8 (Surr)	103		78 - 122		11/20/23 10:52	1			
Dibromofluoromethane (Surr)	95		73 - 120		11/20/23 10:52	1			

Lab Sample ID: LCS 240-595193/4

Matrix: Water

Analysis Batch: 595193

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec
							Added
1,1-Dichloroethene	25.0	27.5		ug/L		110	63 - 134
cis-1,2-Dichloroethene	25.0	26.4		ug/L		106	77 - 123
Tetrachloroethene	25.0	28.9		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	27.3		ug/L		109	75 - 124
Trichloroethene	25.0	26.4		ug/L		106	70 - 122
Vinyl chloride	12.5	11.3		ug/L		90	60 - 144
<b>LCS LCS</b>							
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
1,2-Dichloroethane-d4 (Surr)	88		62 - 137				
4-Bromofluorobenzene (Surr)	107		56 - 136				
Toluene-d8 (Surr)	107		78 - 122				
Dibromofluoromethane (Surr)	98		73 - 120				

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# QC Sample Results

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

Job ID: 240-195398-1

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

Lab Sample ID: 240-195494-A-9 MS

Matrix: Water

Analysis Batch: 595193

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits	
	Result	Qualifier	Added	Result	Qualifier						
1,1-Dichloroethene	1.0	U	25.0	26.7		ug/L		107		56 - 135	
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98		66 - 128	
Tetrachloroethene	1.0	U	25.0	28.1		ug/L		112		62 - 131	
trans-1,2-Dichloroethene	1.0	U	25.0	25.1		ug/L		100		56 - 136	
Trichloroethene	1.0	U	25.0	25.6		ug/L		103		61 - 124	
Vinyl chloride	1.0	U	12.5	9.22		ug/L		74		43 - 157	
<b>MS MS</b>											
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	84		62 - 137								
4-Bromofluorobenzene (Surr)	100		56 - 136								
Toluene-d8 (Surr)	106		78 - 122								
Dibromofluoromethane (Surr)	86		73 - 120								

Lab Sample ID: 240-195494-B-9 MSD

Matrix: Water

Analysis Batch: 595193

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier						RPD	Limit
1,1-Dichloroethene	1.0	U	25.0	24.0		ug/L		96		56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92		66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	31.1		ug/L		124		62 - 131	10	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.8		ug/L		99		56 - 136	1	15
Trichloroethene	1.0	U	25.0	25.5		ug/L		102		61 - 124	1	15
Vinyl chloride	1.0	U	12.5	10.1		ug/L		81		43 - 157	9	24
<b>MSD MSD</b>												
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	87		62 - 137									
4-Bromofluorobenzene (Surr)	106		56 - 136									
Toluene-d8 (Surr)	104		78 - 122									
Dibromofluoromethane (Surr)	89		73 - 120									

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

Lab Sample ID: MB 240-595505/6

Matrix: Water

Analysis Batch: 595505

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/23 21:18	1
<b>MB MB</b>									
Surrogate	%Recovery	Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	97		66 - 120						

# QC Sample Results

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

Job ID: 240-195398-1

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

**Lab Sample ID: LCS 240-595505/4**

**Matrix: Water**

**Analysis Batch: 595505**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.86		ug/L		99	80 - 122
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>				
1,2-Dichloroethane-d4 (Surr)	97		66 - 120				

**Lab Sample ID: 240-195206-K-2 MS**

**Matrix: Water**

**Analysis Batch: 595505**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153
<b>Surrogate</b>	<b>%Recovery</b>	<b>MS Qualifier</b>	<b>Limits</b>						
1,2-Dichloroethane-d4 (Surr)	98		66 - 120						

**Lab Sample ID: 240-195206-O-2 MSD**

**Matrix: Water**

**Analysis Batch: 595505**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16
<b>Surrogate</b>	<b>%Recovery</b>	<b>MSD Qualifier</b>	<b>Limits</b>								
1,2-Dichloroethane-d4 (Surr)	101		66 - 120								



# QC Association Summary

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

Job ID: 240-195398-1

## GC/MS VOA

### Analysis Batch: 595149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-3	DUP_13	Total/NA	Water	8260D	
MB 240-595149/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595149/4	Lab Control Sample	Total/NA	Water	8260D	
240-195260-A-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-195260-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

### Analysis Batch: 595193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-1	TRIP BLANK_91	Total/NA	Water	8260D	
240-195398-2	MW-136S_110823	Total/NA	Water	8260D	
MB 240-595193/7	Method Blank	Total/NA	Water	8260D	
LCS 240-595193/4	Lab Control Sample	Total/NA	Water	8260D	
240-195494-A-9 MS	Matrix Spike	Total/NA	Water	8260D	
240-195494-B-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

### Analysis Batch: 595505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-195398-2	MW-136S_110823	Total/NA	Water	8260D SIM	
240-195398-3	DUP_13	Total/NA	Water	8260D SIM	
MB 240-595505/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-595505/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-195206-K-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-195206-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	



# Lab Chronicle

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

Job ID: 240-195398-1

**Client Sample ID: TRIP BLANK\_91**

**Lab Sample ID: 240-195398-1**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 12:04

**Client Sample ID: MW-136S\_110823**

**Lab Sample ID: 240-195398-2**

Date Collected: 11/08/23 13:45

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595193	LEE	EET CLE	11/20/23 12:28
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 05:12

**Client Sample ID: DUP\_13**

**Lab Sample ID: 240-195398-3**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	595149	LEE	EET CLE	11/19/23 23:10
Total/NA	Analysis	8260D SIM		1	595505	CS	EET CLE	11/22/23 05:36

**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

Job ID: 240-195398-1

## Laboratory: Eurofins Cleveland

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

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

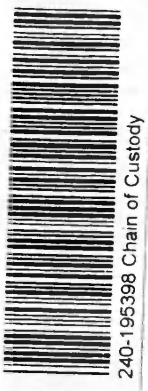
\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



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

<b>Client Contact</b> Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240		<b>Regulatory program:</b> <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
<b>Client Project Manager:</b> Kris Hlnsky Telephone: 248-994-2240 Email: kristoffer.hlnsky@arcadis.com		<b>Lab Contact:</b> Mike DelMonico Telephone: 330-497-9396	
<b>Sampler Name:</b> Alana Pitera Method of Shipment/Carrier: Shipping/Tracking No:		TestAmerica Laboratories, Inc. COC No: 1 of 1 COCs For lab use only	
<b>Sample Identification</b> TRIP BLANK 2691 MW-1365-110823 DUP-13		Walk-in client Lab sampling Job/SDG No:	
Sample Date    Sample Time 11/08/23 13:45 11/13/23 --		Sample Specific Notes / Special Instructions: 1 Trip Blank 3 VOAs for 8260B 13 VOAs for 8260B SIM	
<b>Matrix</b> H2SO4    HNO3    HCl    NaOH    ZnAc    NaOH    Other: 1            6            6            1            1            1            1		TCE 8260B PCE 8260B Trans-1,2-DCE 8260B Cis-1,2-DCE 8260B 1,1-DCE 8260B Composite C / G / B / T Filtered Sample (Y / N) NG X    NG X    NG X    NG X    NG X    NG X	
<b>Containers &amp; Preservatives</b> TAT if different from below 10 day    3 weeks    2 weeks    1 week    2 days    1 day		Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
<b>Possible Hazard Identification</b> <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
<b>Sample Address:</b> Submit all results through Cadena at jtomalle@cadenaco.com. Cadena #E203631 Level IV Reporting requested.		240-195398 Chain of Custody	
<b>Relinquished by:</b> Alana Pitera		Company: Arcadis Date/Time: 11/10/23 1530	
<b>Relinquished by:</b> [Signature]		Company: Arcadis Date/Time: 11/13/23 0835	
<b>Relinquished by:</b> [Signature]		Company: Arcadis Date/Time: 11/13/23	

Capitol Row



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**Eurofins - Cleveland Sample Receipt Form/Narrative** Login # : \_\_\_\_\_  
**Barberton Facility**

Client Arcadis Site Name \_\_\_\_\_ Cooler unpacked by: Missa Atkinson  
Cooler Received on 11-14-23 Opened on 11-14-23  
FedEx: 1<sup>st</sup> Grd  Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other \_\_\_\_\_

**Receipt After-hours: Drop-off Date/Time** \_\_\_\_\_ **Storage Location** \_\_\_\_\_


Eurofins Cooler # EC Foam Box Client Cooler Box Other \_\_\_\_\_  
Packing material used:  Bubble Wrap  Foam  Plastic Bag None Other \_\_\_\_\_  
COOLANT:  Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt  See Multiple Cooler Form  
IR GUN # \_\_\_\_\_ (CF \_\_\_\_\_ °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea  Yes No  
- Were the seals on the outside of the cooler(s) signed & dated?  Yes No NA  
- Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?  Yes  No NA  
- Were tamper/custody seals intact and uncompromised?  Yes No NA

3. Shippers' packing slip attached to the cooler(s)?  Yes No  
4. Did custody papers accompany the sample(s)?  Yes No  
5. Were the custody papers relinquished & signed in the appropriate place?  Yes No  
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), and sample type of grab/comp (Y/N)?  Yes No  
10. Were correct bottle(s) used for the test(s) indicated?  Yes No  
11. Sufficient quantity received to perform indicated analyses?  Yes 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? Yes No  NA pH Strip Lot# HC316719  
14. Were VOAs on the COC?  Yes No  
15. Were air bubbles >6 mm in any VOA vials?  Yes  No NA  ← Larger than this.  
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62225  Yes No  
17. Was a LL Hg or Me Hg trip blank present? Yes  No

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
Concerning \_\_\_\_\_

Tests that are not checked for pH by Receiving:  
VOAs  
Oil and Grease  
TOC

**18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES**  additional next page Samples processed by: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**19. SAMPLE CONDITION**

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
Sample(s) \_\_\_\_\_ were received in a broken container.  
Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter. (Notify PM)

**20. SAMPLE PRESERVATION**

Sample(s) \_\_\_\_\_ were further preserved in the laboratory.  
Time preserved: \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_  
VOA Sample Preservation - Date/Time VOAs Frozen: \_\_\_\_\_



# DATA VERIFICATION REPORT



November 27, 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: 195398-1

Sample date: 2023-11-08

Report received by CADENA: 2023-11-27

Initial Data Verification completed by CADENA: 2023-11-27

Number of Samples:3

Sample Matrices:Water

Test Categories:GCMS VOC

**Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.**

There were no significant QC anomalies or exceptions to report.

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

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

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

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

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.
B	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 contaminants) 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 contaminants) 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: 195398-1

<b>Sample Name:</b>	TRIP BLANK_91	MW-136S_110823	DUP_13
<b>Lab Sample ID:</b>	2401953981	2401953982	2401953983
<b>Sample Date:</b>	11/8/2023	11/8/2023	11/8/2023

Analyte	Cas No.	Report		Units	Valid Qualifier	Report		Units	Valid Qualifier	Report		Units	Valid Qualifier
		Result	Limit			Result	Limit			Result	Limit		
<b>GC/MS VOC</b>													
<u>OSW-8260D</u>													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	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	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	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	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.84	1.0	ug/l	J	0.85	1.0	ug/l	J
<u>OSW-8260DSIM</u>													
1,4-Dioxane	123-91-1					0.91	2.0	ug/l	J	ND	2.0	ug/l	---

# Ford Motor Company – Livonia Transmission Project

## Data Review

### Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-195398-1

CADENA Verification Report: 2023-11-27

Analyses Performed By:  
Eurofins Cleveland  
Barberton, Ohio

Report # 52155R  
Review Level: Tier III  
Project: 30167538.402.02

## DATA REVIEW

### SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-195398-1 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 Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_91	240-195398-1	Water	11/08/2023		X	
MW-136S_110823	240-195398-2	Water	11/08/2023		X	X
DUP_13	240-195398-3	Water	11/08/2023	MW-136S_110823	X	X

## DATA REVIEW

### ANALYTICAL DATA PACKAGE DOCUMENTATION

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

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

## 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.

## DATA REVIEW

### VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

#### 1. Holding Times

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

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

All samples were analyzed within the specified holding time criteria.

#### 2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

#### 3. Calibration

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

##### 3.1 Initial Calibration

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

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

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

##### 3.2 Continuing Calibration

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

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

#### 4. Internal Standard Performance

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

All internal standard responses were within control limits.

#### 5. Field Duplicate Analysis

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

Results for duplicate samples are summarized in the following table.

## DATA REVIEW

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-136S_110823/DUP_13	1,4-Dioxane	0.91 J	2.0 U	AC
	Vinyl chloride	0.84 J	0.85 J	AC

Note:

AC                    Acceptable

The results between the parent sample and field duplicate were acceptable.

### 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	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
<b>GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)</b>					
<b>Tier II Validation</b>					
Holding times/Preservation		X		X	
<b>Tier III Validation</b>					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

## DATA REVIEW

VALIDATION PERFORMED BY: Dilip Kumar

SIGNATURE: 

DATE: December 15, 2023

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2023

**NO CORRECTIONS/QUALIFIERS ADDED  
TO SAMPLE ANALYSIS DATA SHEETS**



**CHAIN OF CUSTODY  
CORRECTED SAMPLE ANALYSIS DATA  
SHEETS**



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

Client Contact		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other										TestAmerica Laboratories, Inc.																																								
Company Name: Arcadis		Client Project Manager: Kris Hlnskey					Site Contact: Christina Weaver					Lab Contact: Mike DelMonico					COC No:																																			
Address: 28550 Cabot Drive, Suite 500		Telephone: 248-994-2240					Telephone: 248-994-2240					Telephone: 330-497-9396					1 of 1 COCs																																			
City/State/Zip: Novi, MI, 48377		Email: kristoffer.hlnskey@arcadis.com					Analysis Turnaround Time					Analyses					For lab use only																																			
Phone: 248-994-2240		Sampler Name: <b>Alayna Pitera</b>					TAT if different from below <b>10 day</b>					<input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day					<input type="checkbox"/> Walk-in client <input type="checkbox"/> Lab sampling <input type="checkbox"/> Job/SDG No:																																			
Project Name: Ford LTP Off-Site		Method of Shipment/Carrier:					Shipping/Tracking No:																																													
Project Number: 30167538.402.04		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5">Matrix</th> <th colspan="5">Containers &amp; Preservatives</th> <th rowspan="2">Filtered Sample (Y/N)</th> <th rowspan="2">Composite-C / Grab-G</th> <th colspan="10">Analyses</th> </tr> <tr> <th>Air</th> <th>Aqueous</th> <th>Sediment</th> <th>Solid</th> <th>Other</th> <th>H2SO4</th> <th>HN03</th> <th>HCl</th> <th>NaOH</th> <th>ZnAc/NaOH</th> <th>Uppres</th> <th>Other</th> <th>1,1-DCE 8260B</th> <th>cis-1,2-DCE 8260B</th> <th>Trans-1,2-DCE 8260B</th> <th>PCE 8260B</th> <th>TCE 8260B</th> <th>Vinyl Chloride 8260B</th> <th>1,4-Dioxane 8260B SIM</th> </tr> </table>					Matrix					Containers & Preservatives					Filtered Sample (Y/N)	Composite-C / Grab-G	Analyses										Air	Aqueous	Sediment	Solid	Other	H2SO4	HN03	HCl	NaOH	ZnAc/NaOH	Uppres	Other	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:				
Matrix							Containers & Preservatives					Filtered Sample (Y/N)	Composite-C / Grab-G	Analyses																																						
Air	Aqueous	Sediment	Solid	Other	H2SO4	HN03	HCl	NaOH	ZnAc/NaOH	Uppres	Other			1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM																																
PO # 30167538.402.04		Sample Identification		Sample Date		Sample Time																																														
TRIP BLANK_ 2691 (S)				---		1												1 Trip Blank																																		
MW-1365-110823		11/08/23		1345		6												3 VOAs for 8260B 3 VOAs for 8260B SIM																																		
DUP-13		11/8/23		---		6												↓																																		
Possible Hazard Identification		<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown										Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)																																								
Special Instructions/QC Requirements & Comments:		<input checked="" type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months										Submit all results through Cadena at jtomalla@cadenco.com. Cadena #E203631 Level IV Reporting requested.																																								
Relinquished by: <i>Alayna Pitera</i>		Company: Arcadis					Date/Time: 11/10/23 1530					Received by: <i>Novi Cold Storage</i>					Company: Arcadis					Date/Time: 11/10/23 1530																														
Relinquished by: <i>[Signature]</i>		Company: Arcadis					Date/Time: 11/13/23 0835					Received by: <i>[Signature]</i>					Company: EENA					Date/Time: 11/13/23																														
Relinquished by: <i>[Signature]</i>		Company: EENA					Date/Time: 11/13/23					Received in Laboratory by: <i>Alayna Pitera</i>					Company: EETNC					Date/Time: 11.14.23 1000																														



240-195398 Chain of Custody

# Client Sample Results

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

Job ID: 240-195398-1

**Client Sample ID: TRIP BLANK\_91**

**Lab Sample ID: 240-195398-1**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

**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			11/20/23 12:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/20/23 12:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137		11/20/23 12:04	1
4-Bromofluorobenzene (Surr)	89		56 - 136		11/20/23 12:04	1
Toluene-d8 (Surr)	108		78 - 122		11/20/23 12:04	1
Dibromofluoromethane (Surr)	99		73 - 120		11/20/23 12:04	1

**Client Sample ID: MW-136S\_110823**

**Lab Sample ID: 240-195398-2**

Date Collected: 11/08/23 13:45

Matrix: Water

Date Received: 11/14/23 10:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.91	J	2.0	0.86	ug/L			11/22/23 05:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		66 - 120		11/22/23 05:12	1

**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			11/20/23 12:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/20/23 12:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/20/23 12:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/20/23 12:28	1
Vinyl chloride	0.84	J	1.0	0.45	ug/L			11/20/23 12:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		11/20/23 12:28	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/20/23 12:28	1
Toluene-d8 (Surr)	102		78 - 122		11/20/23 12:28	1
Dibromofluoromethane (Surr)	82		73 - 120		11/20/23 12:28	1

**Client Sample ID: DUP\_13**

**Lab Sample ID: 240-195398-3**

Date Collected: 11/08/23 00:00

Matrix: Water

Date Received: 11/14/23 10:00

**Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/23 05:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		66 - 120		11/22/23 05:36	1

# Client Sample Results

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

Job ID: 240-195398-1

**Client Sample ID: DUP\_13**

**Lab Sample ID: 240-195398-3**

**Date Collected: 11/08/23 00:00**

**Matrix: Water**

**Date Received: 11/14/23 10:00**

**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			11/19/23 23:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/19/23 23:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/19/23 23:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/19/23 23:10	1
<b>Vinyl chloride</b>	<b>0.85</b>	<b>J</b>	1.0	0.45	ug/L			11/19/23 23:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		62 - 137		11/19/23 23:10	1
4-Bromofluorobenzene (Surr)	98		56 - 136		11/19/23 23:10	1
Toluene-d8 (Surr)	99		78 - 122		11/19/23 23:10	1
Dibromofluoromethane (Surr)	96		73 - 120		11/19/23 23:10	1