

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-185728-1

Eurofins Cleveland

Job Notes

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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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Definitions/Glossary

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

Job ID: 240-185728-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low 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.
α	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 - On Site

Job ID: 240-185728-1

Job ID: 240-185728-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-185728-1

Receipt

The samples were received on 5/20/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 460-911906 recovered above the upper control limit for cis-1,2-Dichloroethene and trans-1,2-Dichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260D: The laboratory control sample (LCS) for analytical batch 460-911906 recovered outside control limits for the following analyte: cis-1,2-Dichloroethene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 8260D: Four surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample contained an allowable number of surrogate compounds outside limits: TRIP BLANK_36 (240-185728-1). These results have been reported and qualified.

Method 8260D_SIM: Internal standard (ISTD) response for Fluorobenzene for the following samples in analytical batch 460-911865 was outside acceptance criteria: MW-52_051823 (240-185728-2), MW-43_051823 (240-185728-3), MW-42_051823 (240-185728-4) and DUP-04 (240-185728-5). This ISTD does not correspond to any of the requested target compounds reported from this analytical batch; therefore, the data have been reported.

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 - On Site

Job ID: 240-185728-1

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

Protocol References:

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

Laboratory References:

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

Sample Summary

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

Job ID: 240-185728-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-185728-1	TRIP BLANK_36	Water	05/18/23 00:00	05/20/23 08:00
240-185728-2	MW-52_051823	Water	05/18/23 09:42	05/20/23 08:00
240-185728-3	MW-43_051823	Water	05/18/23 10:40	05/20/23 08:00
240-185728-4	MW-42_051823	Water	05/18/23 11:35	05/20/23 08:00
240-185728-5	DUP-04	Water	05/18/23 00:00	05/20/23 08:00

Detection Summary

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

Job ID: 240-185728-1

Client Sample ID: TRIP BLANK_36

Lab Sample ID: 240-185728-1

No Detections.

Client Sample ID: MW-52_051823

Lab Sample ID: 240-185728-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-43_051823

Lab Sample ID: 240-185728-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.3	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-42_051823

Lab Sample ID: 240-185728-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.69	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-04

Lab Sample ID: 240-185728-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.5		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 - On Site

Job ID: 240-185728-1

Client Sample ID: TRIP BLANK_36

Lab Sample ID: 240-185728-1

Date Collected: 05/18/23 00:00

Matrix: Water

Date Received: 05/20/23 08:00

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			05/28/23 06:52	1
cis-1,2-Dichloroethene	1.0	U *+	1.0	0.46	ug/L			05/28/23 06:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 06:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 06:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 06:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/28/23 06:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		70 - 128		05/28/23 06:52	1
Dibromofluoromethane (Surr)	115		77 - 124		05/28/23 06:52	1
Toluene-d8 (Surr)	68	S1-	80 - 120		05/28/23 06:52	1
4-Bromofluorobenzene	106		76 - 120		05/28/23 06:52	1

Client Sample Results

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

Job ID: 240-185728-1

Client Sample ID: MW-52_051823

Lab Sample ID: 240-185728-2

Date Collected: 05/18/23 09:42

Matrix: Water

Date Received: 05/20/23 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8		2.0	0.86	ug/L			05/27/23 10:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		75 - 133					05/27/23 10:41	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			05/28/23 09:31	1
cis-1,2-Dichloroethene	1.0	U *	1.0	0.46	ug/L			05/28/23 09:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 09:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 09:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 09:31	1
Vinyl chloride	1.4		1.0	0.45	ug/L			05/28/23 09:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 128					05/28/23 09:31	1
Dibromofluoromethane (Surr)	103		77 - 124					05/28/23 09:31	1
Toluene-d8 (Surr)	98		80 - 120					05/28/23 09:31	1
4-Bromofluorobenzene	100		76 - 120					05/28/23 09:31	1

Client Sample Results

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

Job ID: 240-185728-1

Client Sample ID: MW-43_051823

Lab Sample ID: 240-185728-3

Date Collected: 05/18/23 10:40

Matrix: Water

Date Received: 05/20/23 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.3	J	2.0	0.86	ug/L			05/27/23 11:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		75 - 133					05/27/23 11:03	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			05/28/23 09:54	1
cis-1,2-Dichloroethene	1.0	U *	1.0	0.46	ug/L			05/28/23 09:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 09:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 09:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 09:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/28/23 09:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		70 - 128					05/28/23 09:54	1
Dibromofluoromethane (Surr)	105		77 - 124					05/28/23 09:54	1
Toluene-d8 (Surr)	96		80 - 120					05/28/23 09:54	1
4-Bromofluorobenzene	100		76 - 120					05/28/23 09:54	1

Client Sample Results

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

Job ID: 240-185728-1

Client Sample ID: MW-42_051823

Lab Sample ID: 240-185728-4

Date Collected: 05/18/23 11:35

Matrix: Water

Date Received: 05/20/23 08:00

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			05/27/23 11:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	98		75 - 133					05/27/23 11:25	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			05/28/23 10:17	1
cis-1,2-Dichloroethene	1.0	U *	1.0	0.46	ug/L			05/28/23 10:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 10:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 10:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 10:17	1
Vinyl chloride	0.69	J	1.0	0.45	ug/L			05/28/23 10:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 128					05/28/23 10:17	1
Dibromofluoromethane (Surr)	104		77 - 124					05/28/23 10:17	1
Toluene-d8 (Surr)	98		80 - 120					05/28/23 10:17	1
4-Bromofluorobenzene	101		76 - 120					05/28/23 10:17	1

Client Sample Results

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

Job ID: 240-185728-1

Client Sample ID: DUP-04

Lab Sample ID: 240-185728-5

Date Collected: 05/18/23 00:00

Matrix: Water

Date Received: 05/20/23 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0		2.0	0.86	ug/L			05/27/23 11:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		75 - 133					05/27/23 11:46	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			05/28/23 10:40	1
cis-1,2-Dichloroethene	1.0	U *+	1.0	0.46	ug/L			05/28/23 10:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 10:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 10:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 10:40	1
Vinyl chloride	1.5		1.0	0.45	ug/L			05/28/23 10:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 128					05/28/23 10:40	1
Dibromofluoromethane (Surr)	101		77 - 124					05/28/23 10:40	1
Toluene-d8 (Surr)	98		80 - 120					05/28/23 10:40	1
4-Bromofluorobenzene	98		76 - 120					05/28/23 10:40	1

Surrogate Summary

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

Job ID: 240-185728-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (70-128)	DBFM (77-124)	TOL (80-120)	BFB (76-120)
240-185728-1	TRIP BLANK_36	109	115	68 S1-	106
240-185728-2	MW-52_051823	103	103	98	100
240-185728-3	MW-43_051823	93	105	96	100
240-185728-4	MW-42_051823	104	104	98	101
240-185728-5	DUP-04	101	101	98	98
240-185730-A-2 MS	Matrix Spike	86	96	97	104
240-185730-A-2 MSD	Matrix Spike Duplicate	85	96	109	110
LCS 460-911906/2	Lab Control Sample	88	101	91	116
MB 460-911906/6	Method Blank	98	103	97	105
Surrogate Legend					
DCA = 1,2-Dichloroethane-d4 (Surr)					
DBFM = Dibromofluoromethane (Surr)					
TOL = Toluene-d8 (Surr)					
BFB = 4-Bromofluorobenzene					

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	BFB (75-133)			
240-185728-2	MW-52_051823	97			
240-185728-3	MW-43_051823	98			
240-185728-4	MW-42_051823	98			
240-185728-5	DUP-04	97			
LCS 460-911865/2	Lab Control Sample	86			
LCSD 460-911865/3	Lab Control Sample Dup	94			
MB 460-911865/6	Method Blank	95			
Surrogate Legend					
BFB = 4-Bromofluorobenzene					

QC Sample Results

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

Job ID: 240-185728-1

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

Lab Sample ID: MB 460-911906/6

Matrix: Water

Analysis Batch: 911906

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/28/23 06:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/28/23 06:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 06:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/28/23 06:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/28/23 06:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/28/23 06:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 128		05/28/23 06:07	1
Dibromofluoromethane (Surr)	103		77 - 124		05/28/23 06:07	1
Toluene-d8 (Surr)	97		80 - 120		05/28/23 06:07	1
4-Bromofluorobenzene	105		76 - 120		05/28/23 06:07	1

Lab Sample ID: LCS 460-911906/2

Matrix: Water

Analysis Batch: 911906

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	23.9		ug/L		120	68 - 133
cis-1,2-Dichloroethene	20.0	24.7	*+	ug/L		123	78 - 121
Tetrachloroethene	20.0	22.1		ug/L		111	70 - 127
trans-1,2-Dichloroethene	20.0	25.2		ug/L		126	74 - 126
Trichloroethene	20.0	23.7		ug/L		119	71 - 121
Vinyl chloride	20.0	23.2		ug/L		116	55 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		70 - 128
Dibromofluoromethane (Surr)	101		77 - 124
Toluene-d8 (Surr)	91		80 - 120
4-Bromofluorobenzene	116		76 - 120

Lab Sample ID: 240-185730-A-2 MS

Matrix: Water

Analysis Batch: 911906

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
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	68 - 133
cis-1,2-Dichloroethene	1.0	U *+	20.0	19.8		ug/L		99	78 - 121
Tetrachloroethene	1.0	U	20.0	21.2		ug/L		106	70 - 127
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	74 - 126
Trichloroethene	1.0	U	20.0	19.3		ug/L		96	71 - 121
Vinyl chloride	1.0	U F1	20.0	26.6		ug/L		133	55 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		70 - 128
Dibromofluoromethane (Surr)	96		77 - 124
Toluene-d8 (Surr)	97		80 - 120

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QC Sample Results

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

Job ID: 240-185728-1

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

Lab Sample ID: 240-185730-A-2 MS

Matrix: Water

Analysis Batch: 911906

Client Sample ID: Matrix Spike

Prep Type: Total/NA

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene	104		76 - 120

Lab Sample ID: 240-185730-A-2 MSD

Matrix: Water

Analysis Batch: 911906

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	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	68 - 133	2	30
cis-1,2-Dichloroethene	1.0	U *	20.0	21.1		ug/L		105	78 - 121	6	30
Tetrachloroethene	1.0	U	20.0	24.8		ug/L		124	70 - 127	16	30
trans-1,2-Dichloroethene	1.0	U	20.0	20.6		ug/L		103	74 - 126	5	30
Trichloroethene	1.0	U	20.0	20.4		ug/L		102	71 - 121	6	30
Vinyl chloride	1.0	U F1	20.0	29.1	F1	ug/L		145	55 - 144	9	30

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		70 - 128
Dibromofluoromethane (Surr)	96		77 - 124
Toluene-d8 (Surr)	109		80 - 120
4-Bromofluorobenzene	110		76 - 120

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

Lab Sample ID: MB 460-911865/6

Matrix: Water

Analysis Batch: 911865

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/27/23 07:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	95		75 - 133		05/27/23 07:29	1

Lab Sample ID: LCS 460-911865/2

Matrix: Water

Analysis Batch: 911865

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	5.00	4.57		ug/L		91	57 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	86		75 - 133

Lab Sample ID: LCSD 460-911865/3

Matrix: Water

Analysis Batch: 911865

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	5.00	5.01		ug/L		100	57 - 124	9	30

Eurofins Cleveland

QC Sample Results

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

Job ID: 240-185728-1

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

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	94		75 - 133

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

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

Job ID: 240-185728-1

GC/MS VOA

Analysis Batch: 911865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-185728-2	MW-52_051823	Total/NA	Water	8260D SIM	
240-185728-3	MW-43_051823	Total/NA	Water	8260D SIM	
240-185728-4	MW-42_051823	Total/NA	Water	8260D SIM	
240-185728-5	DUP-04	Total/NA	Water	8260D SIM	
MB 460-911865/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 460-911865/2	Lab Control Sample	Total/NA	Water	8260D SIM	
LCSD 460-911865/3	Lab Control Sample Dup	Total/NA	Water	8260D SIM	

Analysis Batch: 911906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-185728-1	TRIP BLANK_36	Total/NA	Water	8260D	
240-185728-2	MW-52_051823	Total/NA	Water	8260D	
240-185728-3	MW-43_051823	Total/NA	Water	8260D	
240-185728-4	MW-42_051823	Total/NA	Water	8260D	
240-185728-5	DUP-04	Total/NA	Water	8260D	
MB 460-911906/6	Method Blank	Total/NA	Water	8260D	
LCS 460-911906/2	Lab Control Sample	Total/NA	Water	8260D	
240-185730-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-185730-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

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

Job ID: 240-185728-1

Client Sample ID: TRIP BLANK_36

Lab Sample ID: 240-185728-1

Date Collected: 05/18/23 00:00

Matrix: Water

Date Received: 05/20/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	911906	SZD	EET EDI	05/28/23 06:52

Client Sample ID: MW-52_051823

Lab Sample ID: 240-185728-2

Date Collected: 05/18/23 09:42

Matrix: Water

Date Received: 05/20/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	911906	SZD	EET EDI	05/28/23 09:31
Total/NA	Analysis	8260D SIM		1	911865	SZD	EET EDI	05/27/23 10:41

Client Sample ID: MW-43_051823

Lab Sample ID: 240-185728-3

Date Collected: 05/18/23 10:40

Matrix: Water

Date Received: 05/20/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	911906	SZD	EET EDI	05/28/23 09:54
Total/NA	Analysis	8260D SIM		1	911865	SZD	EET EDI	05/27/23 11:03

Client Sample ID: MW-42_051823

Lab Sample ID: 240-185728-4

Date Collected: 05/18/23 11:35

Matrix: Water

Date Received: 05/20/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	911906	SZD	EET EDI	05/28/23 10:17
Total/NA	Analysis	8260D SIM		1	911865	SZD	EET EDI	05/27/23 11:25

Client Sample ID: DUP-04

Lab Sample ID: 240-185728-5

Date Collected: 05/18/23 00:00

Matrix: Water

Date Received: 05/20/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	911906	SZD	EET EDI	05/28/23 10:40
Total/NA	Analysis	8260D SIM		1	911865	SZD	EET EDI	05/27/23 11:46

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 240-185728-1

Laboratory: Eurofins Edison

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

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

[illegible]

Eurofins - Canton Sample Receipt Form/Narrative		Login # : _____	
Barberton Facility			
Client <u>Arcadis</u>		Site Name _____	
Cooler Received on <u>5-20-23</u>		Opened on <u>5-20-23</u>	
FedEx: 1 st Grd Exp <u>UPS</u> <u>FAS</u> <u>Clipper</u>		Client Drop Off <u>Eurofins Courier</u> Other _____	
Receipt After-hours: Drop-off Date/Time _____		Storage Location _____	
Eurofins Cooler # <u>eeen</u>		Foam Box _____ Client Cooler _____ Box _____ Other _____	
Packing material used: <u>Bubble Wrap</u>		Foam _____ Plastic Bag _____ None _____ Other _____	
COOLANT: <u>Wet Ice</u>		Blue Ice _____ Dry Ice _____ Water _____ None _____	
1. Cooler temperature upon receipt		<input checked="" type="checkbox"/> 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 _____		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
-Were the seals on the outside of the cooler(s) signed & dated?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/> NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/> NA	
-Were tamper/custody seals intact and uncompromised?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/> NA	
3. Shippers' packing slip attached to the cooler(s)?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
4. Did custody papers accompany the sample(s)?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
5. Were the custody papers relinquished & signed in the appropriate place?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
6. Was/were the person(s) who collected the samples clearly identified on the COC?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
7. Did all bottles arrive in good condition (Unbroken)?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
10. Were correct bottle(s) used for the test(s) indicated?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
11. Sufficient quantity received to perform indicated analyses?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
12. Are these work share samples and all listed on the COC?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
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 <input checked="" type="radio"/> No <input checked="" type="radio"/> NA pH Strip Lot# HC208070	
14. Were VOAs on the COC?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
15. Were air bubbles >6 mm in any VOA vials? Larger than this.		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/> NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
17. Was a LL Hg or Me Hg trip blank present?		Yes <input checked="" type="radio"/> No <input checked="" type="radio"/>	
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____			
Concerning _____			

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES <input type="checkbox"/> 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: _____		

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 240-185728-1

Login Number: 185728

List Number: 2

Creator: Rivera, Kenneth

List Source: Eurofins Edison

List Creation: 05/25/23 10:14 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	2059440
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2°C, IR #9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VERIFICATION REPORT



June 05, 2023

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728

Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil

Project number: 30167538.401.03- onsite groundwater

Event Specific Scope of Work References: Sample COC

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory submittal: 185728-1

Sample date: 2023-05-18

Report received by CADENA: 2023-06-05

Initial Data Verification completed by CADENA: 2023-06-05

Number of Samples:5

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:

SUR - GCMS VOC surrogate recoveries were outside of laboratory control limits biased low but greater than 10% for at least 1 surrogate. These client sample results should be considered estimated and qualified with J flags if detected and UJ flags if non-detect: GCMS VOC sample -001 (trip blank) - UJ flags - all results.

LCS recoveries were outliers biased HIGH for these tests and analytes (or one LCS and the associated LCS/LCSD RPD). All associated client sample results were non-detect for these analytes so were not affected by the high bias and qualification was not required: GCMS VOC QC batch 911906 - cis-1,2-dichloroethylene.

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS VOC QC batch 911906.

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

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

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

Qualifiers added during verification have been added to the electronic data which is available for download from the CADENA CLMS. Refer to the attached table of analytical results that have been qualified during verification.

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.

Qualified Results Summary

CADENA Project ID: E203728

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory Submittal: 185728-1

Sample Name: TRIP BLANK_36

Lab Sample ID: 2401857281

Sample Date: 5/18/2023

Analyte	Cas No.	Result	Report	Units	Valid	
			Limit		Qualifier	
GC/MS VOC						
<u>OSW-8260D</u>						
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ	
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ	
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ	

Analytical Results Summary

CADENA Project ID: E203728

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory Submittal: 185728-1

		Sample Name: TRIP BLANK_36				MW-52_051823				MW-43_051823				MW-42_051823				DUP-04			
		Lab Sample ID: 2401857281				2401857282				2401857283				2401857284				2401857285			
		Sample Date: 5/18/2023				5/18/2023				5/18/2023				5/18/2023				5/18/2023			
Analyte	Cas No.	Report		Units	Valid	Report		Units	Valid	Report		Units	Valid	Report		Units	Valid	Report		Units	Valid
		Result	Limit			Result	Limit			Result	Limit			Result	Limit			Result	Limit		
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	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	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	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	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	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	UJ	1.4	1.0	ug/l	---	ND	1.0	ug/l	---	0.69	1.0	ug/l	J	1.5	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					2.8	2.0	ug/l	---	1.3	2.0	ug/l	J	ND	2.0	ug/l	---	3.0	2.0	ug/l	---