

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-182163-1

Eurofins Canton

Job Notes

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Authorization



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Authorized for release by
Michael DeMonico, Project Manager I
Michael.DeMonico@et.eurofinsus.com
(330)497-9396



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD 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.
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 U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Job ID: 240-182163-1

Laboratory: Eurofins Canton

Narrative

**Job Narrative
240-182163-1**

Receipt

The samples were received on 3/17/2023 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 0.8°C

GC/MS VOA

Method 8260D_SIM: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for 566343 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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

Protocol References:

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

Laboratory References:

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



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-182163-1	TRIP BLANK_87	Water	03/16/23 00:00	03/17/23 08:00
240-182163-2	MW-49_031623	Water	03/16/23 09:38	03/17/23 08:00
240-182163-3	MW-18_031623	Water	03/16/23 11:42	03/17/23 08:00
240-182163-4	MW-224S_031623	Water	03/16/23 12:32	03/17/23 08:00

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

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: TRIP BLANK_87

Lab Sample ID: 240-182163-1

No Detections.

Client Sample ID: MW-49_031623

Lab Sample ID: 240-182163-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	19		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	63000		2000	920	ug/L	2000		8260D	Total/NA
Trichloroethene	560	J	1000	440	ug/L	1000		8260D	Total/NA
Vinyl chloride	7600		1000	450	ug/L	1000		8260D	Total/NA

Client Sample ID: MW-18_031623

Lab Sample ID: 240-182163-3

No Detections.

Client Sample ID: MW-224S_031623

Lab Sample ID: 240-182163-4

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: TRIP BLANK_87

Lab Sample ID: 240-182163-1

Date Collected: 03/16/23 00:00

Matrix: Water

Date Received: 03/17/23 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			03/27/23 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/27/23 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/27/23 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/27/23 14:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		62 - 137		03/27/23 14:16	1
4-Bromofluorobenzene (Surr)	89		56 - 136		03/27/23 14:16	1
Toluene-d8 (Surr)	96		78 - 122		03/27/23 14:16	1
Dibromofluoromethane (Surr)	94		73 - 120		03/27/23 14:16	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: MW-49_031623

Lab Sample ID: 240-182163-2

Date Collected: 03/16/23 09:38

Matrix: Water

Date Received: 03/17/23 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	19		2.0	0.86	ug/L			03/22/23 12:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		66 - 120					03/22/23 12:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1000	U	1000	490	ug/L			03/27/23 21:46	1000
cis-1,2-Dichloroethene	63000		2000	920	ug/L			03/28/23 20:34	2000
Tetrachloroethene	1000	U	1000	440	ug/L			03/27/23 21:46	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			03/27/23 21:46	1000
Trichloroethene	560	J	1000	440	ug/L			03/27/23 21:46	1000
Vinyl chloride	7600		1000	450	ug/L			03/27/23 21:46	1000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137					03/27/23 21:46	1000
1,2-Dichloroethane-d4 (Surr)	98		62 - 137					03/28/23 20:34	2000
4-Bromofluorobenzene (Surr)	87		56 - 136					03/27/23 21:46	1000
4-Bromofluorobenzene (Surr)	86		56 - 136					03/28/23 20:34	2000
Toluene-d8 (Surr)	96		78 - 122					03/27/23 21:46	1000
Toluene-d8 (Surr)	95		78 - 122					03/28/23 20:34	2000
Dibromofluoromethane (Surr)	94		73 - 120					03/27/23 21:46	1000
Dibromofluoromethane (Surr)	93		73 - 120					03/28/23 20:34	2000

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: MW-18_031623

Lab Sample ID: 240-182163-3

Date Collected: 03/16/23 11:42

Matrix: Water

Date Received: 03/17/23 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			03/22/23 12:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		66 - 120					03/22/23 12:39	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			03/27/23 16:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/27/23 16:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 16:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/27/23 16:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 16:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/27/23 16:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137					03/27/23 16:46	1
4-Bromofluorobenzene (Surr)	87		56 - 136					03/27/23 16:46	1
Toluene-d8 (Surr)	95		78 - 122					03/27/23 16:46	1
Dibromofluoromethane (Surr)	97		73 - 120					03/27/23 16:46	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: MW-224S_031623

Lab Sample ID: 240-182163-4

Date Collected: 03/16/23 12:32

Matrix: Water

Date Received: 03/17/23 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			03/22/23 13:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		66 - 120					03/22/23 13:03	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			03/27/23 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/27/23 17:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/27/23 17:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 17:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/27/23 17:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137					03/27/23 17:10	1
4-Bromofluorobenzene (Surr)	89		56 - 136					03/27/23 17:10	1
Toluene-d8 (Surr)	96		78 - 122					03/27/23 17:10	1
Dibromofluoromethane (Surr)	97		73 - 120					03/27/23 17:10	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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)
240-182163-1	TRIP BLANK_87	97	89	96	94
240-182163-2	MW-49_031623	101	87	96	94
240-182163-2	MW-49_031623	98	86	95	93
240-182163-2 MS	MW-49_031623	93	101	98	92
240-182163-2 MSD	MW-49_031623	94	100	99	92
240-182163-3	MW-18_031623	100	87	95	97
240-182163-4	MW-224S_031623	101	89	96	97
240-182163-4 MS	MW-224S_031623	94	100	98	93
240-182163-4 MSD	MW-224S_031623	94	99	98	93
LCS 240-566827/4	Lab Control Sample	93	101	97	93
LCS 240-567035/4	Lab Control Sample	92	100	98	92
MB 240-566827/7	Method Blank	99	89	97	95
MB 240-567035/7	Method Blank	100	90	97	96

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)
240-182163-2	MW-49_031623	120
240-182163-3	MW-18_031623	110
240-182163-4	MW-224S_031623	98
240-182164-F-3 MS	Matrix Spike	96
240-182164-F-3 MSD	Matrix Spike Duplicate	112
LCS 240-566343/4	Lab Control Sample	89
MB 240-566343/6	Method Blank	93

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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

Lab Sample ID: MB 240-566827/7

Matrix: Water

Analysis Batch: 566827

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			03/27/23 13:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/27/23 13:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 13:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/27/23 13:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/27/23 13:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/27/23 13:51	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	99		62 - 137		03/27/23 13:51	1
4-Bromofluorobenzene (Surr)	89		56 - 136		03/27/23 13:51	1
Toluene-d8 (Surr)	97		78 - 122		03/27/23 13:51	1
Dibromofluoromethane (Surr)	95		73 - 120		03/27/23 13:51	1

Lab Sample ID: LCS 240-566827/4

Matrix: Water

Analysis Batch: 566827

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	25.0	23.1		ug/L		93	77 - 123
Tetrachloroethene	25.0	26.3		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	24.0		ug/L		96	70 - 122
Vinyl chloride	12.5	8.58		ug/L		69	60 - 144

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-182163-4 MS

Matrix: Water

Analysis Batch: 566827

Client Sample ID: MW-224S_031623

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	24.0		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	1.0	U	12.5	8.81		ug/L		71	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	98		78 - 122

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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

Lab Sample ID: 240-182163-4 MS
Matrix: Water
Analysis Batch: 566827

Client Sample ID: MW-224S_031623
Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	93		73 - 120

Lab Sample ID: 240-182163-4 MSD
Matrix: Water
Analysis Batch: 566827

Client Sample ID: MW-224S_031623
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
1,1-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136	3	15
Trichloroethene	1.0	U	25.0	22.8		ug/L		91	61 - 124	1	15
Vinyl chloride	1.0	U	12.5	8.52		ug/L		68	43 - 157	3	24

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	94		62 - 137
<i>4-Bromofluorobenzene (Surr)</i>	99		56 - 136
<i>Toluene-d8 (Surr)</i>	98		78 - 122
<i>Dibromofluoromethane (Surr)</i>	93		73 - 120

Lab Sample ID: MB 240-567035/7
Matrix: Water
Analysis Batch: 567035

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			03/28/23 14:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/28/23 14:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/28/23 14:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/28/23 14:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/28/23 14:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/28/23 14:18	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>MB MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>1,2-Dichloroethane-d4 (Surr)</i>	100		62 - 137		03/28/23 14:18	1
<i>4-Bromofluorobenzene (Surr)</i>	90		56 - 136		03/28/23 14:18	1
<i>Toluene-d8 (Surr)</i>	97		78 - 122		03/28/23 14:18	1
<i>Dibromofluoromethane (Surr)</i>	96		73 - 120		03/28/23 14:18	1

Lab Sample ID: LCS 240-567035/4
Matrix: Water
Analysis Batch: 567035

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	27.5		ug/L		110	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122

Eurofins Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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

Lab Sample ID: LCS 240-567035/4

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 567035

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	12.5	9.62		ug/L		77	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-182163-2 MS

Client Sample ID: MW-49_031623

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 567035

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	2000	U	50000	47400		ug/L		95	56 - 135
cis-1,2-Dichloroethene	63000		50000	106000		ug/L		86	66 - 128
Tetrachloroethene	2000	U	50000	47300		ug/L		95	62 - 131
trans-1,2-Dichloroethene	2000	U	50000	45700		ug/L		91	56 - 136
Trichloroethene	2000	U	50000	46300		ug/L		93	61 - 124
Vinyl chloride	7300		25000	23500		ug/L		65	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-182163-2 MSD

Client Sample ID: MW-49_031623

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 567035

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	2000	U	50000	46900		ug/L		94	56 - 135	1	26
cis-1,2-Dichloroethene	63000		50000	105000		ug/L		84	66 - 128	1	14
Tetrachloroethene	2000	U	50000	47100		ug/L		94	62 - 131	0	20
trans-1,2-Dichloroethene	2000	U	50000	46000		ug/L		92	56 - 136	1	15
Trichloroethene	2000	U	50000	45500		ug/L		91	61 - 124	2	15
Vinyl chloride	7300		25000	23600		ug/L		65	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

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

Lab Sample ID: MB 240-566343/6
Matrix: Water
Analysis Batch: 566343

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			03/22/23 11:50	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		66 - 120					03/22/23 11:50	1

Lab Sample ID: LCS 240-566343/4
Matrix: Water
Analysis Batch: 566343

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	10.9		ug/L		109	80 - 122
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	89		66 - 120				

Lab Sample ID: 240-182164-F-3 MS
Matrix: Water
Analysis Batch: 566343

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 F2	10.0	11.0		ug/L		110	51 - 153
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	96		66 - 120						

Lab Sample ID: 240-182164-F-3 MSD
Matrix: Water
Analysis Batch: 566343

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
1,4-Dioxane	2.0	U F2	10.0	14.4	F2	ug/L		144	51 - 153	27	16
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	112		66 - 120								

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

GC/MS VOA

Analysis Batch: 566343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-182163-2	MW-49_031623	Total/NA	Water	8260D SIM	
240-182163-3	MW-18_031623	Total/NA	Water	8260D SIM	
240-182163-4	MW-224S_031623	Total/NA	Water	8260D SIM	
MB 240-566343/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-566343/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-182164-F-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-182164-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 566827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-182163-1	TRIP BLANK_87	Total/NA	Water	8260D	
240-182163-2	MW-49_031623	Total/NA	Water	8260D	
240-182163-3	MW-18_031623	Total/NA	Water	8260D	
240-182163-4	MW-224S_031623	Total/NA	Water	8260D	
MB 240-566827/7	Method Blank	Total/NA	Water	8260D	
LCS 240-566827/4	Lab Control Sample	Total/NA	Water	8260D	
240-182163-4 MS	MW-224S_031623	Total/NA	Water	8260D	
240-182163-4 MSD	MW-224S_031623	Total/NA	Water	8260D	

Analysis Batch: 567035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-182163-2	MW-49_031623	Total/NA	Water	8260D	
MB 240-567035/7	Method Blank	Total/NA	Water	8260D	
LCS 240-567035/4	Lab Control Sample	Total/NA	Water	8260D	
240-182163-2 MS	MW-49_031623	Total/NA	Water	8260D	
240-182163-2 MSD	MW-49_031623	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Client Sample ID: TRIP BLANK_87

Lab Sample ID: 240-182163-1

Date Collected: 03/16/23 00:00

Matrix: Water

Date Received: 03/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	566827	BAJ	EET CAN	03/27/23 14:16

Client Sample ID: MW-49_031623

Lab Sample ID: 240-182163-2

Date Collected: 03/16/23 09:38

Matrix: Water

Date Received: 03/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1000	566827	BAJ	EET CAN	03/27/23 21:46
Total/NA	Analysis	8260D		2000	567035	BAJ	EET CAN	03/28/23 20:34
Total/NA	Analysis	8260D SIM		1	566343	BAJ	EET CAN	03/22/23 12:14

Client Sample ID: MW-18_031623

Lab Sample ID: 240-182163-3

Date Collected: 03/16/23 11:42

Matrix: Water

Date Received: 03/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	566827	BAJ	EET CAN	03/27/23 16:46
Total/NA	Analysis	8260D SIM		1	566343	BAJ	EET CAN	03/22/23 12:39

Client Sample ID: MW-224S_031623

Lab Sample ID: 240-182163-4

Date Collected: 03/16/23 12:32

Matrix: Water

Date Received: 03/17/23 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	566827	BAJ	EET CAN	03/27/23 17:10
Total/NA	Analysis	8260D SIM		1	566343	BAJ	EET CAN	03/22/23 13:03

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP - On Site

Job ID: 240-182163-1

Laboratory: Eurofins Canton

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	02-27-23 *
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-28-24
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23 *
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-23 *
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-28-24
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
West Virginia DEP	State	210	12-31-23

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



Chain of Custody Record

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

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Site Contact: Christina Weaver
Lab Contact: Mike DeMonico
Telephone: 248-994-2240 Telephone: 248-994-2240 Telephone: 330-497-9396

Email: kristoffer.hinskey@arcadis.com

Company Name: Arcadis
Address: 28550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Project Name: Ford I.T.P. On-Site
Project Number: 30167538-401.03
PO # 30167538-401.03

Sampler Name: Sommer Guy
Method of Shipment/Carrier:
Shipping/Tracking No:

Sample Identification	Sample Date	Sample Time	Matrix						Containers & Preservatives						Filtered Sample (Y / N)	Composite (C / Grab-G)	Analyses						Sample Specific Notes / Special Instructions:			
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	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		
TRIP BLANK_ 87		---	1																							1 Trip Blank
MW-49-031623	3/16/23	0938	6																							3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-18-031623	3/16/23	1142	6																							
MW-2245-031623	3/16/23	1232	6																							



Possible Hazard Identification: Non-Hazard flammable Irritant Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements & Comments:
Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	3/16/23 1430	Sommer Guy	Arcadis	3/16/23 1430
Jessie Spink	Arcadis	3/16/23 15:11	Julie JC	EENA	3/16/23
Julie JC	EENA	3/16/23	Marcus Bl	EEPC	3-17-23 8:00

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Barberton Facility

Client Arcado

Site Name _____

Cooler unpacked by:

Mamolsky

Cooler Received on 3-17-23

Opened on 3-17-23

FedEx: 1st Grd Exp UPS FAS Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____

Storage Location _____

Eurofins Cooler # 0017K 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 # IR-13 (CF -0.2 °C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 0.8 °C
 - IR GUN # IR-16 (CF -0.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 - IR GUN # IR-17 (CF -0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

- 2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____
 - Were the seals on the outside of the cooler(s) 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# HC293086
- 14. Were VOAs on the COC? Yes No NA
- 15. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
- 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- 17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the 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



March 29, 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 - Barberton

Laboratory submittal: 182163-1

Sample date: 2023-03-16

Report received by CADENA: 2023-03-29

Initial Data Verification completed by CADENA: 2023-03-29

Number of Samples:4

Sample Matrices: Water and trip blank

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:

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-SIM VOC QC batch 566343.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD 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.

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 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: E203728

Laboratory: Eurofins Environment Testing LLC - Barberton

Laboratory Submittal: 182163-1

Analyte	Cas No.	Sample Name: TRIP BLANK_87				MW-49_031623				MW-18_031623				MW-224S_031623			
		Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier	Result	Limit	Units	Valid Qualifier
		2401821631				2401821632				2401821633				2401821634			
		3/16/2023				3/16/2023				3/16/2023				3/16/2023			

GC/MS VOC

OSW-8260D

1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	63000	2000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1000	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	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	560	1000	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	7600	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---

OSW-8260DSIM

1,4-Dioxane	123-91-1					19	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---
-------------	----------	--	--	--	--	----	-----	------	-----	----	-----	------	-----	----	-----	------	-----