

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-200154-1

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Job Notes

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Authorization



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Definitions/Glossary

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

Job ID: 240-200154-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
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.
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: Ford LTP - On Site

Job ID: 240-200154-1

Job ID: 240-200154-1

Eurofins Cleveland

Job Narrative 240-200154-1

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 2/28/2024 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 4 coolers at receipt time were 2.3°C, 2.6°C, 3.1°C and 4.2°C.

GC/MS VOA

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

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Method Summary

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

Job ID: 240-200154-1

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

Job ID: 240-200154-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-200154-1	TRIP BLANK_98	Water	02/26/24 00:00	02/28/24 10:00
240-200154-2	MW-20_022624	Water	02/26/24 10:20	02/28/24 10:00
240-200154-3	DUP-03	Water	02/26/24 00:00	02/28/24 10:00
240-200154-4	MW-18_022624	Water	02/26/24 11:55	02/28/24 10:00
240-200154-5	MW-64_022624	Water	02/26/24 13:05	02/28/24 10:00
240-200154-6	MW-49_022624	Water	02/26/24 14:35	02/28/24 10:00

- 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: 240-200154-1

Client Sample ID: TRIP BLANK_98

Lab Sample ID: 240-200154-1

No Detections.

Client Sample ID: MW-20_022624

Lab Sample ID: 240-200154-2

No Detections.

Client Sample ID: DUP-03

Lab Sample ID: 240-200154-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	9.5		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	52000		1000	460	ug/L	1000		8260D	Total/NA
Vinyl chloride	10000		1000	450	ug/L	1000		8260D	Total/NA

Client Sample ID: MW-18_022624

Lab Sample ID: 240-200154-4

No Detections.

Client Sample ID: MW-64_022624

Lab Sample ID: 240-200154-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.78	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	3.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-49_022624

Lab Sample ID: 240-200154-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.9		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	51000		1000	460	ug/L	1000		8260D	Total/NA
Vinyl chloride	9700		1000	450	ug/L	1000		8260D	Total/NA

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: 240-200154-1

Client Sample ID: TRIP BLANK_98

Lab Sample ID: 240-200154-1

Date Collected: 02/26/24 00:00

Matrix: Water

Date Received: 02/28/24 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			03/04/24 17:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/04/24 17:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 17:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/04/24 17:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 17:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/04/24 17:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		62 - 137		03/04/24 17:07	1
4-Bromofluorobenzene (Surr)	88		56 - 136		03/04/24 17:07	1
Toluene-d8 (Surr)	91		78 - 122		03/04/24 17:07	1
Dibromofluoromethane (Surr)	110		73 - 120		03/04/24 17:07	1

Client Sample Results

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

Job ID: 240-200154-1

Client Sample ID: MW-20_022624

Lab Sample ID: 240-200154-2

Date Collected: 02/26/24 10:20

Matrix: Water

Date Received: 02/28/24 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			03/05/24 13:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		68 - 127					03/05/24 13:20	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			03/04/24 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/04/24 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/04/24 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 17:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/04/24 17:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		62 - 137					03/04/24 17:30	1
4-Bromofluorobenzene (Surr)	91		56 - 136					03/04/24 17:30	1
Toluene-d8 (Surr)	92		78 - 122					03/04/24 17:30	1
Dibromofluoromethane (Surr)	111		73 - 120					03/04/24 17:30	1

Client Sample Results

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

Job ID: 240-200154-1

Client Sample ID: DUP-03

Lab Sample ID: 240-200154-3

Date Collected: 02/26/24 00:00

Matrix: Water

Date Received: 02/28/24 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	9.5		2.0	0.86	ug/L			03/05/24 13:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		68 - 127					03/05/24 13:44	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			03/04/24 17:53	1000
cis-1,2-Dichloroethene	52000		1000	460	ug/L			03/04/24 17:53	1000
Tetrachloroethene	1000	U	1000	440	ug/L			03/04/24 17:53	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			03/04/24 17:53	1000
Trichloroethene	1000	U	1000	440	ug/L			03/04/24 17:53	1000
Vinyl chloride	10000		1000	450	ug/L			03/04/24 17:53	1000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		62 - 137					03/04/24 17:53	1000
4-Bromofluorobenzene (Surr)	90		56 - 136					03/04/24 17:53	1000
Toluene-d8 (Surr)	92		78 - 122					03/04/24 17:53	1000
Dibromofluoromethane (Surr)	105		73 - 120					03/04/24 17:53	1000

Client Sample Results

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

Job ID: 240-200154-1

Client Sample ID: MW-18_022624

Lab Sample ID: 240-200154-4

Date Collected: 02/26/24 11:55

Matrix: Water

Date Received: 02/28/24 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			03/05/24 14:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		68 - 127					03/05/24 14:08	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			03/04/24 18:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/04/24 18:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/04/24 18:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 18:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/04/24 18:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		62 - 137					03/04/24 18:17	1
4-Bromofluorobenzene (Surr)	85		56 - 136					03/04/24 18:17	1
Toluene-d8 (Surr)	91		78 - 122					03/04/24 18:17	1
Dibromofluoromethane (Surr)	113		73 - 120					03/04/24 18:17	1

Client Sample Results

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

Job ID: 240-200154-1

Client Sample ID: MW-64_022624

Lab Sample ID: 240-200154-5

Date Collected: 02/26/24 13:05

Matrix: Water

Date Received: 02/28/24 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			03/05/24 14:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		68 - 127					03/05/24 14:32	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			03/04/24 18:40	1
cis-1,2-Dichloroethene	0.78	J	1.0	0.46	ug/L			03/04/24 18:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/04/24 18:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 18:40	1
Vinyl chloride	3.9		1.0	0.45	ug/L			03/04/24 18:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		62 - 137					03/04/24 18:40	1
4-Bromofluorobenzene (Surr)	89		56 - 136					03/04/24 18:40	1
Toluene-d8 (Surr)	93		78 - 122					03/04/24 18:40	1
Dibromofluoromethane (Surr)	112		73 - 120					03/04/24 18:40	1

Client Sample Results

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

Job ID: 240-200154-1

Client Sample ID: MW-49_022624

Lab Sample ID: 240-200154-6

Date Collected: 02/26/24 14:35

Matrix: Water

Date Received: 02/28/24 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	8.9		2.0	0.86	ug/L			03/05/24 14:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		68 - 127					03/05/24 14:56	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			03/04/24 19:03	1000
cis-1,2-Dichloroethene	51000		1000	460	ug/L			03/04/24 19:03	1000
Tetrachloroethene	1000	U	1000	440	ug/L			03/04/24 19:03	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			03/04/24 19:03	1000
Trichloroethene	1000	U	1000	440	ug/L			03/04/24 19:03	1000
Vinyl chloride	9700		1000	450	ug/L			03/04/24 19:03	1000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		62 - 137					03/04/24 19:03	1000
4-Bromofluorobenzene (Surr)	90		56 - 136					03/04/24 19:03	1000
Toluene-d8 (Surr)	92		78 - 122					03/04/24 19:03	1000
Dibromofluoromethane (Surr)	109		73 - 120					03/04/24 19:03	1000

Surrogate Summary

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

Job ID: 240-200154-1

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)
240-200153-E-3 MS	Matrix Spike	104	98	95	100
240-200153-E-3 MSD	Matrix Spike Duplicate	104	95	95	98
240-200154-1	TRIP BLANK_98	115	88	91	110
240-200154-2	MW-20_022624	117	91	92	111
240-200154-3	DUP-03	110	90	92	105
240-200154-4	MW-18_022624	113	85	91	113
240-200154-5	MW-64_022624	122	89	93	112
240-200154-6	MW-49_022624	116	90	92	109
LCS 240-604807/4	Lab Control Sample	103	98	98	101
MB 240-604807/7	Method Blank	108	89	93	105

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 (68-127)
240-200101-E-2 MS	Matrix Spike	102
240-200101-E-2 MSD	Matrix Spike Duplicate	106
240-200154-2	MW-20_022624	97
240-200154-3	DUP-03	100
240-200154-4	MW-18_022624	101
240-200154-5	MW-64_022624	102
240-200154-6	MW-49_022624	92
LCS 240-604941/4	Lab Control Sample	100
MB 240-604941/7	Method Blank	112

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-200154-1

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

Lab Sample ID: MB 240-604807/7

Matrix: Water

Analysis Batch: 604807

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			03/04/24 11:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/04/24 11:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 11:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/04/24 11:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/04/24 11:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/04/24 11:16	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	108		62 - 137		03/04/24 11:16	1
4-Bromofluorobenzene (Surr)	89		56 - 136		03/04/24 11:16	1
Toluene-d8 (Surr)	93		78 - 122		03/04/24 11:16	1
Dibromofluoromethane (Surr)	105		73 - 120		03/04/24 11:16	1

Lab Sample ID: LCS 240-604807/4

Matrix: Water

Analysis Batch: 604807

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	24.2		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	26.3		ug/L		105	75 - 124
Trichloroethene	25.0	25.8		ug/L		103	70 - 122
Vinyl chloride	12.5	9.46		ug/L		76	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)	98		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120

Lab Sample ID: 240-200153-E-3 MS

Matrix: Water

Analysis Batch: 604807

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	100	U	2500	2030		ug/L		81	56 - 135
cis-1,2-Dichloroethene	5300	F1	2500	7180	E	ug/L		74	66 - 128
Tetrachloroethene	100	U	2500	1940		ug/L		78	62 - 131
trans-1,2-Dichloroethene	840		2500	2990		ug/L		86	56 - 136
Trichloroethene	100	U	2500	2150		ug/L		86	61 - 124
Vinyl chloride	300		1250	1120		ug/L		66	43 - 157

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	104		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	95		78 - 122

Eurofins Cleveland

QC Sample Results

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

Job ID: 240-200154-1

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

Lab Sample ID: 240-200153-E-3 MS
Matrix: Water
Analysis Batch: 604807

Client Sample ID: Matrix Spike
Prep Type: Total/NA

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
Dibromofluoromethane (Surr)	100		73 - 120

Lab Sample ID: 240-200153-E-3 MSD
Matrix: Water
Analysis Batch: 604807

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		Limit
1,1-Dichloroethene	100	U	2500	2250		ug/L		90	56 - 135	10	26
cis-1,2-Dichloroethene	5300	F1	2500	6900	E F1	ug/L		62	66 - 128	4	14
Tetrachloroethene	100	U	2500	2080		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	840		2500	3090		ug/L		90	56 - 136	3	15
Trichloroethene	100	U	2500	2280		ug/L		91	61 - 124	6	15
Vinyl chloride	300		1250	1140		ug/L		67	43 - 157	2	24

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	95		78 - 122
Dibromofluoromethane (Surr)	98		73 - 120

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

Lab Sample ID: MB 240-604941/7
Matrix: Water
Analysis Batch: 604941

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			03/05/24 09:45	1

	MB	MB		Prepared	Analyzed	Dil Fac
Surrogate	%Recovery	Qualifier	Limits			
1,2-Dichloroethane-d4 (Surr)	112		68 - 127		03/05/24 09:45	1

Lab Sample ID: LCS 240-604941/4
Matrix: Water
Analysis Batch: 604941

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
1,4-Dioxane	10.0	9.12		ug/L		91	75 - 121

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		68 - 127

Lab Sample ID: 240-200101-E-2 MS
Matrix: Water
Analysis Batch: 604941

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec
	Result	Qualifier	Added	Result	Qualifier				Limits
1,4-Dioxane	2.0	U	10.0	8.46		ug/L		85	20 - 180

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QC Sample Results

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

Job ID: 240-200154-1

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	102		68 - 127

Lab Sample ID: 240-200101-E-2 MSD
Matrix: Water
Analysis Batch: 604941

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	20 - 180	7	20

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	106		68 - 127

QC Association Summary

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

Job ID: 240-200154-1

GC/MS VOA

Analysis Batch: 604807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200154-1	TRIP BLANK_98	Total/NA	Water	8260D	
240-200154-2	MW-20_022624	Total/NA	Water	8260D	
240-200154-3	DUP-03	Total/NA	Water	8260D	
240-200154-4	MW-18_022624	Total/NA	Water	8260D	
240-200154-5	MW-64_022624	Total/NA	Water	8260D	
240-200154-6	MW-49_022624	Total/NA	Water	8260D	
MB 240-604807/7	Method Blank	Total/NA	Water	8260D	
LCS 240-604807/4	Lab Control Sample	Total/NA	Water	8260D	
240-200153-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-200153-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 604941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200154-2	MW-20_022624	Total/NA	Water	8260D SIM	
240-200154-3	DUP-03	Total/NA	Water	8260D SIM	
240-200154-4	MW-18_022624	Total/NA	Water	8260D SIM	
240-200154-5	MW-64_022624	Total/NA	Water	8260D SIM	
240-200154-6	MW-49_022624	Total/NA	Water	8260D SIM	
MB 240-604941/7	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-604941/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-200101-E-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-200101-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

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

Job ID: 240-200154-1

Client Sample ID: TRIP BLANK_98

Lab Sample ID: 240-200154-1

Date Collected: 02/26/24 00:00

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	604807	LEE	EET CLE	03/04/24 17:07

Client Sample ID: MW-20_022624

Lab Sample ID: 240-200154-2

Date Collected: 02/26/24 10:20

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	604807	LEE	EET CLE	03/04/24 17:30
Total/NA	Analysis	8260D SIM		1	604941	MDH	EET CLE	03/05/24 13:20

Client Sample ID: DUP-03

Lab Sample ID: 240-200154-3

Date Collected: 02/26/24 00:00

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1000	604807	LEE	EET CLE	03/04/24 17:53
Total/NA	Analysis	8260D SIM		1	604941	MDH	EET CLE	03/05/24 13:44

Client Sample ID: MW-18_022624

Lab Sample ID: 240-200154-4

Date Collected: 02/26/24 11:55

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	604807	LEE	EET CLE	03/04/24 18:17
Total/NA	Analysis	8260D SIM		1	604941	MDH	EET CLE	03/05/24 14:08

Client Sample ID: MW-64_022624

Lab Sample ID: 240-200154-5

Date Collected: 02/26/24 13:05

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	604807	LEE	EET CLE	03/04/24 18:40
Total/NA	Analysis	8260D SIM		1	604941	MDH	EET CLE	03/05/24 14:32

Client Sample ID: MW-49_022624

Lab Sample ID: 240-200154-6

Date Collected: 02/26/24 14:35

Matrix: Water

Date Received: 02/28/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1000	604807	LEE	EET CLE	03/04/24 19:03
Total/NA	Analysis	8260D SIM		1	604941	MDH	EET CLE	03/05/24 14:56

Laboratory References:

EET CLE = Eurofins Cleveland, 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: 240-200154-1

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 *
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (WW)	State	KY98016	12-30-24
Minnesota	NELAP	039-999-348	12-31-24
New Jersey	NELAP	OH001	07-01-24
New York	NELAP	10975	04-01-24
Oregon	NELAP	4062	02-27-25
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
USDA	US Federal Programs	P330-18-00281	01-05-27
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-24

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

Eurofins - Cleveland Sample Receipt Form/Narrative Login #
 Barberton Facility

Client FRACDIS Site Name _____ Cooler unpacked by M. J. ...
 Cooler Received on 2-28-20 Opened on 2-28-20

FedEx: 1st GRD Exp. UPS PAKS Waypoint Client Drop Off Eurofins Courier Other _____
 Receipt After-hour? Yes Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 2 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 _____ Yes Yes No NA
 -Were the seals on the outside of the cooler(s) signed & dated? Yes Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes Yes No NA

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

3 Shippers' packing slip attached to the cooler(s)? Yes No NA
 4. Did custody papers accompany the sample(s)? Yes No NA
 5 Were the custody papers relinquished & signed in the appropriate place? Yes No NA
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No NA
 7 Did all bottles arrive in good condition (Unbroken)? Yes No NA
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No NA
 9 For each sample, does the COC specify preservatives (DAN), # of containers (DAN), and sample type of grab/comp (DAN)? Yes No NA
 10 Were correct bottle(s) used for the test(s) indicated? Yes No NA
 11 Sufficient quantity received to perform indicated analyses? Yes No NA
 12 Are these work share samples and all listed on the COC? Yes No NA
 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HCC316719
 14 Were VOAs on the COC? Yes No NA
 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 # _____ Yes Yes No NA
 17 Was a LL Hg or Me Hg trip blank present? Yes Yes No NA

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 07, 2024

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
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Cleveland
Laboratory submittal: 200154-1
Sample date: 2024-02-26
Report received by CADENA: 2024-03-06
Initial Data Verification completed by CADENA: 2024-03-07
Number of Samples:6
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 VOC QC batch 604807.

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 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 - Cleveland

Laboratory Submittal: 200154-1

Analyte	Cas No.	Sample Name: TRIP BLANK_98				MW-20_022624				DUP-03				MW-18_022624				MW-64_022624				MW-49_022624			
		Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC																									
<u>OSW-8260D</u>																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	52000	1000	ug/l	---	ND	1.0	ug/l	---	0.78	1.0	ug/l	J	51000	1000	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1000	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	10000	1000	ug/l	---	ND	1.0	ug/l	---	3.9	1.0	ug/l	---	9700	1000	ug/l	---
<u>OSW-8260DSIM</u>																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	9.5	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	8.9	2.0	ug/l	---