# 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 - Off Site

# **JOB NUMBER**

240-181593-1

Eurofins Canton 180 S. Van Buren Avenue Barberton OH 44203

# **Eurofins Canton**

# **Job Notes**

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# **Authorization**

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Authorized for release by Michael DelMonico, Project Manager I Michael.DelMonico@et.eurofinsus.com (330)497-9396 4

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Laboratory Job ID: 240-181593-1

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# **Definitions/Glossary**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

# **Qualifiers**

# **GC/MS VOA**

Qualifier **Qualifier Description** 

Indicates the analyte was analyzed for but not detected.

# **Glossary**

Appreviation	These commonly used appreviations may or may not be present in this report.
n	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

Decision Level Concentration (Radiochemistry) DLC

Estimated Detection Limit (Dioxin) EDL 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 **Quality Control** 

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

**Eurofins Canton** 

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# **Case Narrative**

Client: ARCADIS U.S., Inc.

Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Job ID: 240-181593-1

**Laboratory: Eurofins Canton** 

Narrative

Job Narrative 240-181593-1

### Receipt

The samples were received on 3/9/2023 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 2.6°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 - Off Site

Job ID: 240-181593-1

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

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# **Sample Summary**

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-181593-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-181593-1	TRIP BLANK_55	Water	03/07/23 00:00	03/09/23 08:00
240-181593-2	MW-111S_030723	Water	03/07/23 12:35	03/09/23 08:00

# **Detection Summary**

Client: ARCADIS U.S., Inc.

Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK\_55 Lab Sample ID: 240-181593-1

No Detections.

Client Sample ID: MW-111S\_030723 Lab Sample ID: 240-181593-2

No Detections.

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# **Client Sample Results**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Date Received: 03/09/23 08:00

Client Sample ID: TRIP BLANK\_55

Lab Sample ID: 240-181593-1 Date Collected: 03/07/23 00:00

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/13/23 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/13/23 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/13/23 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/13/23 14:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137			-		03/13/23 14:40	1
4-Bromofluorobenzene (Surr)	96		56 <sub>-</sub> 136					03/13/23 14:40	1
Toluene-d8 (Surr)	103		78 - 122					03/13/23 14:40	1
Dibromofluoromethane (Surr)	111		73 - 120					03/13/23 14:40	1

# **Client Sample Results**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Date Received: 03/09/23 08:00

Client Sample ID: MW-111S\_030723

Lab Sample ID: 240-181593-2 Date Collected: 03/07/23 12:35

**Matrix: Water** 

Method: SW846 8260D SIM - Volati	le Organic C	ompounds	(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			03/16/23 13:46	1
Surrogate	%Recovery	Qualifier	Limits			-	Prepared	Analyzed	Dil Fac

1,2-Dichloroethane-d4 (Surr)	84		66 - 120					03/16/23 13:46	1
- Method: SW846 8260D - Volati	le Organic Comp	ounds by G	C/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/13/23 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/13/23 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/13/23 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/13/23 15:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137			-		03/13/23 15:03	1
4-Bromofluorobenzene (Surr)	86		56 <sub>-</sub> 136					03/13/23 15:03	1
Toluene-d8 (Surr)	91		78 - 122					03/13/23 15:03	1
Dibromofluoromethane (Surr)	99		73 - 120					03/13/23 15:03	1

# **Surrogate Summary**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1 Project/Site: Ford LTP - Off Site

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

Matrix: Water Prep Type: Total/NA

				Percent Sur	rogate Reco
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-181593-1	TRIP BLANK_55	107	96	103	111
240-181593-2	MW-111S_030723	100	86	91	99
240-181595-Q-2 MSD	Matrix Spike Duplicate	94	92	93	92
240-181595-R-2 MS	Matrix Spike	96	91	93	96
LCS 240-565082/5	Lab Control Sample	97	104	103	100
MB 240-565082/8	Method Blank	103	97	99	106

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

			Percent Surrogate Recovery (Acceptance Limits)
		DCA	
Lab Sample ID	Client Sample ID	(66-120)	
240-181593-2	MW-111S_030723	84	
240-181596-F-5 MSD	Matrix Spike Duplicate	94	
240-181596-I-5 MS	Matrix Spike	95	
LCS 240-565607/4	Lab Control Sample	85	
MB 240-565607/6	Method Blank	83	

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

Job ID: 240-181593-1

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

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

Lab Sample ID: MB 240-565082/8

**Matrix: Water** 

Analysis Batch: 565082

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

	МВ	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/13/23 10:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/13/23 10:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 10:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/13/23 10:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 10:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/13/23 10:38	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103	62 - 137		03/13/23 10:38	1
4-Bromofluorobenzene (Surr)	97	56 - 136		03/13/23 10:38	1
Toluene-d8 (Surr)	99	78 - 122		03/13/23 10:38	1
Dibromofluoromethane (Surr)	106	73 - 120		03/13/23 10:38	1

Lab Sample ID: LCS 240-565082/5

**Matrix: Water** 

Analysis Batch: 565082

Client Sample ID: Lab Control Sample

**Prep Type: Total/NA** 

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	23.8		ug/L		119	63 - 134	
cis-1,2-Dichloroethene	20.0	22.2		ug/L		111	77 - 123	
Tetrachloroethene	20.0	23.7		ug/L		119	76 - 123	
trans-1,2-Dichloroethene	20.0	20.6		ug/L		103	75 - 124	
Trichloroethene	20.0	21.8		ug/L		109	70 - 122	
Vinyl chloride	20.0	16.3		ug/L		81	60 - 144	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	104		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	100		73 - 120

Lab Sample ID: 240-181595-Q-2 MSD

**Matrix: Water** 

Analysis Batch: 565082

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Total/NA** 

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	56 - 135	8	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		94	66 - 128	6	14
Tetrachloroethene	1.0	U	20.0	19.0		ug/L		95	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	20.0	17.2		ug/L		86	56 - 136	9	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	2	15
Vinyl chloride	1.0	U	20.0	15.1		ug/L		75	43 - 157	9	24

MSD	MS
% Pacayony	0

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	93		78 <sub>-</sub> 122

**Eurofins Canton** 

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-181593-1

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

Lab Sample ID: 240-181595-Q-2 MSD

**Matrix: Water** 

Analysis Batch: 565082

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

MSD MSD

Surrogate %Recovery Qualifier Limits Dibromofluoromethane (Surr) 92 73 - 120

Lab Sample ID: 240-181595-R-2 MS

**Matrix: Water** 

Analysis Batch: 565082

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

MS MS %Rec Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits 1,1-Dichloroethene 1.0 U 20.0 20.3 ug/L 102 56 - 135 cis-1,2-Dichloroethene 1.0 U 20.0 199 99 66 - 128 ug/L Tetrachloroethene 1.0 U 20.0 19.0 ug/L 95 62 - 131 trans-1.2-Dichloroethene 20.0 ug/L 94 1.0 U 18.9 56 - 136 Trichloroethene 1.0 U 20.0 17.9 ug/L 90 61 - 124 Vinyl chloride 1.0 U 20.0 16.5 ug/L 43 - 157

MS MS

MR MR

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		62 - 137
4-Bromofluorobenzene (Surr)	91		56 - 136
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

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

Lab Sample ID: MB 240-565607/6

**Matrix: Water** 

Analysis Batch: 565607

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 1,4-Dioxane 2.0 U 2.0 0.86 ug/L 03/16/23 12:09 MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 83 66 - 120 03/16/23 12:09

Lab Sample ID: LCS 240-565607/4

**Matrix: Water** Prep Type: Total/NA Analysis Batch: 565607 Spike LCS LCS %Rec

Analyte Added Result Qualifier Unit D %Rec Limits 1,4-Dioxane 10.0 10.5 ug/L 105 80 - 122

LCS LCS

%Recovery Qualifier Surrogate Limits 1,2-Dichloroethane-d4 (Surr) 66 - 120 85

Lab Sample ID: 240-181596-F-5 MSD

**Matrix: Water** 

Analysis Batch: 565607

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

Client Sample ID: Lab Control Sample

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	11.6		ug/L		116	51 - 153	7	16

**Eurofins Canton** 

# **QC Sample Results**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Surrogate

1,2-Dichloroethane-d4 (Surr)

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

%Recovery Qualifier

95

Surrogate 1,2-Dichloroethane-d4 (Surr)	MSD %Recovery  94		Limits 66 - 120							
Lab Sample ID: 240-181596-l- Matrix: Water Analysis Batch: 565607	-5 MS							Client	Sample ID: M Prep Typ	Matrix Spike be: Total/NA
_	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,4-Dioxane	2.0	U	10.0	12.4		ug/L		124	51 - 153	
	MS	MS								

Limits

66 - 120

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# **QC Association Summary**

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-181593-1

GC/MS VOA

Analysis Batch: 565082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Bato
240-181593-1	TRIP BLANK_55	Total/NA	Water	8260D	
240-181593-2	MW-111S_030723	Total/NA	Water	8260D	
MB 240-565082/8	Method Blank	Total/NA	Water	8260D	
LCS 240-565082/5	Lab Control Sample	Total/NA	Water	8260D	
240-181595-Q-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-181595-R-2 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 565607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-181593-2	MW-111S_030723	Total/NA	Water	8260D SIM	
MB 240-565607/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-565607/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-181596-F-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-181596-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	

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# **Lab Chronicle**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK\_55

Lab Sample ID: 240-181593-1 Date Collected: 03/07/23 00:00

Matrix: Water

Date Received: 03/09/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D			565082	AJS	EET CAN	03/13/23 14:40

Client Sample ID: MW-111S\_030723 Lab Sample ID: 240-181593-2

Date Collected: 03/07/23 12:35 Matrix: Water

Date Received: 03/09/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260D		1	565082	AJS	EET CAN	03/13/23 15:03
Total/NA	Analysis	8260D SIM		1	565607	BAJ	EET CAN	03/16/23 13:46

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. Job ID: 240-181593-1

Project/Site: Ford LTP - Off Site

# **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	02-27-23 *
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	02-27-23 *
Ohio VAP	State	CL0024	02-27-23 *
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

 $<sup>^{\</sup>star}\,\text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

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Eurofins - Canton Sample Receipt Form/Narrative	Login # : 181593
Barberton Facility	
Client Accadi S Site Name	Cooler unpacked by:
Cooler Received on 3 9 33 Opened on	3923 KAChelle HAde
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop	
Receipt After-hours: Drop-off Date/Time	Storage Location
Eurofins Cooler # Foam Box Client Cooler	
Packing material used: Subble Wrap Foam Plasti COOLANT: Wet Ice Blue Ice Dry Ice	
COOLANT: Wet Ice Blue Ice Dry Ice  1. Cooler temperature upon receipt	Water None  See Multiple Cooler Form
IR GUN # IR-13 (CF -0.2 °C) Observed Cooler Temp.	°C Corrected Cooler Temp °C
IR GUN # IR-16 (CF -0.1°C) Observed Cooler Temp	O. Corrected Cooler Temp O. Co°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 Yes No
-Were the seals on the outside of the cooler(s) signed & d	lated? Yes No NA Tests that are not checked for pH by
-Were tamper/custody seals on the bottle(s) or bottle kits	(LLHg/MeHg)? Yes No Receiving:
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No VOAs Oil and Grease
4. Did custody papers accompany the sample(s)?	TOC TOC
<ul><li>5. Were the custody papers relinquished &amp; signed in the appro</li><li>6. Was/were the person(s) who collected the samples clearly in</li></ul>	
7. Did all bottles arrive in good condition (Unbroken)?	dentified on the COC? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with th	
9. For each sample, does the COC specify preservative (YN)	
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	
13. Were all preserved sample(s) at the correct pH upon receipt	
14. Were VOAs on the COC?	Yes) No
15. Were air bubbles >6 mm in any VOA vials? Lai  16. Was a VOA trip blank present in the cooler(s)? Trip Blank	rger than this. Yes No NA
17. Was a LL Hg or Me Hg trip blank present?	Lot #Yes No
	100000
Contacted PM Date by	via Verbal Voice Mail Other
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	additional next page Samples processed by:
	Jan Proposition (1975)
19. SAMPLE CONDITION	
Sample(s) were received	after the recommended holding time had expired.
Sample(s)	
Sample(s)were r	eceived with bubble >6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s)	were further preserved in the laboratory.
Sample(s)Preservative(s) added/Lot number	er(s):
VOA Sample Preservation - Date/Time VOAs Frozen:	

# DATA VERIFICATION REPORT



March 20, 2023

Kris Hinskey Arcadis Inc 10559 Citation Ave Suite 100 Brighton, MI 48116

CADENA project ID: E203631

Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater

Project number: 30167538.402.04 off-site

Event Specific Scope of Work References: Sample COC Laboratory: Eurofins Environment Testing LLC - Barberton

Laboratory submittal: 181593-1 Sample date: 2023-03-07

Report received by CADENA: 2023-03-20

Initial Data Verification completed by CADENA: 2023-03-20

Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC

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

There were no significant QC anomalies or exceptions to report.

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

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

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 <a href="http://clms.cadenaco.com/index.cfm">http://clms.cadenaco.com/index.cfm</a>.

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

# **Analytical Results Summary**

**CADENA Project ID:** E203631

**Laboratory:** Eurofins Environment Testing LLC - Barberton

**Laboratory Submittal:** 181593-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401815 3/7/202	5931			MW-112 2401815 3/7/202	_ 5932	23	
			Report		Valid		Report		Valid	
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
OSW-826	<u>50D</u>									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	
	Tetrachloroethene	127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	
	Trichloroethene	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	
	Vinyl chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	
OSW-826	<u>60DSIM</u>									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	



# Ford Motor Company – Livonia Transmission Project

# **Data Review**

# Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-181593-1

CADENA Verification Report: 2023-03-20

Analyses Performed By: Eurofins North Canton, Ohio

Report # 49117R Review Level: Tier III Project: 30167538.601.01

# **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-181593-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample Collection		Analysis		
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM	
TRIP BLANK_55	240-181593-1	Water	03/07/23		Х		
MW-111S_030723	240-181593-2	Water	03/07/23		Х	Х	

# **ANALYTICAL DATA PACKAGE DOCUMENTATION**

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

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

### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

# **VOLATILE ORGANIC COMPOUND (VOC) ANALYSES**

# 1. Holding Times

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

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

All samples were analyzed within the specified holding time criteria.

# 2. Mass Spectrometer Tuning

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

System performance and column resolution were acceptable.

### 3. Calibration

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

# 3.1 Initial Calibration

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

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

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

# 3.2 Continuing Calibration

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

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

### 4. Internal Standard Performance

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

All internal standard responses were within control limits.

### 5. Field Duplicate Analysis

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

A field duplicate sample was not collected for samples from this SDG.

# 6. Compound Identification

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

No compounds were detected in the samples within this SDG.

# 7. System Performance and Overall Assessment

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

# **DATA VALIDATION CHECKLIST FOR VOCs**

VOCs: 8260D/8260D-SIM	Rep	orted	Perfo Acce	Not	
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (G	C/MS)				
Tier II Validation					
Holding times/Preservation		Х		Х	
Tier III Validation					-
System performance and column resolution		Х		Х	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х		Х	
Instrument tune and performance check		Х		Х	
lon abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD	Х				Х
Internal standard		Х		Х	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		Х		Х	
B. Quantitation Reports		Х		Х	
C. RT of sample compounds within the established RT windows		Х		Х	
D. Transcription/calculation errors present		Х		Х	
E. Reporting limits adjusted to reflect sample dilutions		Х		Х	

# Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: March 27, 2023

PEER REVIEW: Andrew Korycinski

DATE: March 28, 2023

# NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

# MICHIGAN 100

# **Chain of Custody Record**

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TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763 **Client Contact** Regulatory program: □ DW ☐ NPDES ☐ RCRA C Other Company Name: Arcadis TestAmerica Laboratories, Inc. Client Project Manager: Kris Hinskey Site Contact: Christina Weaver ab Contact: Mike DelMonico Address: 28550 Cabot Drive, Suite 500 Telephone: 248-994-2240 Telephone: 248-994-2240 Telephone: 330-497-9396 City/State/Zip: Novi, MI, 48377 1 of 1 COCs Analysis Turnaround Time Email: kristoffer.hinskey@arcadis.com Analyses For lab use only Phone: 248-994-2240 TAT if different from below Sampler Name: Walk-in client Project Name: Ford LTP Off-Site 3 weeks ✓ 2 weeks 10 day Lab sampling Project Number: 30167538.402.04 1 week 8260B 2 days 8260B PO # 30167538.402.04 Shipping/Tracking No: ☐ I day Job/SDG No: Vinyl Chloride Matrix Containers & Preservatives Sample Specific Notes / Unpres Solid Special Instructions: Sample Date Sample Time Sample Identification NG TRIP BLANK\_ Χ 317123 Χ Χ X 1 Trip Blank 3 VOAs for 8260B 552050- 911-MM 3 VOAs for 8260B SIM Paģe 387 of 388 Possible Hazard Identification Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) Non-Hazard Skin Irritant Poison B Unknown Disposal By Lab Archive For Special Instructions/QC Requirements & Comments: Sample Address: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested. Relinquished by Relinquished by Relinquished by:

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# **Client Sample Results**

Client: ARCADIS U.S., Inc. Job ID: 240-181593-1 Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK\_55

Lab Sample ID: 240-181593-1

Date Collected: 03/07/23 00:00 **Matrix: Water** Date Received: 03/09/23 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/13/23 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/13/23 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/13/23 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/13/23 14:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		62 - 137					03/13/23 14:40	1
4-Bromofluorobenzene (Surr)	96		56 <sub>-</sub> 136					03/13/23 14:40	1
Toluene-d8 (Surr)	103		78 - 122					03/13/23 14:40	1
Dibromofluoromethane (Surr)	111		73 - 120					03/13/23 14:40	

Client Sample ID: MW-111S\_030723 Lab Sample ID: 240-181593-2

Date Collected: 03/07/23 12:35 Date Received: 03/09/23 08:00

Method: SW846 8260D SIN	I - Volatile Orga	atile 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			03/16/23 13:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		66 - 120			-		03/16/23 13:46	1

Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0		1.0	0.49		_ <u>-</u> -		03/13/23 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/13/23 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/13/23 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/13/23 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/13/23 15:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analvzed	Dil Fac

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		03/13/23 15:03	1	
4-Bromofluorobenzene (Surr)	86		56 - 136		03/13/23 15:03	1	
Toluene-d8 (Surr)	91		78 - 122		03/13/23 15:03	1	
Dibromofluoromethane (Surr)	99		73 - 120		03/13/23 15:03	1	

**Matrix: Water**