ANALYTICAL REPORT

Eurofins TestAmerica, Canton 4101 Shuffel Street NW North Canton, OH 44720 Tel: (330)497-9396

Laboratory Job ID: 240-149973-1 Client Project/Site: Ford LTP - Off Site

Revision: 1

For:

ARCADIS U.S., Inc. 28550 Cabot Drive Suite 500 Novi, Michigan 48377

Attn: Kristoffer Hinskey

Mode Del Your

Authorized for release by: 6/22/2021 11:30:57 AM

Michael DelMonico, Project Manager I (330)497-9396

Michael.DelMonico@Eurofinset.com

·····LINKS ······

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Laboratory Job ID: 240-149973-1

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Definitions/Glossary

Client: ARCADIS U.S., Inc.

Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier Qualifier Description

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.

Example 2 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

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Case Narrative

Client: ARCADIS U.S., Inc.

Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Job ID: 240-149973-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-149973-1

Comments

No additional comments.

Receipt

The samples were received on 5/22/2021 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 was 1.6° C.

GC/MS VOA

Method 8260B SIM: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 240-488395.

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

VOA Prep

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

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Method Summary

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

Method **Method Description** Protocol Laboratory 8260B Volatile Organic Compounds (GC/MS) SW846 TAL CAN 8260B SIM Volatile Organic Compounds (GC/MS) SW846 TAL CAN 5030B Purge and Trap SW846 TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Job ID: 240-149973-1

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Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-149973-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-149973-1	TRIP BLANK_142	Water	05/20/21 00:00	05/24/21 08:00	
240-149973-2	MW-103S_052021	Water	05/20/21 09:25	05/24/21 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142 Lab Sample ID: 240-149973-1

No Detections.

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D	Method	Prep Type
Vinyl chloride	0.46 J	1.0	0.20 ug/L		8260B	Total/NA

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142

Date Collected: 05/20/21 00:00 Date Received: 05/24/21 08:00 Lab Sample ID: 240-149973-1

Matrix: Water

Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/01/21 18:56	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/01/21 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 18:56	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/01/21 18:56	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/01/21 18:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		75 - 130					06/01/21 18:56	1
4-Bromofluorobenzene (Surr)	90		47 - 134					06/01/21 18:56	1
Toluene-d8 (Surr)	94		69 - 122					06/01/21 18:56	1
Dibromofluoromethane (Surr)	86		78 - 129					06/01/21 18:56	1

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-103S_052021

Date Collected: 05/20/21 09:25 Date Received: 05/24/21 08:00 Lab Sample ID: 240-149973-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/01/21 18:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133					06/01/21 18:09	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/I	MS)						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/01/21 19:21	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/01/21 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 19:21	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/01/21 19:21	1
Vinyl chloride	0.46	J	1.0	0.20	ug/L			06/01/21 19:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130					06/01/21 19:21	1
4-Bromofluorobenzene (Surr)	93		47 - 134					06/01/21 19:21	1
Toluene-d8 (Surr)	97		69 - 122					06/01/21 19:21	1
Dibromofluoromethane (Surr)	85		78 - 129					06/01/21 19:21	1

Job ID: 240-149973-1

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

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

Matrix: Water Prep Type: Total/NA

	Percent Sur	rogate Reco
Lab Sample ID Client Sample ID (75-130) (47-134) (69-122) (78-7)	DCA BFB TOL	DBFM
	nple ID (75-130) (47-134) (69-122)	(78-129)
240-149973-1 TRIP BLANK_142 78 90 94 80	√K_142 78 90 94	86
240-149973-2 MW-103S_052021 80 93 97 8:	_052021 80 93 97	85
240-149975-E-2 MS Matrix Spike 81 95 96 8	ce 81 95 96	86
240-149975-F-2 MSD Matrix Spike Duplicate 81 95 98 8	ce Duplicate 81 95 98	89
LCS 240-488334/4 Lab Control Sample 79 94 98 8	ol Sample 79 94 98	87
MB 240-488334/7 Method Blank 79 94 98 8	ank 79 94 98	86

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

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

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

Matrix: Water Prep Type: Total/NA

			Percent Surrogate Recovery (Acceptance Limits)
		DCA	
Lab Sample ID	Client Sample ID	(70-133)	
240-149973-2	MW-103S_052021	84	
LCS 240-488395/4	Lab Control Sample	83	
MB 240-488395/5	Method Blank	84	

Job ID: 240-149973-1

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

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

Lab Sample ID: MB 240-488334/7

Matrix: Water

Analysis Batch: 488334

Client S	Sample ID:	Method	Blank
	Prep '	Type: To	tal/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 15:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/01/21 15:33	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/01/21 15:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 15:33	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/01/21 15:33	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/01/21 15:33	1

	MB N	ИВ					
Surrogate	%Recovery 0	Qualifier	Limits	Pr	repared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		75 - 130			06/01/21 15:33	1
4-Bromofluorobenzene (Surr)	94		47 - 134			06/01/21 15:33	1
Toluene-d8 (Surr)	98		69 - 122			06/01/21 15:33	1
Dibromofluoromethane (Surr)	86		78 - 129			06/01/21 15:33	1
Dibromofluoromethane (Surr)	86		78 - 129			06/01/21 15:33	1

Lab Sample ID: LCS 240-488334/4

Matrix: Water

Analysis Batch: 488334

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	10.0	7.62		ug/L		76	73 - 129	
cis-1,2-Dichloroethene	10.0	9.99		ug/L		100	75 - 124	
Tetrachloroethene	10.0	11.2		ug/L		112	70 - 125	
trans-1,2-Dichloroethene	10.0	8.80		ug/L		88	74 - 130	
Trichloroethene	10.0	9.49		ug/L		95	71 - 121	
Vinyl chloride	10.0	11.3		ug/L		113	61 - 134	

	LUS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		75 - 130
4-Bromofluorobenzene (Surr)	94		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	87		78 - 129

Lab Sample ID: 240-149975-E-2 MS

Matrix: Water

Analysis Batch: 488334

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

•	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	1.0	U	10.0	7.15		ug/L		72	64 - 132	
cis-1,2-Dichloroethene	1.0	U	10.0	9.23		ug/L		92	68 - 121	
Tetrachloroethene	1.0	U	10.0	10.1		ug/L		101	52 - 129	
trans-1,2-Dichloroethene	1.0	U	10.0	8.39		ug/L		84	69 - 126	
Trichloroethene	1.0	U	10.0	9.30		ug/L		93	56 - 124	
Vinyl chloride	1.0	U	10.0	11.1		ug/L		111	49 - 136	

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	96		69 - 122

Spike

Added

10.0

10.0

10.0

10.0

10.0

10.0

11.8

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Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-149973-1

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

Lab Sample ID: 240-149975-E-2 MS

Matrix: Water

Analysis Batch: 488334

Client Sample ID: Matrix Spike

Prep Type: Total/NA

MS MS

Sample Sample

1.0 U

1.0 U

1.0 U

1.0 U

1.0 U

Result Qualifier

%Recovery Qualifier Limits Surrogate Dibromofluoromethane (Surr) 86 78 - 129

Lab Sample ID: 240-149975-F-2 MSD

Matrix: Water

1,1-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl chloride

cis-1,2-Dichloroethene

trans-1.2-Dichloroethene

Analyte

Analysis Batch: 488334

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

49 - 136

MSD MSD %Rec. **RPD** Limits RPD Limit Result Qualifier Unit D %Rec 6.94 ug/L 69 64 - 132 3 35 9.23 ug/L 92 68 - 121 0 35 10.1 ug/L 101 52 - 129 0 35 8.54 2 35 ug/L 85 69 - 126 8.76 ug/L 88 56 - 124 6 35

118

ug/L

1.0 U MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		75 - 130
4-Bromofluorobenzene (Surr)	95		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

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

Lab Sample ID: MB 240-488395/5

Matrix: Water

Analysis Batch: 488395

Client Sample ID: Method Blank Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

MB MB **Analyte** Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 2.0 06/01/21 15:27 1,4-Dioxane 2.0 U 0.86 ug/L

MB MB

%Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 84 70 - 133 06/01/21 15:27

Lab Sample ID: LCS 240-488395/4

Matrix: Water

Analysis Batch: 488395

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1 4-Dioxane		9 79		ua/l		98	80 _ 135	

LCS LCS

%Recovery Qualifier Surrogate Limits 1,2-Dichloroethane-d4 (Surr) 70 - 133 83

QC Association Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 488334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-149973-1	TRIP BLANK_142	Total/NA	Water	8260B	
240-149973-2	MW-103S_052021	Total/NA	Water	8260B	
MB 240-488334/7	Method Blank	Total/NA	Water	8260B	
LCS 240-488334/4	Lab Control Sample	Total/NA	Water	8260B	
240-149975-E-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-149975-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 488395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-149973-2	MW-103S_052021	Total/NA	Water	8260B SIM	
MB 240-488395/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-488395/4	Lab Control Sample	Total/NA	Water	8260B SIM	

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Lab Chronicle

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142 Lab Sample ID: 240-149973-1

Date Collected: 05/20/21 00:00 **Matrix: Water**

Date Received: 05/24/21 08:00

Batch Batch Dilution Batch **Prepared** Method **Factor** Number or Analyzed **Prep Type** Type Run Analyst Lab Total/NA Analysis 8260B 488334 06/01/21 18:56 LRW TAL CAN

Client Sample ID: MW-103S_052021 Lab Sample ID: 240-149973-2

Date Collected: 05/20/21 09:25 **Matrix: Water**

Date Received: 05/24/21 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	488334	06/01/21 19:21	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	488395	06/01/21 18:09	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1 Project/Site: Ford LTP - Off Site

Laboratory: Eurofins TestAmerica, 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	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21 *
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

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

Chain of Custody Record

TestAmerica Laboratory location. Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763 Client Contact Regulatory program: NPDES RCRA Company Name: Arcadis TestAmerica Laboratories, Inc. Client Project Manager: Kris Hinskey Site Contact, Julia McClafferty Lab Contact: Mike DelMonico COC No: Address: 28550 Cabot Drive, Suite 509 Telephone: 248-994-2240 Telephone: 734-644-5131 Telephone: 330-497-9396 City/State/Zip: Novi, MI, 48377 COCs Email: kristoffer.hinskey@arcadis.com Analysis Turnaround Time Analyses or lab use only Phone: 248-994-2240 Sampler Name TAT if diffe cut from below Walk-in client Project Name: Ford LTP Off-Site Allyson Hartz 3 weeks 10 day Lab sampling Project Number: 30080642.402.04 Method of Shipment/Carrier 1 week 1,4-Dioxane 8260B SIM Filtered Sample (Y/N) 2 days Frans-1 2-DCE 8260B Vinyl Chloride 8260B PO# 30080642.402.04 Shipping/Tracking No: 1 day is-1,2-DCE 8260B Job/SDG No: Matrix Containers & Preservatives **CE 8260B** Aqueous H2SO4 Sample Specific Notes / HN03 HCE Special Instructions: Sample Identification Agr Sample Date Sample Time TRIP BLANK _ 142 Х X Х X Χ X Χ 1 Trip Blank J 3 VOAs for 8260B MN-1035-052021 5/20/21/9 25 0 X N ₽ 3 VOAs for 8260B SIM Possible Hazard Identification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Non-Hazard lammable sin Irritant Poison B Unknown Return to Client ✓ Disposal By Lab Archive For Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested. Relinguished by Date Time Arcadis 5/20/21 Arrunin Relinquished by Dat Time 5/21/2 Relinguished } Date fime; Company



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ent ARCADIS Site	Name FORD LT	Cooler un	packed by
<u> </u>	ned on 5 22 21		MTI
	Drop Off TestAmerica C	ourier Other	/ [4 -
ceipt After-hours. Drop-off Date/Time	Storage Lo		
		her	
		her	
COOLANT. Wet Ice Blue Ice Dry I			
Cooler temperature upon receipt	_ D See Multiple	Cooler Form	
IR GUN# IR-11 (CF +0.1 °C) Observed Cooler		Cooler Temp (- 6	°C
IR GUN #IR-12 (CF +0.2°C) Observed Cooler	Femp. C Corrected	Cooler Temp	°C
Were tamper/custody seals on the outside of the coo	ler(s)? If Yes Quantity	Yes No	
-Were the seals on the outside of the cooler(s) sign		Yes No NA	Tests that are not
-Were tamper/custody seals on the bottle(s) or bott		Yes No	checked for pH by Receiving:
-Were tamper/custody seals intact and uncomprom		Yes No Want	1 ~ 1
Shippers' packing slip attached to the cooler(s)?		1 6 9 0 PM	OVOAs
Did custody papers accompany the sample(s)?		Yes No	Oil and Grease
Were the custody papers relinquished & signed in the	appropriate place?	Ves No	TOC
Was/were the person(s) who collected the samples cle		VES No	
Did all bottles arrive in good condition (Unbroken)?		(Yes) No	
Could all bottle labels (ID/Date/Time) be reconciled a	with the COC?	Yes No	
For each sample, does the COC specify preservatives		, and sample type of g	rab/comp(Y/N)?
Were correct bottle(s) used for the test(s) indicated?		(es)No	
Sufficient quantity received to perform indicated anal	yses?	Yes No	
Are these work share samples and all listed on the CC	C?	Yes No	}
If yes, Questions 13-17 have been checked at the orig	inating laboratory		
Were all preserved sample(s) at the correct pH upon r	eceipt?	Yes No (NA) pl	I Strip Lot# HC022887
Were VOAs on the COC?		(Yes) No	
Were air bubbles >6 mm in any VOA vials?	Larger than this	Yes No NA	
Was a VOA trip blank present in the cooler(s)? Trip	Blank Lot # COU EREU	(es No	
Was a LL Hg or Me Hg trip blank present?		Yes(No)	

tacted PM Date	byvia Ve	erbal Voice Mail Othe	er
cerning			
cerning			
CHAIN OF CUSTODY & SAMPLE DISCREPAN	ICIES additional next p	page Samples proc	essed by
	· · · · · · · · · · · · · · · · · · ·		
SAMPLE CONDITION			
	ceived after the recommende	d holding time had ext	orred
		-	

Login #:

Contacted PM	Date	by	via Verbal \	oice Mail Other
	TODY & SAMPLE DIS			Samples processed by
19. SAMPLE CONDI	TION		fter the recommended hold	ing time had expired
			were received	
			ceived with bubble >6 mm i	
20. SAMPLE PRESE	RVATION			
Sample(s)			were fur	ther preserved in the laboratory
Time preserved	Preservative(s) a	idded/Lot number	(s)	ther preserved in the laboratory

Eurofins TestAmerica Canton Sample Receipt Form/Narrative

11 Sufficient quantity received to perform indicated analyses?

13 Were all preserved sample(s) at the correct pH upon receipt?

12 Are these work share samples and all listed on the COC?

10 Were correct bottle(s) used for the test(s) indicated?

Canton Facility

Cooler Received on

FedEx. 1st Grd Exp

TestAmerica Cooler #

Client

14 Were VOAs on the COC?

Receipt After-hours. Drop-off Date/Time

WI-NC-099

DATA VERIFICATION REPORT



June 08, 2021

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: 30080642.402.04_W01 OFF-SITE GW Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 149973-1 Sample date: 2021-05-20

Report received by CADENA: 2021-06-08

Initial Data Verification completed by CADENA: 2021-06-08

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.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch did not include MS/MSD recovery data due to insufficient sample volume available for spiking according to the laboratory submittal case narrative.

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

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

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

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

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
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

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 149973-1

	Sample Name: Lab Sample ID: Sample Date:	TRIP BL/ 2401499 5/20/20	9731	2		MW-103 2401499 5/20/20	9732	21	
			Report		Valid		Report		Valid
Analy	yte Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC OSW-8260B									
1,1-Dichloroeth	ene 75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	
cis-1,2-Dichloro	ethene 156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	
Tetrachloroethe	ene 127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
trans-1,2-Dichlo	roethene 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		0.46	1.0	ug/l	J
OSW-8260BBSim									
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 # 240-149973-1

CADENA Verification Report: 2021-06-08

Analyses Performed By: TestAmerica

North Canton, Ohio

Report # 41744R Review Level: Tier III Project: 30080642.402.04

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-149973-1 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) includes 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:

) Matrix San	Sample Collection		Analysis			
Sample ID	ID Lab ID Matrix		Date	Parent Sample	voc	VOC SIM		
TRIP BLANK_142	240-149973-1	Water	05/20/21		Х			
MW-103S_052021	240-149973-2	Water	05/20/21		X	X		

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

	Rep	orted		mance ptable	Not
Items Reviewed	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 8260B and 8260B SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

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.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - 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 8260B/8260B-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 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.

All identified compounds met the specified criteria.

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: 8260B/8260B-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: June 25, 2021

Curuliland

PEER REVIEW: Andrew Korycinski

DATE: June 25, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

1,6/16

Chain of Custody Record

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

MICHIGA	TestAmerico
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Client Contact	Regulat	ory program:		_ D	w		NPDE:	s	-	RCRA	Г	Oth	er						=19	U								
Company Name: Arcadis	Client Project	Manager: Kris	Hinskey			Site	Contac	d: Jul	lia Me	Clafferty			'	l ah (ontec	r Mil	(e Del	Monic			TestAmerica Laborator	ies, Inc.						
Address: 28550 Cabot Drive, Suite 500													Lab Contact: Mike DelMonico						COC No:									
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240				Telephone: 734-644-5131					Telephone: 330-497-9396						1 of 1 COCs												
Phone: 248-994-2240	Email: kristoff	er.hinskey@arc	cadis.com			1	Analysi	s Tur	rnarou	nd Time				Analyses					ses	For lab use only								
	Sampler Name:				TAT	if differe														Walk-in client	Description.							
Project Name: Ford LTP Off-Site	AILY!	son H	ar.	TZ			+2			rtz			10 day		3 weeks 1 day 2 weeks												Lab sampling	10000
Project Number: 30080642.402.04	Method of Ship	ment/Carrier:					,	-	1 we		2	9			8				<u>≅</u>		Lao sampining	10000						
PO # 30080642.402.04	Shipping/Track	ing No:				┨			2 day		(8/1	rab		90 90	3260			360B	80 80		Job/SDG No:							
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					T						d San	site=	E 82	DG-	1,2-D	560B	909i	hloric	xane									
Sample Identification	Sample Date	Sample Time	Air Aqueous	Sediment	Solid Other:	H2SO4	HNO3	NaOH	ZnAc	Unpres Other:	Filtered Sample (Y / N)	Composite	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		Sample Specific Note Special Instruction							
TRIP BLANK _ 142			X				1				N	G	Х	Х	Х	Х	Х	Х	X		1 Trip Blank							
MW-1035_052021	5/20/21	9 25	X				(0			N	b	X	X	X	×	X	X			3 VOAs for 8260B 3 VOAs for 8260B	SIM						
T						\top	1					П									0 70713 101 02008	31101						
							\top	\dagger				\vdash										\neg						
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Possible Hazard Identification						Sa	mple I	Dispos	sal (Á	fee may b	oe asses	sed if	samp	les are	retair	ned lo	nger t	han 1	month)									
Special Instructions/QC Requirements & Comments:	Poisc	n B	Unknow	n			Re	turn to	o Clien	t 🔽	Dispos	sal By	y Lab		A	rchive	For [Months									
Submit all results through Cadena at jtomalia@cadenaco.o Level IV Reporting requested,	com. Cadena #	E203631																										
Relinquished by: CAPAVES	Company:	- N ' -	Date	Time:	,		4 -	Rec	ceived	by:							Comp	any:			Date/Time:							
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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-149973-1 Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_142

Lab Sample ID: 240-149973-1

Date Collected: 05/20/21 00:00 **Matrix: Water** Date Received: 05/24/21 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/01/21 18:56	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/01/21 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 18:56	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/01/21 18:56	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/01/21 18:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		75 - 130					06/01/21 18:56	1
4-Bromofluorobenzene (Surr)	90		47 - 134					06/01/21 18:56	1
Toluene-d8 (Surr)	94		69 - 122					06/01/21 18:56	1
Dibromofluoromethane (Surr)	86		78 - 129					06/01/21 18:56	1

Client Sample ID: MW-103S_052021 Lab Sample ID: 240-149973-2 **Matrix: Water**

Date Collected: 05/20/21 09:25

Date Received: 05/24/21 08:								Matrix	. water
Method: 8260B SIM - Volati			(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			06/01/21 18:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		70 - 133			-		06/01/21 18:09	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)						
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/01/21 19:21	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/01/21 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/01/21 19:21	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/01/21 19:21	1
Vinyl chloride	0.46	J	1.0	0.20	ug/L			06/01/21 19:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 130			-		06/01/21 19:21	1
4-Bromofluorobenzene (Surr)	93		47 - 134					06/01/21 19:21	1
Toluene-d8 (Surr)	97		69 - 122					06/01/21 19:21	1
Dibromofluoromethane (Surr)	85		78 - 129					06/01/21 19:21	1