

Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 240-144815-1 Client Project/Site: Ford LTP - Off Site

For:

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

Attn: Kristoffer Hinskey

Mode Del Your

Authorized for release by: 3/10/2021 9:13:30 AM

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

Michael.DelMonico@Eurofinset.com

·····LINKS ······

Review your project results through Total Access

Have a Question?



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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: 240-144815-1

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Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Qualifiers

GC/MS VOA

Qualifier Qualifier Description

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

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Case Narrative

Client: ARCADIS U.S., Inc.

Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Job ID: 240-144815-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative 240-144815-1

Comments

No additional comments.

Receipt

The samples were received on 2/24/2021 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 1.3° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described 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

Job ID: 240-144815-1

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

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Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-144815-1

	011 / 0 / 1 / 1		A II		
Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-144815-1	TRIP BLANK	Water	02/22/21 00:00	02/24/21 08:00	
240-144815-2	MW-207S_022221	Water	02/22/21 11:55	02/24/21 08:00	

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Detection Summary

Client: ARCADIS U.S., Inc.

Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK Lab Sample ID: 240-144815-1

No Detections.

No Detections.

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-144815-1

Date Collected: 02/22/21 00:00 **Matrix: Water** Date Received: 02/24/21 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			03/02/21 14:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 14:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 14:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 14:13	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 14:13	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 14:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 130					03/02/21 14:13	1
4-Bromofluorobenzene (Surr)	77		47 - 134					03/02/21 14:13	1
Toluene-d8 (Surr)	87		69 - 122					03/02/21 14:13	1
Dibromofluoromethane (Surr)	110		78 - 129					03/02/21 14:13	1

Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Client Sample ID: MW-207S_022221

Date Collected: 02/22/21 11:55 Date Received: 02/24/21 08:00 Lab Sample ID: 240-144815-2

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			03/01/21 18:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					03/01/21 18:03	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			03/02/21 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 14:45	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 14:45	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 14:45	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 14:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 130					03/02/21 14:45	1
4-Bromofluorobenzene (Surr)	75		47 - 134					03/02/21 14:45	1
Toluene-d8 (Surr)	87		69 - 122					03/02/21 14:45	1
Dibromofluoromethane (Surr)	109		78 - 129					03/02/21 14:45	1

3/10/2021

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Surrogate Summary

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

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

Matrix: Water Prep Type: Total/NA

			Pe	ercent Surre	ogate Reco
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(75-130)	(47-134)	(69-122)	(78-129)
240-144718-C-26 MS	Matrix Spike	84	94	92	100
240-144718-C-26 MSD	Matrix Spike Duplicate	84	96	94	101
240-144815-1	TRIP BLANK	97	77	87	110
240-144815-2	MW-207S_022221	100	75	87	109
LCS 240-475003/4	Lab Control Sample	87	95	94	101
MB 240-475003/7	Method Blank	97	82	89	108

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (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)	
240-144807-J-4 MS	Matrix Spike	90	
240-144807-J-4 MSD	Matrix Spike Duplicate	88	
240-144815-2	MW-207S_022221	89	
LCS 240-474842/4	Lab Control Sample	90	
MB 240-474842/5	Method Blank	86	
Surrogate Legend			

Eurofins TestAmerica, Canton

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

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

Lab Sample ID: MB 240-475003/7

Matrix: Water

Analysis Batch: 475003

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

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared 1,1-Dichloroethene 1.0 U 1.0 0.19 ug/L 03/02/21 11:05 cis-1,2-Dichloroethene 1.0 U 1.0 0.16 ug/L 03/02/21 11:05 1.0 U Tetrachloroethene 1.0 0.15 ug/L 03/02/21 11:05 0.19 ug/L trans-1,2-Dichloroethene 1.0 U 1.0 03/02/21 11:05 Trichloroethene 10 U 1.0 0.10 ug/L 03/02/21 11:05 Vinyl chloride 1.0 U 1.0 0.20 ug/L 03/02/21 11:05

MB MB Surrogate %Recovery Qualifier Limits Prepared Dil Fac Analyzed 75 - 130 97 1,2-Dichloroethane-d4 (Surr) 03/02/21 11:05 4-Bromofluorobenzene (Surr) 82 47 - 134 03/02/21 11:05 89 69 - 122 Toluene-d8 (Surr) 03/02/21 11:05 Dibromofluoromethane (Surr) 108 78 - 129 03/02/21 11:05

Lab Sample ID: LCS 240-475003/4

Matrix: Water

Analysis Batch: 475003

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

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit %Rec 1,1-Dichloroethene 10.0 73 - 129 12.4 ug/L 124 cis-1,2-Dichloroethene 10.0 11.0 ug/L 110 75 - 124 Tetrachloroethene 10.0 10.5 105 ug/L 70 - 125 trans-1.2-Dichloroethene 10.0 10.9 ug/L 109 74 - 130 Trichloroethene 10.0 10.2 ug/L 102 71 - 121 Vinyl chloride 10.0 10.6 ug/L 106 61 - 134

LCS LCS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 87 75 - 130 4-Bromofluorobenzene (Surr) 95 47 - 134 69 - 122 Toluene-d8 (Surr) 94 78 - 129 Dibromofluoromethane (Surr) 101

Lab Sample ID: 240-144718-C-26 MS

Matrix: Water

Analysis Batch: 475003

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	21		100	132		ug/L		111	64 - 132	
cis-1,2-Dichloroethene	56		100	160		ug/L		104	68 - 121	
Tetrachloroethene	10	U	100	87.1		ug/L		87	52 - 129	
trans-1,2-Dichloroethene	3.9	J	100	102		ug/L		98	69 - 126	
Trichloroethene	250		100	319		ug/L		72	56 - 124	
Vinyl chloride	3.3	J	100	80.0		ug/L		77	49 - 136	

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		75 - 130
4-Bromofluorobenzene (Surr)	94		47 - 134
Toluene-d8 (Surr)	92		69 - 122

Eurofins TestAmerica, Canton

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Client: ARCADIS U.S., Inc.

Job ID: 240-144815-1

Prep Type: Total/NA

Project/Site: Ford LTP - Off Site

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

Lab Sample ID: 240-144718-C-26 MS

Lab Sample ID: 240-144718-C-26 MSD

Matrix: Water

Analysis Batch: 475003

MS MS

%Recovery Qualifier Surrogate Limits Dibromofluoromethane (Surr) 100 78 - 129

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Matrix Spike

Matrix: Water Analysis Batch: 475003

Sample Sample Spike MSD MSD %Rec. **RPD** Limit Result Qualifier Added Limits RPD **Analyte** Result Qualifier Unit %Rec 1,1-Dichloroethene 21 100 139 ug/L 119 64 - 132 6 35 ug/L cis-1,2-Dichloroethene 56 100 163 107 68 - 121 2 35 Tetrachloroethene 10 U 100 95.7 ug/L 96 52 - 129 35 trans-1.2-Dichloroethene 100 108 ug/L 104 69 - 12635 3.9 6 Trichloroethene 250 100 317 ug/L 70 56 - 124 1 35 Vinyl chloride 3.3 J 100 110 ug/L 107 49 - 136 35

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		75 - 130
4-Bromofluorobenzene (Surr)	96		47 - 134
Toluene-d8 (Surr)	94		69 - 122
Dibromofluoromethane (Surr)	101		78 - 129

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

Lab Sample ID: MB 240-474842/5

Matrix: Water

Analysis Batch: 474842

Prep Type: Total/NA

MB MB **Analyte** Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 1,4-Dioxane 2.0 03/01/21 12:12 2.0 U 0.86 ug/L

MB MB

%Recovery Qualifier Limits Surrogate Prepared Analyzed Dil Fac 1,2-Dichloroethane-d4 (Surr) 86 70 - 133 03/01/21 12:12

Lab Sample ID: LCS 240-474842/4

Matrix: Water

Analysis Batch: 474842

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit D %Rec 1,4-Dioxane 10.0 9.05 ug/L 91 80 - 135

LCS LCS

Surrogate %Recovery Qualifier Limits 70 - 133 1,2-Dichloroethane-d4 (Surr) 90

Lab Sample ID: 240-144807-J-4 MS

Matrix: Water

Analysis Batch: 474842

7 maryolo Batom 47 4042	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,4-Dioxane	2.0	U	10.0	8.95		ua/L		90	46 - 170	

Eurofins TestAmerica, Canton

Client Sample ID: Matrix Spike

QC Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1 Project/Site: Ford LTP - Off Site

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

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		70 - 133

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	90		70 - 133
_ Lab Sample ID: 240-1448	807-J-4 MSD		

Matrix: Water Analysis Batch: 474842		
-	Sample	Sample
Analyte	Result	Qualifi
1,4-Dioxane	2.0	U

Surrogate

1,2-Dichloroethane-d4 (Surr)

	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	9.28		ug/L		93	46 - 170	4	26
	MCD	MCD									

MSD	MSD	
%Recovery	Qualifier	Limits
88		70 - 133

Prep Type: Total/NA

Eurofins TestAmerica, Canton

3/10/2021

Client Sample ID: Matrix Spike Duplicate

QC Association Summary

Client: ARCADIS U.S., Inc.

Project/Site: Ford LTP - Off Site

Job ID: 240-144815-1

GC/MS VOA

Analysis Batch: 474842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144815-2	MW-207S_022221	Total/NA	Water	8260B SIM	
MB 240-474842/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-474842/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-144807-J-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-144807-J-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 475003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144815-1	TRIP BLANK	Total/NA	Water	8260B	
240-144815-2	MW-207S_022221	Total/NA	Water	8260B	
MB 240-475003/7	Method Blank	Total/NA	Water	8260B	
LCS 240-475003/4	Lab Control Sample	Total/NA	Water	8260B	
240-144718-C-26 MS	Matrix Spike	Total/NA	Water	8260B	
240-144718-C-26 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

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Lab Chronicle

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1

Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-144815-1 Date Collected: 02/22/21 00:00

Matrix: Water

Date Received: 02/24/21 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	475003	03/02/21 14:13	LEE	TAL CAN

Client Sample ID: MW-207S_022221 Lab Sample ID: 240-144815-2

Date Collected: 02/22/21 11:55 **Matrix: Water**

Date Received: 02/24/21 08:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	475003	03/02/21 14:45	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	474842	03/01/21 18:03	SAM	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: 240-144815-1 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	02-23-21 *
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21 *
Illinois	NELAP	004498	07-31-21
lowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21 *
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	03-31-21
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

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

Site Counter; Julia McCaffery Telephone; 30 at 7, 1796		2 ! 3 TestAmerica Laboratory location: Brightor	1	n of Custo	Chain of Custody Record 10448 Citation Drive, Sulle 200 / Brighton, MI 48116 / 810-229-2763	8116 / 810-22	9-2763		AICHIG	ANTes	estAmerica HELEAZE DE L'AMBRICHIEN L'ASSENCE
The plane 1985 Chair Day No. 19. 19. 19. 19. 19. 19. 19. 19. 19. 19	Client Contact	Regulatory pr		NPDES	RCRA	Other			180		
Comparing Part March Mar	Company Name: Arcadis	Client Project Manage	r: Kris Hinskey	Site Contact: J	Julia McClafferty		Lab Conta	ct: Mike Del	Monico	TestA	America Laboratories, Inc
Property	Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi Mt 48177	Telephone: 248-994-22	40	Telephone: 73-	4-644-5131		Telephone	330-497-93	9(
The control of the		Email: kristoffer.hinsl	key@arcadis.com	Analysis T	urnaround Time			Y	nalyses	For lat	
Particle Notice Particle	rnone: 248-994-2240 Project Name: Ford LTP Off-Site	Sampler Name:	-	TAT if different fro	om below. 3 weeks					Walk-	in client
TRIP BLANK Syngle themitering Syngle themiter	Project Number: 30050315,402.04	Method of Shipment/C	-	10 day					Mi	Lab sa	mpling
Sumple Heart Identification Sumple Date Sumple Time A Sumple Date Sumple D	PO # 30050315.402.04	Shipping/Tracking No:		Т	z days 1 day	Grab	809			Job/SI	DG No:
TRIP BLANK			Matrix	Containers	s & Preservatives	/)=	Z8 3:				
TRIP BLANK	Sample Identification		Alt Aqueous Sediment bilo2	\vdash	HORN banz HORN Sorgeos Tradio	Composite	cis-1,2-DC				Sample Specific Notes / Special Instructions:
WWW-2075_022A33 3 3 3		1				ی	×	<u> </u>			Trip blank
Founds Hazard destitication Founds Hazard destition Founds Hazard destits	MW-2075	=	5	\$		5	~	┼	+	10 M	UAN FOR BALOUR
Fourth Hazer Identification **Non-Hazer Identification *											
Pouble Hazer d'édiffication Voir-Hazer d'édiffi	Pag										
Possible Hazard Identification * Non-Hazard * Special Instructions/OC Requirements. * Sometial Instructions/OC Requirements. * Submit all results through Cadena at Jonathia Goodenaco.com. Cadena #E203531 * Relinquished by: OULVIP * Relinquished by: O	je 1										
Possible Hazard demification Possible Hazard demification Possible Hazard demification Possible Hazard demification Social Burding Social Burding Social Burding Return to Client Social Burding Return to Client Date Time: Date Time: Return to Client Date Time: Return to Client Date Time: Date Time: Date Time: Return to Client Date Time: Date Time: Date Time: Date Time: Date Time: Date Time: Return to Company: Return to Client Date Time:	7 of				+						
Company:	18						_			+	
Sample Disposal A fee may be assessed if samples are retained longer than 1 month) Return to Clicat	- 5										
Company:											
immable din Irriant Poison B Cunknown Return to Client Disposal By Lab Archive For Months Return to Client Disposal By Lab Archive For Months Return to Client Disposal By Lab Archive For Months Return to Client Disposal By Lab Archive For Months Company: Compan			240-	144815 Chain	of Custody						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return to Chent & Disposal By Lab Archive For Months					=	_					
The st from the st from the state of the state of the state of the st from the	Possible Hazard Identification			Sample Disp	oosal (A fee may be	assessed if san	nples are reta	ined longer	an I month)		
Company: Company: Date/Time: 312-11 17:00 Received by: Cold Stevel of e Art Oult Date/Time:	Special Instructions/QC Requirements & Comments	VIII III III III III III III III III II	Chkhown	Ketum	,	Disposal By La		vrchive For	Months		
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DATA VERIFICATION REPORT



March 10, 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: 30050315.402.04 off site

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 144815-1 Sample date: 2021-02-22

Report received by CADENA: 2021-03-10

Initial Data Verification completed by CADENA: 2021-03-10

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 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.
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: 144815-1

		Sample Name:	TRIP BLA	ANK			MW-207	7S_0222	21	
		Lab Sample ID:	2401448	3151			2401448	3152		
		Sample Date:	2/22/20	21			2/22/20	21		
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
OSW-8260	<u>)B</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-8260	<u>BBSim</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 # 240-144815-1

CADENA Verification Report: 2021-03-10

Analyses Performed By: TestAmerica

North Canton, Ohio

Report # 40659R Review Level: Tier III Project: 30080642.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-144815-1 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:

		Sample Collection Boront Sample			Analysis			
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	VOC SIM		
TRIP BLANK	240-144815-1	Water	02/22/2021		Х			
MW-207S_022221	240-144815-2	Water	02/22/2021		Х	Х		

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.

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: 8260B/8260B-SIM	Rep	orted		rmance ptable	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		X		X	
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 22, 2021

PEER REVIEW: Andrew Korycinski

DATE: March 24, 2021

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

-2/1.3

Chain of Custody Record

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

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Client Sample Results

Client: ARCADIS U.S., Inc. Job ID: 240-144815-1 Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-144815-1

Date Collected: 02/22/21 00:00 **Matrix: Water** Date Received: 02/24/21 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			03/02/21 14:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 14:13	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 14:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 14:13	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 14:13	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 14:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 130					03/02/21 14:13	1
4-Bromofluorobenzene (Surr)	77		47 - 134					03/02/21 14:13	1
Toluene-d8 (Surr)	87		69 - 122					03/02/21 14:13	1
Dibromofluoromethane (Surr)	110		78 - 129					03/02/21 14:13	1

Client Sample ID: MW-207S_022221 Lab Sample ID: 240-144815-2

Date Collected: 02/22/21 11:55 Date Received: 02/24/21 08:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/01/21 18:03	•
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		70 - 133					03/01/21 18:03	1

Method: 8260B - Volatile Oi	rganic Compoi	unds (GC/MS	5)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			03/02/21 14:45	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			03/02/21 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			03/02/21 14:45	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			03/02/21 14:45	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			03/02/21 14:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 130		03/02/21 14:45	1
4-Bromofluorobenzene (Surr)	75		47 - 134		03/02/21 14:45	1
Toluene-d8 (Surr)	87		69 - 122		03/02/21 14:45	1
Dibromofluoromethane (Surr)	109		78 - 129	(03/02/21 14:45	1

Matrix: Water