

ANALYTICAL REPORT

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

Laboratory Job ID: 240-135456-1
Client Project/Site: Ford LTP Off-Site

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

Attn: Kristoffer Hinskey



Authorized for release by:
9/8/2020 4:42:57 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

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.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Method Summary	5
Sample Summary	6
Detection Summary	7
Client Sample Results	8
Surrogate Summary	10
QC Sample Results	11
QC Association Summary	14
Lab Chronicle	15
Certification Summary	16
Chain of Custody	17

Definitions/Glossary

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

Job ID: 240-135456-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate recovery exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

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

Job ID: 240-135456-1

Job ID: 240-135456-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Off-Site

Report Number: 240-135456-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/22/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-135456-1) and MW-147S_082020 (240-135456-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/01/2020.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MW-147S_082020 (240-135456-2) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The sample was analyzed on 08/29/2020.

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

Method Summary

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

Job ID: 240-135456-1

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

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

Sample Summary

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

Job ID: 240-135456-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-135456-1	TRIP BLANK	Water	08/20/20 00:00	08/22/20 10:00	
240-135456-2	MW-147S_082020	Water	08/20/20 15:40	08/22/20 10:00	

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

Detection Summary

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

Job ID: 240-135456-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-135456-1

No Detections.

Client Sample ID: MW-147S_082020

Lab Sample ID: 240-135456-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.4		1.0	0.50	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

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

Client Sample Results

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

Job ID: 240-135456-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-135456-1

Date Collected: 08/20/20 00:00

Matrix: Water

Date Received: 08/22/20 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.46	ug/L			09/01/20 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.38	ug/L			09/01/20 20:16	1
Tetrachloroethene	1.0	U	1.0	0.33	ug/L			09/01/20 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.43	ug/L			09/01/20 20:16	1
Trichloroethene	1.0	U	1.0	0.36	ug/L			09/01/20 20:16	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			09/01/20 20:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		09/01/20 20:16	1
4-Bromofluorobenzene (Surr)	65		47 - 134		09/01/20 20:16	1
Toluene-d8 (Surr)	89		69 - 122		09/01/20 20:16	1
Dibromofluoromethane (Surr)	105		78 - 129		09/01/20 20:16	1

Client Sample Results

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

Job ID: 240-135456-1

Client Sample ID: MW-147S_082020

Lab Sample ID: 240-135456-2

Date Collected: 08/20/20 15:40

Matrix: Water

Date Received: 08/22/20 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/20 12:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		08/29/20 12:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.46	ug/L			09/01/20 21:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.38	ug/L			09/01/20 21:51	1
Tetrachloroethene	1.0	U	1.0	0.33	ug/L			09/01/20 21:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.43	ug/L			09/01/20 21:51	1
Trichloroethene	1.0	U	1.0	0.36	ug/L			09/01/20 21:51	1
Vinyl chloride	1.4		1.0	0.50	ug/L			09/01/20 21:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		09/01/20 21:51	1
4-Bromofluorobenzene (Surr)	68		47 - 134		09/01/20 21:51	1
Toluene-d8 (Surr)	92		69 - 122		09/01/20 21:51	1
Dibromofluoromethane (Surr)	103		78 - 129		09/01/20 21:51	1

Surrogate Summary

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

Job ID: 240-135456-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-130)	BFB (47-134)	TOL (69-122)	DBFM (78-129)
240-135342-C-28 MS	Matrix Spike	69 X	88	99	87
240-135342-C-28 MSD	Matrix Spike Duplicate	66 X	86	98	86
240-135456-1	TRIP BLANK	87	65	89	105
240-135456-2	MW-147S_082020	87	68	92	103
LCS 240-449570/4	Lab Control Sample	82	91	100	91
MB 240-449570/7	Method Blank	99	67	90	103

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)

Lab Sample ID	Client Sample ID	DCA (70-133)
240-135456-2	MW-147S_082020	85
240-135515-B-2 MS	Matrix Spike	91
240-135515-B-2 MSD	Matrix Spike Duplicate	88
LCS 240-449273/4	Lab Control Sample	86
MB 240-449273/5	Method Blank	88

Surrogate Legend

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

QC Sample Results

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

Job ID: 240-135456-1

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

Lab Sample ID: MB 240-449570/7
Matrix: Water
Analysis Batch: 449570

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.46	ug/L			09/01/20 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.38	ug/L			09/01/20 15:02	1
Tetrachloroethene	1.0	U	1.0	0.33	ug/L			09/01/20 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.43	ug/L			09/01/20 15:02	1
Trichloroethene	1.0	U	1.0	0.36	ug/L			09/01/20 15:02	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			09/01/20 15:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		75 - 130		09/01/20 15:02	1
4-Bromofluorobenzene (Surr)	67		47 - 134		09/01/20 15:02	1
Toluene-d8 (Surr)	90		69 - 122		09/01/20 15:02	1
Dibromofluoromethane (Surr)	103		78 - 129		09/01/20 15:02	1

Lab Sample ID: LCS 240-449570/4
Matrix: Water
Analysis Batch: 449570

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	9.73		ug/L		97	73 - 129
cis-1,2-Dichloroethene	10.0	9.96		ug/L		100	75 - 124
Tetrachloroethene	10.0	11.4		ug/L		114	70 - 125
trans-1,2-Dichloroethene	10.0	10.5		ug/L		105	74 - 130
Trichloroethene	10.0	9.49		ug/L		95	71 - 121
Vinyl chloride	10.0	9.83		ug/L		98	61 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		75 - 130
4-Bromofluorobenzene (Surr)	91		47 - 134
Toluene-d8 (Surr)	100		69 - 122
Dibromofluoromethane (Surr)	91		78 - 129

Lab Sample ID: 240-135342-C-28 MS
Matrix: Water
Analysis Batch: 449570

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	5.0	U	50.0	48.0		ug/L		96	64 - 132
cis-1,2-Dichloroethene	130	F1	50.0	159	F1	ug/L		61	68 - 121
Tetrachloroethene	5.0	U	50.0	53.1		ug/L		106	52 - 129
trans-1,2-Dichloroethene	2.2	J	50.0	51.2		ug/L		102	69 - 126
Trichloroethene	4.7	J	50.0	46.1		ug/L		83	56 - 124
Vinyl chloride	5.0	U	50.0	51.6		ug/L		103	49 - 136

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	69	X	75 - 130
4-Bromofluorobenzene (Surr)	88		47 - 134
Toluene-d8 (Surr)	99		69 - 122

QC Sample Results

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

Job ID: 240-135456-1

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

Lab Sample ID: 240-135342-C-28 MS
Matrix: Water
Analysis Batch: 449570

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

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	87		78 - 129

Lab Sample ID: 240-135342-C-28 MSD
Matrix: Water
Analysis Batch: 449570

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

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
1,1-Dichloroethene	5.0	U	50.0	45.4		ug/L		91	64 - 132	6	35	
cis-1,2-Dichloroethene	130	F1	50.0	158	F1	ug/L		59	68 - 121	1	35	
Tetrachloroethene	5.0	U	50.0	52.0		ug/L		104	52 - 129	2	35	
trans-1,2-Dichloroethene	2.2	J	50.0	54.2		ug/L		108	69 - 126	6	35	
Trichloroethene	4.7	J	50.0	46.4		ug/L		83	56 - 124	1	35	
Vinyl chloride	5.0	U	50.0	49.6		ug/L		99	49 - 136	4	35	

Surrogate	MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	66	X	75 - 130
4-Bromofluorobenzene (Surr)	86		47 - 134
Toluene-d8 (Surr)	98		69 - 122
Dibromofluoromethane (Surr)	86		78 - 129

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

Lab Sample ID: MB 240-449273/5
Matrix: Water
Analysis Batch: 449273

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dioxane	2.0	U	2.0	0.86	ug/L		08/29/20 06:52	1	

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	88		70 - 133	08/29/20 06:52	1	

Lab Sample ID: LCS 240-449273/4
Matrix: Water
Analysis Batch: 449273

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

Analyte	Spike	LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
1,4-Dioxane	10.0	10.5		ug/L		105	80 - 135	

Surrogate	LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	86		70 - 133

Lab Sample ID: 240-135515-B-2 MS
Matrix: Water
Analysis Batch: 449273

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

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	RPD
1,4-Dioxane	2.0	U	10.0	9.50		ug/L		95	46 - 170	

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-135456-1

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

<i>Surrogate</i>	<i>MS</i> <i>%Recovery</i>	<i>MS</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	91		70 - 133

Lab Sample ID: 240-135515-B-2 MSD
Matrix: Water
Analysis Batch: 449273

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

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qualifier</i>	<i>Spike</i> <i>Added</i>	<i>MSD</i> <i>Result</i>	<i>MSD</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> <i>Limit</i>
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	46 - 170	6	26

<i>Surrogate</i>	<i>MSD</i> <i>%Recovery</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	88		70 - 133

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

QC Association Summary

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

Job ID: 240-135456-1

GC/MS VOA

Analysis Batch: 449273

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-135456-2	MW-147S_082020	Total/NA	Water	8260B SIM	
MB 240-449273/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-449273/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-135515-B-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-135515-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 449570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-135456-1	TRIP BLANK	Total/NA	Water	8260B	
240-135456-2	MW-147S_082020	Total/NA	Water	8260B	
MB 240-449570/7	Method Blank	Total/NA	Water	8260B	
LCS 240-449570/4	Lab Control Sample	Total/NA	Water	8260B	
240-135342-C-28 MS	Matrix Spike	Total/NA	Water	8260B	
240-135342-C-28 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-135456-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-135456-1

Date Collected: 08/20/20 00:00

Matrix: Water

Date Received: 08/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	449570	09/01/20 20:16	LRW	TAL CAN

Client Sample ID: MW-147S_082020

Lab Sample ID: 240-135456-2

Date Collected: 08/20/20 15:40

Matrix: Water

Date Received: 08/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	449570	09/01/20 21:51	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	449273	08/29/20 12:14	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.
 Project/Site: Ford LTP Off-Site

Job ID: 240-135456-1

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	07-31-20 *
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
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	06-05-21
Oregon	NELAP	4062	02-24-21
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	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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



Chain of Custody Record

4.15.0

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

Client Contact 190 Company Name: Arendis Address: 28660 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Off-Site Project Number: 30080315.402.04 PO # 30080315.402.04		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other									
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kris@hindis.com		Site Contact: Julia McClafferty Telephone: 734-644-5131									
Sampler Name: Andrew Barritt Method of Shipment/Carrier: Shipping/Tracking No:		Lab Contact: Mike DeMonico Telephone: 330-497-9396									
Analytical Turnaround Time TAT if different from below 10 day <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Analyses 1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM									
Matrix Aqueous Sediment Solid Other:		Filtered Sample (Y / N) Composite (C / Grab-G)									
Containers & Preservatives H2SO4 HNO3 HCl NaOH NaOH ZnAc NH4OH Other:		Sample Specific Notes / Special Instructions: 1 Trip Blank 3 Vials for 320B 3 Vials for 8260B SIM									
Sample Date	Sample Time	Filtered Sample (Y / N)	Composite (C / Grab-G)	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Job/SDG No:
8/20/20	-	N	G	X	X	X	X	X	X	X	
8/20/20	1540	N	G	X	X	X	X	X	X	X	



Possible Hazard Identification
 Non-hazard Flammable Corrosive Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
 Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.

Requisitioned by: Andrew Barritt Requisitioned by: Julia McClafferty Requisitioned by:	Date/Time: 8/20/20 1640 Date/Time: 8/20/20 1230 Date/Time: 8/20/20 12:31	Company: Arcadis Company: Arcadis Company: ERM-1	Received by: Noni Cold Storage Received by: ERM-1 Received in Laboratory by:	Date/Time: 8/20/20 1640 Date/Time: 8/20/20 12:30 Date/Time: 8-22-20 1000
--	--	--	--	--

©2008 TestAmerica, Inc. All rights reserved. TestAmerica Laboratories, Inc.



Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 135456

Client Arcadis Site Name _____ Cooler unpacked by: Math Smyrn
 Cooler Received on 8-22-20 Opened on 8-22-20
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # VA Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 4.0 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels be reconciled with the COC? Yes No
 9. Were correct bottle(s) used for the test(s) indicated? Yes No
 10. Sufficient quantity received to perform indicated analyses? Yes No
 11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.
 12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC911298
 13. Were VOAs on the COC? Yes No
 14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 16. Was a LL Hg or Me Hg trip blank present? Yes No

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

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

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

18. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

September 09, 2020

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: 30050315.0402.04 off site

Event Specific Scope of Work References: Sample COC

Laboratory: TestAmerica - North Canton

Laboratory submittal: 135456-1

Sample date: 2020-08-20

Report received by CADENA: 2020-09-08

Initial Data Verification completed by CADENA: 2020-09-09

Number of Samples: 1 Water and 1 trip blank

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:

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers:
GCMS VOC QC batch 449570.

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

Analytical Results Summary

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton

Laboratory Submittal: 135456-1

Sample Name: TRIP BLANK MW-147S_082020
 Lab Sample ID: 2401354561 2401354562
 Sample Date: 8/20/2020 8/20/2020

Analyte	Cas No.	Report		Units	Valid		Report		Valid	
		Result	Limit		Qualifier	Result	Limit	Units	Qualifier	
GC/MS VOC										
<u>OSW-8260B</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	---	1.4	1.0	ug/l	---	
<u>OSW-8260BBSim</u>										
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	

ANALYTICAL REPORT

Eurofins TestAmerica, Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

Laboratory Job ID: 460-218140-1
Client Project/Site: Ford LTP Off-Site

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

Attn: Kristoffer Hinskey



Authorized for release by:
9/16/2020 9:40:20 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	5
Client Sample Results	6
Surrogate Summary	7
QC Sample Results	8
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Method Summary	14
Sample Summary	15
Chain of Custody	16
Receipt Checklists	18

Definitions/Glossary

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

Job ID: 460-218140-1

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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

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

Job ID: 460-218140-1

Job ID: 460-218140-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Off-Site

Report Number: 460-218140-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/12/2020 10:55 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (460-218140-1) and MW-147S_091120 (460-218140-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 09/14/2020.

The continuing calibration verification (CCV) associated with batch 460-723769 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported.

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

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Sample MW-147S_091120 (460-218140-2) was analyzed for Volatile organic compounds (GC/MS) in accordance with SW-846 Method 8260C SIM. The samples were analyzed on 09/14/2020.

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

Detection Summary

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

Job ID: 460-218140-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-218140-1

No Detections.

Client Sample ID: MW-147S_091120

Lab Sample ID: 460-218140-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.4		1.0	0.17	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Edison



Client Sample Results

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

Job ID: 460-218140-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-218140-1

Date Collected: 09/11/20 00:00

Matrix: Water

Date Received: 09/12/20 10:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 09:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 09:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 09:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 09:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 09:45	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			09/14/20 09:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 123		09/14/20 09:45	1
Toluene-d8 (Surr)	95		80 - 120		09/14/20 09:45	1
Dibromofluoromethane (Surr)	96		77 - 124		09/14/20 09:45	1
4-Bromofluorobenzene	88		76 - 120		09/14/20 09:45	1

Client Sample ID: MW-147S_091120

Lab Sample ID: 460-218140-2

Date Collected: 09/11/20 13:33

Matrix: Water

Date Received: 09/12/20 10:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.33	ug/L			09/14/20 09:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	79		52 - 137		09/14/20 09:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 21:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 21:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 21:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 21:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 21:45	1
Vinyl chloride	1.4		1.0	0.17	ug/L			09/14/20 21:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 123		09/14/20 21:45	1
Toluene-d8 (Surr)	93		80 - 120		09/14/20 21:45	1
Dibromofluoromethane (Surr)	98		77 - 124		09/14/20 21:45	1
4-Bromofluorobenzene	90		76 - 120		09/14/20 21:45	1

Surrogate Summary

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

Job ID: 460-218140-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-123)	TOL (80-120)	DBFM (77-124)	BFB (76-120)
460-218140-1	TRIP BLANK	87	95	96	88
460-218140-2	MW-147S_091120	83	93	98	90
LCS 460-723769/3	Lab Control Sample	85	94	95	90
LCS 460-723910/4	Lab Control Sample	83	93	97	92
LCSD 460-723769/4	Lab Control Sample Dup	86	94	95	89
LCSD 460-723910/5	Lab Control Sample Dup	83	92	97	93
MB 460-723769/7	Method Blank	84	92	94	87
MB 460-723910/8	Method Blank	87	92	98	90

Surrogate Legend

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

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (52-137)
460-218140-2	MW-147S_091120	79
LCS 460-723777/3	Lab Control Sample	81
LCSD 460-723777/4	Lab Control Sample Dup	79
MB 460-723777/7	Method Blank	80

Surrogate Legend

BFB = 4-Bromofluorobenzene

QC Sample Results

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

Job ID: 460-218140-1

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

Lab Sample ID: MB 460-723769/7
Matrix: Water
Analysis Batch: 723769

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 08:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 08:33	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 08:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 08:33	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 08:33	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			09/14/20 08:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		75 - 123		09/14/20 08:33	1
Toluene-d8 (Surr)	92		80 - 120		09/14/20 08:33	1
Dibromofluoromethane (Surr)	94		77 - 124		09/14/20 08:33	1
4-Bromofluorobenzene	87		76 - 120		09/14/20 08:33	1

Lab Sample ID: LCS 460-723769/3
Matrix: Water
Analysis Batch: 723769

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	21.4		ug/L		107	68 - 133
cis-1,2-Dichloroethene	20.0	20.2		ug/L		101	78 - 121
Tetrachloroethene	20.0	20.4		ug/L		102	70 - 127
trans-1,2-Dichloroethene	20.0	21.9		ug/L		110	74 - 126
Trichloroethene	20.0	20.2		ug/L		101	71 - 121
Vinyl chloride	20.0	24.9		ug/L		125	61 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		75 - 123
Toluene-d8 (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	95		77 - 124
4-Bromofluorobenzene	90		76 - 120

Lab Sample ID: LCSD 460-723769/4
Matrix: Water
Analysis Batch: 723769

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	20.0	20.7		ug/L		103	68 - 133	4	30
cis-1,2-Dichloroethene	20.0	20.0		ug/L		100	78 - 121	1	30
Tetrachloroethene	20.0	20.6		ug/L		103	70 - 127	1	30
trans-1,2-Dichloroethene	20.0	20.7		ug/L		104	74 - 126	6	30
Trichloroethene	20.0	20.0		ug/L		100	71 - 121	1	30
Vinyl chloride	20.0	23.9		ug/L		120	61 - 144	4	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		75 - 123
Toluene-d8 (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	95		77 - 124

Eurofins TestAmerica, Edison

QC Sample Results

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

Job ID: 460-218140-1

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

Lab Sample ID: LCSD 460-723769/4
Matrix: Water
Analysis Batch: 723769

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

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	89		76 - 120

Lab Sample ID: MB 460-723910/8
Matrix: Water
Analysis Batch: 723910

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 20:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 20:33	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 20:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 20:33	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 20:33	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			09/14/20 20:33	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	87		75 - 123		09/14/20 20:33	1
Toluene-d8 (Surr)	92		80 - 120		09/14/20 20:33	1
Dibromofluoromethane (Surr)	98		77 - 124		09/14/20 20:33	1
4-Bromofluorobenzene	90		76 - 120		09/14/20 20:33	1

Lab Sample ID: LCS 460-723910/4
Matrix: Water
Analysis Batch: 723910

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,1-Dichloroethene	20.0	19.0		ug/L		95	68 - 133
cis-1,2-Dichloroethene	20.0	19.8		ug/L		99	78 - 121
Tetrachloroethene	20.0	18.9		ug/L		94	70 - 127
trans-1,2-Dichloroethene	20.0	21.2		ug/L		106	74 - 126
Trichloroethene	20.0	18.8		ug/L		94	71 - 121
Vinyl chloride	20.0	21.6		ug/L		108	61 - 144

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	83		75 - 123
Toluene-d8 (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	97		77 - 124
4-Bromofluorobenzene	92		76 - 120

Lab Sample ID: LCSD 460-723910/5
Matrix: Water
Analysis Batch: 723910

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

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
1,1-Dichloroethene	20.0	20.3		ug/L		101	68 - 133	6	30
cis-1,2-Dichloroethene	20.0	19.8		ug/L		99	78 - 121	0	30
Tetrachloroethene	20.0	20.5		ug/L		103	70 - 127	8	30
trans-1,2-Dichloroethene	20.0	21.1		ug/L		106	74 - 126	0	30
Trichloroethene	20.0	19.7		ug/L		99	71 - 121	5	30

Eurofins TestAmerica, Edison

QC Sample Results

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

Job ID: 460-218140-1

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

Lab Sample ID: LCSD 460-723910/5
Matrix: Water
Analysis Batch: 723910

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	20.0	22.6		ug/L		113	61 - 144	4	30
Surrogate									
	%Recovery	LCSD Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	83		75 - 123						
Toluene-d8 (Surr)	92		80 - 120						
Dibromofluoromethane (Surr)	97		77 - 124						
4-Bromofluorobenzene	93		76 - 120						

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

Lab Sample ID: MB 460-723777/7
Matrix: Water
Analysis Batch: 723777

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.33	ug/L			09/14/20 08:26	1
Surrogate									
	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	80		52 - 137					09/14/20 08:26	1

Lab Sample ID: LCS 460-723777/3
Matrix: Water
Analysis Batch: 723777

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	5.00	4.62		ug/L		92	64 - 138		
Surrogate									
	%Recovery	LCS Qualifier	Limits						
4-Bromofluorobenzene	81		52 - 137						

Lab Sample ID: LCSD 460-723777/4
Matrix: Water
Analysis Batch: 723777

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	5.00	4.82		ug/L		96	64 - 138	4	30
Surrogate									
	%Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene	79		52 - 137						

QC Association Summary

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

Job ID: 460-218140-1

GC/MS VOA

Analysis Batch: 723769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-218140-1	TRIP BLANK	Total/NA	Water	8260C	
MB 460-723769/7	Method Blank	Total/NA	Water	8260C	
LCS 460-723769/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 460-723769/4	Lab Control Sample Dup	Total/NA	Water	8260C	

Analysis Batch: 723777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-218140-2	MW-147S_091120	Total/NA	Water	8260C SIM	
MB 460-723777/7	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-723777/3	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 460-723777/4	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

Analysis Batch: 723910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-218140-2	MW-147S_091120	Total/NA	Water	8260C	
MB 460-723910/8	Method Blank	Total/NA	Water	8260C	
LCS 460-723910/4	Lab Control Sample	Total/NA	Water	8260C	
LCSD 460-723910/5	Lab Control Sample Dup	Total/NA	Water	8260C	

Lab Chronicle

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

Job ID: 460-218140-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-218140-1

Date Collected: 09/11/20 00:00

Matrix: Water

Date Received: 09/12/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	723769	09/14/20 09:45	SZD	TAL EDI

Client Sample ID: MW-147S_091120

Lab Sample ID: 460-218140-2

Date Collected: 09/11/20 13:33

Matrix: Water

Date Received: 09/12/20 10:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	723910	09/14/20 21:45	VBP	TAL EDI
Total/NA	Analysis	8260C SIM		1	723777	09/14/20 09:56	SZD	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

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

Job ID: 460-218140-1

Laboratory: Eurofins TestAmerica, Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-20
DE Haz. Subst. Cleanup Act (HSCA)	State	<cert No.>	12-31-21
Georgia	State	12028 (NJ)	07-01-21
Massachusetts	State	M-NJ312	06-30-21
New Jersey	NELAP	12028	06-30-21
New York	NELAP	11452	04-01-21
Pennsylvania	NELAP	68-00522	02-28-21
Rhode Island	State	LAO00132	12-31-20
USDA	US Federal Programs	P330-18-00135	05-03-21

Method Summary

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

Job ID: 460-218140-1

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

Protocol References:

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

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900



Sample Summary

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

Job ID: 460-218140-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
460-218140-1	TRIP BLANK	Water	09/11/20 00:00	09/12/20 10:55	
460-218140-2	MW-147S_091120	Water	09/11/20 13:33	09/12/20 10:55	

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 460-218140-1

Login Number: 218140

List Source: Eurofins TestAmerica, Edison

List Number: 1

Creator: Rivera, Kenneth

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1043178
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VERIFICATION REPORT



September 16, 2020

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: 30050315.0402.04 off site
Event Specific Scope of Work References: Sample COC
Laboratory: TestAmerica - Edison
Laboratory submittal: 218140-1
Sample date: 2020-09-11
Report received by CADENA: 2020-09-16
Initial Data Verification completed by CADENA: 2020-09-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC and GCMS SVOC

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 QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

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

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

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

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - Edison

Laboratory Submittal: 218140-1

Sample Name: TRIP BLANK MW-147S_091120
Lab Sample ID: 4602181401 4602181402
Sample Date: 9/11/2020 9/11/2020

Analyte	Cas No.	Report		Units	Valid Qualifier	Report		Units	Valid Qualifier	
		Result	Limit			Result	Limit			
GC/MS VOC										
<u>OSW-8260C</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	---	1.4	1.0	ug/l	---	
GC/MS SVOC										
<u>OSW-8260CSIM</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 # 240-135456-1 and 240-218140-1

CADENA Verification Report: 2020-09-09 and 2020-09-16

Analyses Performed By:

TestAmerica

Edison, New Jersey

Report #38345R

Review Level: Tier III

Project: 30050315.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 240-135456-1 and 240-218140-1 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:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						VOC (Full Scan)	VOC (SIM)	MISC
240-135456-1	TRIP BLANK	240-135456-1	Water	8/20/2020		X		
	MW-147S_082020	240-135456-2	Water	8/20/2020		X	X	
240-218140-1	TRIP BLANK	460-218140-1	Water	9/11/2020		X		
	MW-147S_091120	460-218140-2	Water	9/11/2020		X	X	

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

DATA REVIEW

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.

DATA REVIEW

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, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
TRIP BLANK (240-218140-1)	CCV %D	Vinyl chloride	+24.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

DATA REVIEW

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD >90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D >90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

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 was not performed on a sample within 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.

DATA REVIEW

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 REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

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

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:



DATE: September 8, 2020

PEER REVIEW: Joseph C. Houser

DATE: September 9, 2020



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Chain of Custody Record

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

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240 Project Name: Ford LTP Off-Site Project Number: 30050315.402.04 PO # 30050315.402.04		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinskey Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com		Lab Contact: Mike DelMontico Telephone: 330-497-9396	
Sample Name: CHRISTOPHER WEAVER Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below: <input type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day	
Containers & Preservatives H2SO4 HNO3 HCl NaOH ZnAc NaOH Other:		Filtered Sample (Y/N) Composite C / Grab-C	
Matrix Air Aqueous Sediment Solid Other:		Analyses 1,1-DCE 8260B cis-1,2-DCE 8260B Trans-1,2-DCE 8260B PCE 8260B TCE 8260B Vinyl Chloride 8260B 1,4-Dioxane 8260B SIM	
Sample Identification 1 TRIP BLANK 2 MW-1475-091120		Sample Date: 9/11/20 Sample Time: 1333	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Special Instructions/OC Requirements & Comments: Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.		CS # 1043178	
Relinquished by: Christopher Weaver Date/Time: 9/11/20 14:40		Received by: WJ Date/Time: 9/11/20 14:45	
Relinquished by: WJ Date/Time: 9/11/20 14:45		Received by: JOHNN (FedEx) Date/Time: 9/12/20 10:55	
Relinquished by:		Received in Laboratory by:	
Date/Time: 9/11/20 14:40		Date/Time: 9/12/20 10:55	



2-Day RUSH

3.4°C IR 11

©2019 TestAmerica Laboratories, Inc. All rights reserved. TestAmerica and Logo are trademarks of TestAmerica Laboratories, Inc.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Client Sample Results

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

Job ID: 460-218140-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-218140-1

Date Collected: 09/11/20 00:00

Matrix: Water

Date Received: 09/12/20 10:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 09:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 09:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 09:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 09:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 09:45	1
Vinyl chloride	1.0	U	1.0	0.17	ug/L			09/14/20 09:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 123		09/14/20 09:45	1
Toluene-d8 (Surr)	95		80 - 120		09/14/20 09:45	1
Dibromofluoromethane (Surr)	96		77 - 124		09/14/20 09:45	1
4-Bromofluorobenzene	88		76 - 120		09/14/20 09:45	1

Client Sample ID: MW-147S_091120

Lab Sample ID: 460-218140-2

Date Collected: 09/11/20 13:33

Matrix: Water

Date Received: 09/12/20 10:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.33	ug/L			09/14/20 09:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	79		52 - 137		09/14/20 09:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.26	ug/L			09/14/20 21:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.22	ug/L			09/14/20 21:45	1
Tetrachloroethene	1.0	U	1.0	0.25	ug/L			09/14/20 21:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.24	ug/L			09/14/20 21:45	1
Trichloroethene	1.0	U	1.0	0.31	ug/L			09/14/20 21:45	1
Vinyl chloride	1.4		1.0	0.17	ug/L			09/14/20 21:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 123		09/14/20 21:45	1
Toluene-d8 (Surr)	93		80 - 120		09/14/20 21:45	1
Dibromofluoromethane (Surr)	98		77 - 124		09/14/20 21:45	1
4-Bromofluorobenzene	90		76 - 120		09/14/20 21:45	1

Chain of Custody Record

4.15.0

MICHIGAN

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

Regulatory program: DW NPDES RCRA Other

Client Project Manager: Kris Hinskey
Site Contact: Julia McClafferty
Telephone: 248-994-2240 Telephone: 734-644-5131

Email: kris@hinskey.com
Analyst Turnaround Time: 10 day

Sampler Name: Andrew Barritt
Method of Shipment/Carrier:
Shipping/Tracking No:

Sample Identification	Sample Date	Sample Time	Matrix			Containers & Preservatives						Filtered Sample (Y / N)	Composite (C / Grab-G)	Analyses						Sample Specific Notes / Special Instructions:					
			Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH			ZnAc	NaOH	Uppers	Other:	1,1-DCE 8260B	cis-1,2-DCE 8260B		Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM
Trip Blank	8/20/20	-	1																						1 Trip Blank
NW-1475-082020	8/20/20	1540	6																						3 Vials for 320B 3 Vials for 8260B SIM

240-135456 Chain of Custody

Possible Hazard Identification
 Non-hazard Flammable Corrosive Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631 Level IV Reporting requested.

Company:	Date/Time:	Received by:	Company:	Date/Time:
Acadus	8/20/20 1640	Non-Cold Storage	Acadus	8/20/20 1640
Acadus	8/20/20 1230	AM	ETHMI	8/21/20 12:30
ETHMI	8/21/20 12:31	AM	ETHMI	8-22-20 1000



Client Sample Results

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

Job ID: 240-135456-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-135456-1

Date Collected: 08/20/20 00:00

Matrix: Water

Date Received: 08/22/20 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.46	ug/L			09/01/20 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.38	ug/L			09/01/20 20:16	1
Tetrachloroethene	1.0	U	1.0	0.33	ug/L			09/01/20 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.43	ug/L			09/01/20 20:16	1
Trichloroethene	1.0	U	1.0	0.36	ug/L			09/01/20 20:16	1
Vinyl chloride	1.0	U	1.0	0.50	ug/L			09/01/20 20:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		09/01/20 20:16	1
4-Bromofluorobenzene (Surr)	65		47 - 134		09/01/20 20:16	1
Toluene-d8 (Surr)	89		69 - 122		09/01/20 20:16	1
Dibromofluoromethane (Surr)	105		78 - 129		09/01/20 20:16	1

Client Sample Results

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

Job ID: 240-135456-1

Client Sample ID: MW-147S_082020

Lab Sample ID: 240-135456-2

Date Collected: 08/20/20 15:40

Matrix: Water

Date Received: 08/22/20 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/20 12:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 133		08/29/20 12:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.46	ug/L			09/01/20 21:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.38	ug/L			09/01/20 21:51	1
Tetrachloroethene	1.0	U	1.0	0.33	ug/L			09/01/20 21:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.43	ug/L			09/01/20 21:51	1
Trichloroethene	1.0	U	1.0	0.36	ug/L			09/01/20 21:51	1
Vinyl chloride	1.4		1.0	0.50	ug/L			09/01/20 21:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 130		09/01/20 21:51	1
4-Bromofluorobenzene (Surr)	68		47 - 134		09/01/20 21:51	1
Toluene-d8 (Surr)	92		69 - 122		09/01/20 21:51	1
Dibromofluoromethane (Surr)	103		78 - 129		09/01/20 21:51	1