

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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Tel: (330)497-9396

Laboratory Job ID: 240-119306-1

Client Project/Site: Ford LTP Livonia MI - E203631

For:

ARCADIS U.S., Inc.
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Attn: Kristoffer Hinskey



Authorized for release by:
10/7/2019 3:54:43 PM

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

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Job ID: 240-119306-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-119306-1

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 9/21/2019 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-78S_091919 (240-119306-1), MW-78_091919 (240-119306-2), DUP-02 (240-119306-3), MW-79D_091919 (240-119306-4) and TRIP BLANK (1) (240-119306-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/01/2019 and 10/02/2019.

1,2-Dichloroethane-d4 (Surr) failed the surrogate recovery criteria high for LCS 240-403240/4. Refer to the QC report for details.

Surrogate recovery for the LCS and the following samples were outside the upper control limit: MW-78S_091919 (240-119306-1), MW-78_091919 (240-119306-2), TRIP BLANK (1) (240-119306-5) and (LCS 240-403240/4). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No MS/MSD in batch 403654 due to an instrument fault: DUP-02 (240-119306-3) and MW-79D_091919 (240-119306-4).

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Job ID: 240-119306-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

Samples MW-78S_091919 (240-119306-1), MW-78_091919 (240-119306-2), DUP-02 (240-119306-3) and MW-79D_091919 (240-119306-4) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 09/26/2019.

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

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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



Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119306-1	MW-78S_091919	Water	09/19/19 13:28	09/21/19 09:50	
240-119306-2	MW-78_091919	Water	09/19/19 14:38	09/21/19 09:50	
240-119306-3	DUP-02	Water	09/19/19 00:00	09/21/19 09:50	
240-119306-4	MW-79D_091919	Water	09/19/19 11:07	09/21/19 09:50	
240-119306-5	TRIP BLANK (1)	Water	09/19/19 00:00	09/21/19 09:50	

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- 11
- 12
- 13
- 14

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: MW-78S_091919

Lab Sample ID: 240-119306-1

No Detections.

Client Sample ID: MW-78_091919

Lab Sample ID: 240-119306-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.22	J	1.0	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: DUP-02

Lab Sample ID: 240-119306-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.87	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	1.7		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-79D_091919

Lab Sample ID: 240-119306-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119306-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: MW-78S_091919

Lab Sample ID: 240-119306-1

Date Collected: 09/19/19 13:28

Matrix: Water

Date Received: 09/21/19 09:50

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			09/26/19 17:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 125		09/26/19 17:25	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	0.19	ug/L			10/01/19 02:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/19 02:18	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/19 02:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/19 02:18	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/19 02:18	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/19 02:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		10/01/19 02:18	1
4-Bromofluorobenzene (Surr)	94		59 - 120		10/01/19 02:18	1
Toluene-d8 (Surr)	98		70 - 123		10/01/19 02:18	1
Dibromofluoromethane (Surr)	87		75 - 128		10/01/19 02:18	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: MW-78_091919

Lab Sample ID: 240-119306-2

Date Collected: 09/19/19 14:38

Matrix: Water

Date Received: 09/21/19 09:50

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	-		09/26/19 17:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125		09/26/19 17:50	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	0.19	ug/L	-		10/01/19 02:40	1
cis-1,2-Dichloroethene	0.22	J	1.0	0.16	ug/L	-		10/01/19 02:40	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		10/01/19 02:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		10/01/19 02:40	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		10/01/19 02:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		10/01/19 02:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		10/01/19 02:40	1
4-Bromofluorobenzene (Surr)	99		59 - 120		10/01/19 02:40	1
Toluene-d8 (Surr)	102		70 - 123		10/01/19 02:40	1
Dibromofluoromethane (Surr)	88		75 - 128		10/01/19 02:40	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: DUP-02

Lab Sample ID: 240-119306-3

Date Collected: 09/19/19 00:00

Matrix: Water

Date Received: 09/21/19 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.87	J	2.0	0.86	ug/L			09/26/19 18:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		63 - 125		09/26/19 18:15	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	0.19	ug/L			10/02/19 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 15:02	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 15:02	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 15:02	1
Vinyl chloride	1.7		1.0	0.20	ug/L			10/02/19 15:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		70 - 121		10/02/19 15:02	1
4-Bromofluorobenzene (Surr)	97		59 - 120		10/02/19 15:02	1
Toluene-d8 (Surr)	100		70 - 123		10/02/19 15:02	1
Dibromofluoromethane (Surr)	90		75 - 128		10/02/19 15:02	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: MW-79D_091919

Lab Sample ID: 240-119306-4

Date Collected: 09/19/19 11:07

Matrix: Water

Date Received: 09/21/19 09:50

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			09/26/19 18:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125		09/26/19 18:40	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	0.19	ug/L			10/02/19 15:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 15:25	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 15:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 15:25	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 15:25	1
Vinyl chloride	1.5		1.0	0.20	ug/L			10/02/19 15:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		70 - 121		10/02/19 15:25	1
4-Bromofluorobenzene (Surr)	98		59 - 120		10/02/19 15:25	1
Toluene-d8 (Surr)	100		70 - 123		10/02/19 15:25	1
Dibromofluoromethane (Surr)	85		75 - 128		10/02/19 15:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119306-5

Date Collected: 09/19/19 00:00

Matrix: Water

Date Received: 09/21/19 09:50

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	0.19	ug/L			10/01/19 03:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/01/19 03:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/01/19 03:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/01/19 03:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/01/19 03:47	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/01/19 03:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		70 - 121		10/01/19 03:47	1
4-Bromofluorobenzene (Surr)	97		59 - 120		10/01/19 03:47	1
Toluene-d8 (Surr)	96		70 - 123		10/01/19 03:47	1
Dibromofluoromethane (Surr)	88		75 - 128		10/01/19 03:47	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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 (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-119304-B-1 MSD	Matrix Spike Duplicate	113	97	97	93
240-119304-D-1 MS	Matrix Spike	109	98	98	82
240-119306-1	MW-78S_091919	114	94	98	87
240-119306-2	MW-78_091919	117	99	102	88
240-119306-3	DUP-02	119	97	100	90
240-119306-4	MW-79D_091919	115	98	100	85
240-119306-5	TRIP BLANK (1)	118	97	96	88
LCS 240-403240/4	Lab Control Sample	123 X	107	104	96
LCS 240-403654/4	Lab Control Sample	106	95	93	85
MB 240-403240/6	Method Blank	117	98	101	91
MB 240-403654/6	Method Blank	118	99	103	83

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 (63-125)
240-119306-1	MW-78S_091919	99
240-119306-2	MW-78_091919	102
240-119306-3	DUP-02	100
240-119306-4	MW-79D_091919	103
240-119306-4 MS	MW-79D_091919	101
240-119306-4 MSD	MW-79D_091919	101
LCS 240-402639/4	Lab Control Sample	99
MB 240-402639/5	Method Blank	98

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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

Lab Sample ID: MB 240-403240/6
Matrix: Water
Analysis Batch: 403240

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	0.19	ug/L			09/30/19 21:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			09/30/19 21:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			09/30/19 21:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			09/30/19 21:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			09/30/19 21:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			09/30/19 21:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		09/30/19 21:51	1
4-Bromofluorobenzene (Surr)	98		59 - 120		09/30/19 21:51	1
Toluene-d8 (Surr)	101		70 - 123		09/30/19 21:51	1
Dibromofluoromethane (Surr)	91		75 - 128		09/30/19 21:51	1

Lab Sample ID: LCS 240-403240/4
Matrix: Water
Analysis Batch: 403240

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	9.16		ug/L		92	65 - 139
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 128
Tetrachloroethene	10.0	9.44		ug/L		94	74 - 130
trans-1,2-Dichloroethene	10.0	9.90		ug/L		99	78 - 133
Trichloroethene	10.0	8.92		ug/L		89	76 - 125
Vinyl chloride	10.0	8.80		ug/L		88	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	123	X	70 - 121
4-Bromofluorobenzene (Surr)	107		59 - 120
Toluene-d8 (Surr)	104		70 - 123
Dibromofluoromethane (Surr)	96		75 - 128

Lab Sample ID: 240-119304-B-1 MSD
Matrix: Water
Analysis Batch: 403240

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	7.79		ug/L		78	53 - 140	8	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.05		ug/L		90	64 - 130	3	21
Tetrachloroethene	1.0	U	10.0	7.07		ug/L		71	51 - 136	2	23
trans-1,2-Dichloroethene	1.0	U	10.0	8.46		ug/L		85	68 - 133	4	24
Trichloroethene	1.0	U	10.0	7.18		ug/L		72	55 - 131	0	23
Vinyl chloride	1.0	U	10.0	7.11		ug/L		71	43 - 154	2	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	113		70 - 121
4-Bromofluorobenzene (Surr)	97		59 - 120
Toluene-d8 (Surr)	97		70 - 123

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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

Lab Sample ID: 240-119304-B-1 MSD
Matrix: Water
Analysis Batch: 403240

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

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	93		75 - 128

Lab Sample ID: 240-119304-D-1 MS
Matrix: Water
Analysis Batch: 403240

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	1.0	U	10.0	7.21		ug/L		72	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	8.79		ug/L		88	64 - 130
Tetrachloroethene	1.0	U	10.0	7.24		ug/L		72	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	8.15		ug/L		81	68 - 133
Trichloroethene	1.0	U	10.0	7.21		ug/L		72	55 - 131
Vinyl chloride	1.0	U	10.0	7.00		ug/L		70	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		70 - 121
4-Bromofluorobenzene (Surr)	98		59 - 120
Toluene-d8 (Surr)	98		70 - 123
Dibromofluoromethane (Surr)	82		75 - 128

Lab Sample ID: MB 240-403654/6
Matrix: Water
Analysis Batch: 403654

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	0.19	ug/L			10/02/19 12:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/02/19 12:27	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/02/19 12:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/02/19 12:27	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/02/19 12:27	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/02/19 12:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		70 - 121		10/02/19 12:27	1
4-Bromofluorobenzene (Surr)	99		59 - 120		10/02/19 12:27	1
Toluene-d8 (Surr)	103		70 - 123		10/02/19 12:27	1
Dibromofluoromethane (Surr)	83		75 - 128		10/02/19 12:27	1

Lab Sample ID: LCS 240-403654/4
Matrix: Water
Analysis Batch: 403654

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	8.95		ug/L		90	65 - 139
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	76 - 128
Tetrachloroethene	10.0	9.12		ug/L		91	74 - 130
trans-1,2-Dichloroethene	10.0	9.83		ug/L		98	78 - 133
Trichloroethene	10.0	8.45		ug/L		84	76 - 125

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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

Lab Sample ID: LCS 240-403654/4
Matrix: Water
Analysis Batch: 403654

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	7.66		ug/L		77	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		70 - 121
4-Bromofluorobenzene (Surr)	95		59 - 120
Toluene-d8 (Surr)	93		70 - 123
Dibromofluoromethane (Surr)	85		75 - 128

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

Lab Sample ID: MB 240-402639/5
Matrix: Water
Analysis Batch: 402639

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	0.86	ug/L			09/26/19 13:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 125		09/26/19 13:18	1

Lab Sample ID: LCS 240-402639/4
Matrix: Water
Analysis Batch: 402639

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	10.0	10.8		ug/L		108	59 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		63 - 125

Lab Sample ID: 240-119306-4 MS
Matrix: Water
Analysis Batch: 402639

Client Sample ID: MW-79D_091919
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	52 - 129

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		63 - 125

Lab Sample ID: 240-119306-4 MSD
Matrix: Water
Analysis Batch: 402639

Client Sample ID: MW-79D_091919
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	52 - 129	8	13

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

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

Lab Sample ID: 240-119306-4 MSD
Matrix: Water
Analysis Batch: 402639

Client Sample ID: MW-79D_091919
Prep Type: Total/NA

<i>Surrogate</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
1,2-Dichloroethane-d4 (Surr)	101		63 - 125

- 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 Livonia MI - E203631

Job ID: 240-119306-1

GC/MS VOA

Analysis Batch: 402639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119306-1	MW-78S_091919	Total/NA	Water	8260B SIM	
240-119306-2	MW-78_091919	Total/NA	Water	8260B SIM	
240-119306-3	DUP-02	Total/NA	Water	8260B SIM	
240-119306-4	MW-79D_091919	Total/NA	Water	8260B SIM	
MB 240-402639/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-402639/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119306-4 MS	MW-79D_091919	Total/NA	Water	8260B SIM	
240-119306-4 MSD	MW-79D_091919	Total/NA	Water	8260B SIM	

Analysis Batch: 403240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119306-1	MW-78S_091919	Total/NA	Water	8260B	
240-119306-2	MW-78_091919	Total/NA	Water	8260B	
240-119306-5	TRIP BLANK (1)	Total/NA	Water	8260B	
MB 240-403240/6	Method Blank	Total/NA	Water	8260B	
LCS 240-403240/4	Lab Control Sample	Total/NA	Water	8260B	
240-119304-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-119304-D-1 MS	Matrix Spike	Total/NA	Water	8260B	

Analysis Batch: 403654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119306-3	DUP-02	Total/NA	Water	8260B	
240-119306-4	MW-79D_091919	Total/NA	Water	8260B	
MB 240-403654/6	Method Blank	Total/NA	Water	8260B	
LCS 240-403654/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203631

Job ID: 240-119306-1

Client Sample ID: MW-78S_091919

Lab Sample ID: 240-119306-1

Date Collected: 09/19/19 13:28

Matrix: Water

Date Received: 09/21/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403240	10/01/19 02:18	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	402639	09/26/19 17:25	SAM	TAL CAN

Client Sample ID: MW-78_091919

Lab Sample ID: 240-119306-2

Date Collected: 09/19/19 14:38

Matrix: Water

Date Received: 09/21/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403240	10/01/19 02:40	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	402639	09/26/19 17:50	SAM	TAL CAN

Client Sample ID: DUP-02

Lab Sample ID: 240-119306-3

Date Collected: 09/19/19 00:00

Matrix: Water

Date Received: 09/21/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403654	10/02/19 15:02	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	402639	09/26/19 18:15	SAM	TAL CAN

Client Sample ID: MW-79D_091919

Lab Sample ID: 240-119306-4

Date Collected: 09/19/19 11:07

Matrix: Water

Date Received: 09/21/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403654	10/02/19 15:25	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	402639	09/26/19 18:40	SAM	TAL CAN

Client Sample ID: TRIP BLANK (1)

Lab Sample ID: 240-119306-5

Date Collected: 09/19/19 00:00

Matrix: Water

Date Received: 09/21/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	403240	10/01/19 03:47	LEE	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 Livonia MI - E203631

Job ID: 240-119306-1

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	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19



Regulatory program: DW NPDES RCRA Other

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 Project Number: M1001454.0004.0002B PO # M1001454.0004.0002B		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		Site Contact: Rachel Bielak Telephone: 248-946-6331 Lab Contact: Mike DeMontico Telephone: 330-497-9396		TestAmerica Laboratories, Inc. COC No: _____ of _____ COCs For lab use only Walk-in client Lab sampling Job/SDG No: _____	
Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if differs 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		Analysis 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 Specific Notes / Special Instructions: Bottles Bottles Bottles Bottles	
Sample Identification MW-785-091919 MW-78-091919 DUP-02 MW-79D-091919 Trip Blank (1)		Matrix Air Aqueous Sediment Solid Other:		Containers & Preservative HCl NaOH NaOH U/pres Other:		Filtered Sample (Y/N) Composite=C / Grab=C 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 Date 9/19/19 ↓ ↓		Sample Time 1328 1438 - 1107		H2SO4 HNO3 HCl NaOH U/pres Other:		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	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203631 Level IV Reporting requested.		Received by: <i>Julie McElroy</i> Date/Time: 9/19/19 1600 Company: Arcadis		Received by: <i>Adavi Cold Storage</i> Date/Time: 9/19/19 1900 Company: Arcadis	
Relinquished by: <i>Rachel Bielak</i> Date/Time: 9/20/19 1514 Company: Arcadis		Relinquished by: <i>Julie McElroy</i> Date/Time: 9/19/19 1900 Company: Arcadis		Relinquished by: <i>Adavi Cold Storage</i> Date/Time: 9/20/19 1130 Company: EIA		Relinquished by: <i>Rachel Bielak</i> Date/Time: 9/20/19 1130 Company: EIA	



Canton Facility _____
 Client Arcadis Site Name _____ Cooler unpacked by: _____
 Cooler Received on 9-21-19 Opened on 9-23-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA 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. 1.6 °C Corrected Cooler Temp. 2.3 °C
 IR GUN #IR-11 (CF +0.9 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °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# HC991818
 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: RC

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: _____