

ANALYTICAL REPORT

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

Laboratory Job ID: 240-114179-1
Client Project/Site: Ford LTP Livonia MI - E203728

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

Attn: Kristoffer Hinskey



Authorized for release by:
6/26/2019 3:22:00 PM

Michael DelMonico, Project Manager I
(330)497-9396
michael.delmonico@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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	6
Sample Summary	7
Detection Summary	8
Client Sample Results	9
Surrogate Summary	11
QC Sample Results	12
QC Association Summary	16
Lab Chronicle	17
Certification Summary	18
Chain of Custody	19

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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.

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 - E203728

Job ID: 240-114179-1

Job ID: 240-114179-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-114179-1

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 6/12/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.5° C, 3.9° C and 4.5° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples PW-16-01_061019 (240-114179-1) and TRIP BLANK (240-114179-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/21/2019 and 06/22/2019.

Sample PW-16-01_061019 (240-114179-1)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The internal standard is outside QC acceptance criteria and the Vinyl Chloride is suspected carry over from the previous sample but there is insufficient sample to re-analyze: TRIP BLANK (240-114179-2).

No MS/MSD in batch 385516 due to the internal standards dropping: TRIP BLANK (240-114179-2).

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample PW-16-01_061019 (240-114179-1) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The sample was analyzed on 06/16/2019.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

Job ID: 240-114179-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

1,4-Dioxane was detected in method blank MB 240-386387/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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 - E203728

Job ID: 240-114179-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114179-1	PW-16-01_061019	Water	06/10/19 17:30	06/12/19 08:40	
240-114179-2	TRIP BLANK	Water	06/10/19 00:00	06/12/19 08:40	

- 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 Livonia MI - E203728

Job ID: 240-114179-1

Client Sample ID: PW-16-01_061019

Lab Sample ID: 240-114179-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0	B	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	300		100	16	ug/L	100		8260B	Total/NA
Vinyl chloride	2100		100	20	ug/L	100		8260B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114179-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.18	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	2.2		1.0	0.20	ug/L	1		8260B	Total/NA

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 - E203728

Job ID: 240-114179-1

Client Sample ID: PW-16-01_061019

Lab Sample ID: 240-114179-1

Date Collected: 06/10/19 17:30

Matrix: Water

Date Received: 06/12/19 08:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.0	B	2.0	0.86	ug/L	-		06/16/19 11:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		63 - 125		06/16/19 11:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	100	U	100	19	ug/L	-		06/22/19 17:35	100
cis-1,2-Dichloroethene	300		100	16	ug/L			06/22/19 17:35	100
Tetrachloroethene	100	U	100	15	ug/L			06/22/19 17:35	100
trans-1,2-Dichloroethene	100	U	100	19	ug/L			06/22/19 17:35	100
Trichloroethene	100	U	100	10	ug/L			06/22/19 17:35	100
Vinyl chloride	2100		100	20	ug/L			06/22/19 17:35	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 121		06/22/19 17:35	100
4-Bromofluorobenzene (Surr)	95		59 - 120		06/22/19 17:35	100
Toluene-d8 (Surr)	106		70 - 123		06/22/19 17:35	100
Dibromofluoromethane (Surr)	114		75 - 128		06/22/19 17:35	100

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114179-2

Date Collected: 06/10/19 00:00

Matrix: Water

Date Received: 06/12/19 08:40

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			06/21/19 17:39	1
cis-1,2-Dichloroethene	0.18	J	1.0	0.16	ug/L			06/21/19 17:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/21/19 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/21/19 17:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/21/19 17:39	1
Vinyl chloride	2.2		1.0	0.20	ug/L			06/21/19 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		70 - 121		06/21/19 17:39	1
4-Bromofluorobenzene (Surr)	68		59 - 120		06/21/19 17:39	1
Toluene-d8 (Surr)	84		70 - 123		06/21/19 17:39	1
Dibromofluoromethane (Surr)	102		75 - 128		06/21/19 17:39	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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)
240-114179-1	PW-16-01_061019	108	95	106	114
240-114179-2	TRIP BLANK	100	68	84	102
240-114181-G-3 MS	Matrix Spike	94	99	103	97
240-114181-L-3 MSD	Matrix Spike Duplicate	90	96	98	94
LCS 240-387516/4	Lab Control Sample	82	90	98	84
LCS 240-387696/4	Lab Control Sample	102	106	111	101
LCSD 240-387696/8	Lab Control Sample Dup	100	105	112	101
MB 240-387516/6	Method Blank	93	65	80	90
MB 240-387696/6	Method Blank	106	93	108	102

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)
240-114179-1	PW-16-01_061019	79
240-114181-B-3 MS	Matrix Spike	87
240-114181-B-3 MSD	Matrix Spike Duplicate	94
LCS 240-386387/4	Lab Control Sample	92
MB 240-386387/5	Method Blank	91

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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

Lab Sample ID: MB 240-387516/6
Matrix: Water
Analysis Batch: 387516

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			06/21/19 12:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/21/19 12:12	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/21/19 12:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/21/19 12:12	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/21/19 12:12	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/21/19 12:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		70 - 121		06/21/19 12:12	1
4-Bromofluorobenzene (Surr)	65		59 - 120		06/21/19 12:12	1
Toluene-d8 (Surr)	80		70 - 123		06/21/19 12:12	1
Dibromofluoromethane (Surr)	90		75 - 128		06/21/19 12:12	1

Lab Sample ID: LCS 240-387516/4
Matrix: Water
Analysis Batch: 387516

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	8.96		ug/L		90	65 - 139
cis-1,2-Dichloroethene	10.0	8.64		ug/L		86	76 - 128
Tetrachloroethene	10.0	9.65		ug/L		96	74 - 130
trans-1,2-Dichloroethene	10.0	9.12		ug/L		91	78 - 133
Trichloroethene	10.0	8.96		ug/L		90	76 - 125
Vinyl chloride	10.0	8.93		ug/L		89	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		70 - 121
4-Bromofluorobenzene (Surr)	90		59 - 120
Toluene-d8 (Surr)	98		70 - 123
Dibromofluoromethane (Surr)	84		75 - 128

Lab Sample ID: MB 240-387696/6
Matrix: Water
Analysis Batch: 387696

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			06/22/19 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			06/22/19 13:52	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			06/22/19 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			06/22/19 13:52	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			06/22/19 13:52	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			06/22/19 13:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 121		06/22/19 13:52	1
4-Bromofluorobenzene (Surr)	93		59 - 120		06/22/19 13:52	1
Toluene-d8 (Surr)	108		70 - 123		06/22/19 13:52	1

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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

Lab Sample ID: MB 240-387696/6
Matrix: Water
Analysis Batch: 387696

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

Surrogate	MB MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)		102		75 - 128		06/22/19 13:52	1

Lab Sample ID: LCS 240-387696/4
Matrix: Water
Analysis Batch: 387696

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	11.0		ug/L		110	65 - 139
cis-1,2-Dichloroethene	10.0	10.8		ug/L		108	76 - 128
Tetrachloroethene	10.0	9.53		ug/L		95	74 - 130
trans-1,2-Dichloroethene	10.0	10.8		ug/L		108	78 - 133
Trichloroethene	10.0	9.42		ug/L		94	76 - 125
Vinyl chloride	10.0	9.80		ug/L		98	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		70 - 121
4-Bromofluorobenzene (Surr)	106		59 - 120
Toluene-d8 (Surr)	111		70 - 123
Dibromofluoromethane (Surr)	101		75 - 128

Lab Sample ID: LCSD 240-387696/8
Matrix: Water
Analysis Batch: 387696

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	10.0	11.0		ug/L		110	65 - 139	0	35
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	76 - 128	3	35
Tetrachloroethene	10.0	9.10		ug/L		91	74 - 130	5	35
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	78 - 133	1	35
Trichloroethene	10.0	9.64		ug/L		96	76 - 125	2	35
Vinyl chloride	10.0	10.3		ug/L		103	58 - 143	5	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 121
4-Bromofluorobenzene (Surr)	105		59 - 120
Toluene-d8 (Surr)	112		70 - 123
Dibromofluoromethane (Surr)	101		75 - 128

Lab Sample ID: 240-114181-G-3 MS
Matrix: Water
Analysis Batch: 387696

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	8.51		ug/L		85	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	9.72		ug/L		97	64 - 130
Tetrachloroethene	1.0	U	10.0	7.38		ug/L		74	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	9.53		ug/L		95	68 - 133
Trichloroethene	1.0	U	10.0	7.85		ug/L		79	55 - 131

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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

Lab Sample ID: 240-114181-G-3 MS
Matrix: Water
Analysis Batch: 387696

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
Vinyl chloride	1.5		10.0	8.91		ug/L		74	43 - 154
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	94		70 - 121						
4-Bromofluorobenzene (Surr)	99		59 - 120						
Toluene-d8 (Surr)	103		70 - 123						
Dibromofluoromethane (Surr)	97		75 - 128						

Lab Sample ID: 240-114181-L-3 MSD
Matrix: Water
Analysis Batch: 387696

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	9.50		ug/L		95	53 - 140	11	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.86		ug/L		99	64 - 130	1	21
Tetrachloroethene	1.0	U	10.0	8.11		ug/L		81	51 - 136	9	23
trans-1,2-Dichloroethene	1.0	U	10.0	9.50		ug/L		95	68 - 133	0	24
Trichloroethene	1.0	U	10.0	8.22		ug/L		82	55 - 131	5	23
Vinyl chloride	1.5		10.0	10.0		ug/L		85	43 - 154	12	29
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	90		70 - 121								
4-Bromofluorobenzene (Surr)	96		59 - 120								
Toluene-d8 (Surr)	98		70 - 123								
Dibromofluoromethane (Surr)	94		75 - 128								

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

Lab Sample ID: MB 240-386387/5
Matrix: Water
Analysis Batch: 386387

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	0.951	J	2.0	0.86	ug/L			06/16/19 05:43	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		63 - 125					06/16/19 05:43	1

Lab Sample ID: LCS 240-386387/4
Matrix: Water
Analysis Batch: 386387

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	12.6		ug/L		126	59 - 131
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	92		63 - 125				

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

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

Lab Sample ID: 240-114181-B-3 MS
Matrix: Water
Analysis Batch: 386387

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
1,4-Dioxane	2.0	U	10.0	12.0		ug/L		120	52 - 129
Surrogate	%Recovery	MS Qualifier	MS Limits						
1,2-Dichloroethane-d4 (Surr)	87		63 - 125						

Lab Sample ID: 240-114181-B-3 MSD
Matrix: Water
Analysis Batch: 386387

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
1,4-Dioxane	2.0	U	10.0	12.6		ug/L		126	52 - 129	4	13
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
1,2-Dichloroethane-d4 (Surr)	94		63 - 125								



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

GC/MS VOA

Analysis Batch: 386387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114179-1	PW-16-01_061019	Total/NA	Water	8260B SIM	
MB 240-386387/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-386387/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-114181-B-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-114181-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 387516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114179-2	TRIP BLANK	Total/NA	Water	8260B	
MB 240-387516/6	Method Blank	Total/NA	Water	8260B	
LCS 240-387516/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 387696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114179-1	PW-16-01_061019	Total/NA	Water	8260B	
MB 240-387696/6	Method Blank	Total/NA	Water	8260B	
LCS 240-387696/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-387696/8	Lab Control Sample Dup	Total/NA	Water	8260B	
240-114181-G-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-114181-L-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-114179-1

Client Sample ID: PW-16-01_061019

Lab Sample ID: 240-114179-1

Date Collected: 06/10/19 17:30

Matrix: Water

Date Received: 06/12/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	387696	06/22/19 17:35	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	386387	06/16/19 11:37	TJL2	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114179-2

Date Collected: 06/10/19 00:00

Matrix: Water

Date Received: 06/12/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	387516	06/21/19 17:39	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 - E203728

Job ID: 240-114179-1


Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Florida	NELAP		E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New Jersey	NELAP		OH001	06-30-19
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

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

MICHIGAN Chain of Custody Record

Client Information Client Contact: Caitlin O'Neill Company: ARCADIS U.S. Inc Address: 28550 Cabot Drive Suite 500 City: Novi State, Zip: MI, 48377 Phone: PO #: 248-411-0001 B M1001454-0006-0000+ WO #: Cadena #: E203684 72B Email: Caitlin.O'Neill@arcadis.com Project Name: Ford LTP Livonia MI - E203684 72B Site: LTP		Lab PM: DelMonico, Michael E-Mail: michael.delmonico@testamericainc.com Carrier Tracking No(s): COC No: 240-61361-26116.10 Page: Page 10 of 10 Job #:	
Analysis Requested Due Date Requested: TAT Requested (days): 10 day / standard Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> A Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> A 8260B - VOCs (Short List) <input checked="" type="checkbox"/> A 8260B, 8260B SIM <input checked="" type="checkbox"/> A		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2OHS Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other: Total Number of containers:	
Sample Identification Sample Date: 6/10/19 Sample Time: 1730 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, On-site/off): Water Preservation Code:		Special Instructions/Note:  240-114179 Chain of Custody	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:			
Empty Kit Relinquished by: Relinquished by: Emma Witherspoon (Witherspoon) Received by: Rachel Bielek (Bielek) Relinquished by: Rachel Bielek (Bielek) Received by: Rachel Bielek (Bielek) Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:			
Date: 6-11-19 1415 Company: ETA		Date: 6-10-19 1830 Company: Arcadis Date: 6/10/19 1931 Company: Arcadis Date: 6/11/19 1020 Company: Arcadis Date: 6-11-19 840 Company: EAC	
Method of Shipment: Received by: Rachel Bielek (Bielek) Date/Time: 6/10/19 18:30 Company: Arcadis Received by: Novil Cold Storage Date/Time: 6/10/19 1931 Company: Arcadis Received by: [Signature] Date/Time: 6-11-19 1018 Company: ETA Cooler Temperature(s) and Other Remarks:			

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 114179

Client Arcadis Site Name _____
 Cooler Received on 6-12-19 Opened on 6-12-19
 FedEx: 1st Grid Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by: [Signature]

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-8 (CF +0.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #36 (CF +0.6 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity each 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 NA
 -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?
 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# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Yes No NA ● ← Larger than this.
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: _____

Login #: 114179

TestAmerica Canton Sample Receipt Multiple Cooler Form									
Cooler Description (Circle)				IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)		
TA	Client	Box	Other	IR-8 #36	3.8	3.9	Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36	4.4	4.5	Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36	2.4	2.5	Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	
TA	Client	Box	Other	IR-8 #36			Wet Ice	Blue Ice	Dry Ice
							Water	None	

See Temperature Excursion Form