

ANALYTICAL REPORT

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

Laboratory Job ID: 240-110998-1
Client Project/Site: Ford LTP Livonia MI - E203631

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

Attn: Kristoffer Hinskey



Authorized for release by:
4/29/2019 4:41:29 PM

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

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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: 240-110998-1

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.
▫	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: 240-110998-1

Job ID: 240-110998-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203631

Report Number: 240-110998-1

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 4/16/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-186S_041219 (240-110998-1), MW-85SR_041219 (240-110998-2), MW-187_041219 (240-110998-3), MW-187S_041219 (240-110998-4) and TRIP BLANK (240-110998-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/19/2019.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-186S_041219 (240-110998-1), MW-85SR_041219 (240-110998-2), MW-187_041219 (240-110998-3) and MW-187S_041219 (240-110998-4) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 04/17/2019.

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

Case Narrative

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

Job ID: 240-110998-1

Job ID: 240-110998-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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Method Summary

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

Job ID: 240-110998-1

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: 240-110998-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-110998-1	MW-186S_041219	Water	04/12/19 10:55	04/16/19 10:00
240-110998-2	MW-85SR_041219	Water	04/12/19 12:45	04/16/19 10:00
240-110998-3	MW-187_041219	Water	04/12/19 14:45	04/16/19 10:00
240-110998-4	MW-187S_041219	Water	04/12/19 16:10	04/16/19 10:00
240-110998-5	TRIP BLANK	Water	04/12/19 00:00	04/16/19 10:00

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- 13
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Detection Summary

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

Job ID: 240-110998-1

Client Sample ID: MW-186S_041219

Lab Sample ID: 240-110998-1

No Detections.

Client Sample ID: MW-85SR_041219

Lab Sample ID: 240-110998-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.2		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-187_041219

Lab Sample ID: 240-110998-3

No Detections.

Client Sample ID: MW-187S_041219

Lab Sample ID: 240-110998-4

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110998-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

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Client Sample Results

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

Job ID: 240-110998-1

Client Sample ID: MW-186S_041219

Lab Sample ID: 240-110998-1

Date Collected: 04/12/19 10:55

Matrix: Water

Date Received: 04/16/19 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			04/17/19 15:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125		04/17/19 15:59	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			04/19/19 18:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/19/19 18:11	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/19/19 18:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/19/19 18:11	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/19/19 18:11	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/19/19 18:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 121		04/19/19 18:11	1
4-Bromofluorobenzene (Surr)	71		59 - 120		04/19/19 18:11	1
Toluene-d8 (Surr)	92		70 - 123		04/19/19 18:11	1
Dibromofluoromethane (Surr)	122		75 - 128		04/19/19 18:11	1

Client Sample Results

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

Job ID: 240-110998-1

Client Sample ID: MW-85SR_041219

Lab Sample ID: 240-110998-2

Date Collected: 04/12/19 12:45

Matrix: Water

Date Received: 04/16/19 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	-		04/17/19 16:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 125		04/17/19 16:25	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	-		04/19/19 18:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/19/19 18:33	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/19/19 18:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/19/19 18:33	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/19/19 18:33	1
Vinyl chloride	2.2		1.0	0.20	ug/L	-		04/19/19 18:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 121		04/19/19 18:33	1
4-Bromofluorobenzene (Surr)	69		59 - 120		04/19/19 18:33	1
Toluene-d8 (Surr)	91		70 - 123		04/19/19 18:33	1
Dibromofluoromethane (Surr)	122		75 - 128		04/19/19 18:33	1

Client Sample Results

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

Job ID: 240-110998-1

Client Sample ID: MW-187_041219

Lab Sample ID: 240-110998-3

Date Collected: 04/12/19 14:45

Matrix: Water

Date Received: 04/16/19 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	-		04/17/19 16:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 125		04/17/19 16:51	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	-		04/19/19 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L	-		04/19/19 18:55	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L	-		04/19/19 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L	-		04/19/19 18:55	1
Trichloroethene	1.0	U	1.0	0.10	ug/L	-		04/19/19 18:55	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L	-		04/19/19 18:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		04/19/19 18:55	1
4-Bromofluorobenzene (Surr)	74		59 - 120		04/19/19 18:55	1
Toluene-d8 (Surr)	98		70 - 123		04/19/19 18:55	1
Dibromofluoromethane (Surr)	127		75 - 128		04/19/19 18:55	1

Client Sample Results

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

Job ID: 240-110998-1

Client Sample ID: MW-187S_041219

Lab Sample ID: 240-110998-4

Date Collected: 04/12/19 16:10

Matrix: Water

Date Received: 04/16/19 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			04/17/19 17:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125		04/17/19 17:16	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			04/19/19 19:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/19/19 19:17	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/19/19 19:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/19/19 19:17	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/19/19 19:17	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/19/19 19:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		70 - 121		04/19/19 19:17	1
4-Bromofluorobenzene (Surr)	73		59 - 120		04/19/19 19:17	1
Toluene-d8 (Surr)	98		70 - 123		04/19/19 19:17	1
Dibromofluoromethane (Surr)	126		75 - 128		04/19/19 19:17	1

Client Sample Results

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

Job ID: 240-110998-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110998-5

Date Collected: 04/12/19 00:00

Matrix: Water

Date Received: 04/16/19 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	0.19	ug/L			04/19/19 19:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/19/19 19:38	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/19/19 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/19/19 19:38	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/19/19 19:38	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/19/19 19:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 121		04/19/19 19:38	1
4-Bromofluorobenzene (Surr)	69		59 - 120		04/19/19 19:38	1
Toluene-d8 (Surr)	94		70 - 123		04/19/19 19:38	1
Dibromofluoromethane (Surr)	122		75 - 128		04/19/19 19:38	1

Surrogate Summary

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

Job ID: 240-110998-1

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)
240-110973-G-1 MSD	Matrix Spike Duplicate	89	91	104	106
240-110973-H-1 MS	Matrix Spike	98	99	106	115
240-110998-1	MW-186S_041219	106	71	92	122
240-110998-2	MW-85SR_041219	107	69	91	122
240-110998-3	MW-187_041219	111	74	98	127
240-110998-4	MW-187S_041219	109	73	98	126
240-110998-5	TRIP BLANK	107	69	94	122
LCS 240-377344/4	Lab Control Sample	91	100	108	112
MB 240-377344/6	Method Blank	104	78	98	121

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)
240-110996-A-2 MS	Matrix Spike	107
240-110996-A-2 MSD	Matrix Spike Duplicate	103
240-110998-1	MW-186S_041219	103
240-110998-2	MW-85SR_041219	99
240-110998-3	MW-187_041219	102
240-110998-4	MW-187S_041219	101
LCS 240-376915/4	Lab Control Sample	99
MB 240-376915/5	Method Blank	101

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: 240-110998-1

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

Lab Sample ID: MB 240-377344/6
Matrix: Water
Analysis Batch: 377344

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			04/19/19 12:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			04/19/19 12:18	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			04/19/19 12:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			04/19/19 12:18	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			04/19/19 12:18	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			04/19/19 12:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 121		04/19/19 12:18	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/19/19 12:18	1
Toluene-d8 (Surr)	98		70 - 123		04/19/19 12:18	1
Dibromofluoromethane (Surr)	121		75 - 128		04/19/19 12:18	1

Lab Sample ID: LCS 240-377344/4
Matrix: Water
Analysis Batch: 377344

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	10.0		ug/L		100	65 - 139
cis-1,2-Dichloroethene	10.0	11.4		ug/L		114	76 - 128
Tetrachloroethene	10.0	12.0		ug/L		120	74 - 130
trans-1,2-Dichloroethene	10.0	12.5		ug/L		125	78 - 133
Trichloroethene	10.0	9.92		ug/L		99	76 - 125
Vinyl chloride	10.0	10.6		ug/L		106	58 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		70 - 121
4-Bromofluorobenzene (Surr)	100		59 - 120
Toluene-d8 (Surr)	108		70 - 123
Dibromofluoromethane (Surr)	112		75 - 128

Lab Sample ID: 240-110973-G-1 MSD
Matrix: Water
Analysis Batch: 377344

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	8.70		ug/L		87	53 - 140	2	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.74		ug/L		97	64 - 130	1	21
Tetrachloroethene	1.0	U	10.0	9.82		ug/L		98	51 - 136	2	23
trans-1,2-Dichloroethene	1.0	U	10.0	10.9		ug/L		109	68 - 133	2	24
Trichloroethene	0.21	J	10.0	8.73		ug/L		85	55 - 131	3	23
Vinyl chloride	1.0	U	10.0	9.87		ug/L		99	43 - 154	8	29

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		70 - 121
4-Bromofluorobenzene (Surr)	91		59 - 120
Toluene-d8 (Surr)	104		70 - 123

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110998-1

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

Lab Sample ID: 240-110973-G-1 MSD
Matrix: Water
Analysis Batch: 377344

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

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	106		75 - 128

Lab Sample ID: 240-110973-H-1 MS
Matrix: Water
Analysis Batch: 377344

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	8.52		ug/L		85	53 - 140
cis-1,2-Dichloroethene	1.0	U	10.0	9.84		ug/L		98	64 - 130
Tetrachloroethene	1.0	U	10.0	9.63		ug/L		96	51 - 136
trans-1,2-Dichloroethene	1.0	U	10.0	11.1		ug/L		111	68 - 133
Trichloroethene	0.21	J	10.0	8.44		ug/L		82	55 - 131
Vinyl chloride	1.0	U	10.0	10.6		ug/L		106	43 - 154

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		70 - 121
4-Bromofluorobenzene (Surr)	99		59 - 120
Toluene-d8 (Surr)	106		70 - 123
Dibromofluoromethane (Surr)	115		75 - 128

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

Lab Sample ID: MB 240-376915/5
Matrix: Water
Analysis Batch: 376915

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			04/17/19 12:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125		04/17/19 12:59	1

Lab Sample ID: LCS 240-376915/4
Matrix: Water
Analysis Batch: 376915

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	10.5		ug/L		105	59 - 131

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

Lab Sample ID: 240-110996-A-2 MS
Matrix: Water
Analysis Batch: 376915

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	10.8		ug/L		108	52 - 129

Eurofins TestAmerica, Canton

QC Sample Results

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

Job ID: 240-110998-1

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)	107		63 - 125

Lab Sample ID: 240-110996-A-2 MSD
 Matrix: Water
 Analysis Batch: 376915

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	11.1		ug/L		111	52 - 129	4	13

<i>Surrogate</i>	<i>MSD</i> <i>%Recovery</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
1,2-Dichloroethane-d4 (Surr)	103		63 - 125

- 1
- 2
- 3
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- 14

QC Association Summary

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

Job ID: 240-110998-1

GC/MS VOA

Analysis Batch: 376915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110998-1	MW-186S_041219	Total/NA	Water	8260B SIM	
240-110998-2	MW-85SR_041219	Total/NA	Water	8260B SIM	
240-110998-3	MW-187_041219	Total/NA	Water	8260B SIM	
240-110998-4	MW-187S_041219	Total/NA	Water	8260B SIM	
MB 240-376915/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-376915/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-110996-A-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-110996-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 377344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110998-1	MW-186S_041219	Total/NA	Water	8260B	
240-110998-2	MW-85SR_041219	Total/NA	Water	8260B	
240-110998-3	MW-187_041219	Total/NA	Water	8260B	
240-110998-4	MW-187S_041219	Total/NA	Water	8260B	
240-110998-5	TRIP BLANK	Total/NA	Water	8260B	
MB 240-377344/6	Method Blank	Total/NA	Water	8260B	
LCS 240-377344/4	Lab Control Sample	Total/NA	Water	8260B	
240-110973-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-110973-H-1 MS	Matrix Spike	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-110998-1

Client Sample ID: MW-186S_041219

Lab Sample ID: 240-110998-1

Date Collected: 04/12/19 10:55

Matrix: Water

Date Received: 04/16/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	377344	04/19/19 18:11	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376915	04/17/19 15:59	SAM	TAL CAN

Client Sample ID: MW-85SR_041219

Lab Sample ID: 240-110998-2

Date Collected: 04/12/19 12:45

Matrix: Water

Date Received: 04/16/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	377344	04/19/19 18:33	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376915	04/17/19 16:25	SAM	TAL CAN

Client Sample ID: MW-187_041219

Lab Sample ID: 240-110998-3

Date Collected: 04/12/19 14:45

Matrix: Water

Date Received: 04/16/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	377344	04/19/19 18:55	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376915	04/17/19 16:51	SAM	TAL CAN

Client Sample ID: MW-187S_041219

Lab Sample ID: 240-110998-4

Date Collected: 04/12/19 16:10

Matrix: Water

Date Received: 04/16/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	377344	04/19/19 19:17	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	376915	04/17/19 17:16	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-110998-5

Date Collected: 04/12/19 00:00

Matrix: Water

Date Received: 04/16/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	377344	04/19/19 19:38	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: 240-110998-1

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 Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
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 York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
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.



Chain of Custody Record

TestAmerica Laboratory location: N.Canton — 4101 Shuffel Street NW/ North Canton, OH 44720 / 330-497-9396

Regulatory program: DW NPDES RCRA Other

Client Contact
Company Name: Arcadis
Address: 38550 Cabot Drive, Suite 500
City/State/Zip: Novi, MI, 48377
Phone: 248-994-2240

Client Project Manager: Kris Hinkley
Site Contact: Angela DeGrando
Telephone: 248-994-2240
Email: kristoffer.hinkley@arcadis.com

Project Name: Ford LTP
Project Number: MI001454.0003
PO # MI001454.0003

Method of Shipment/Carrier: FedEx
Shipping/Tracking No:

Lab Contact: Mike DelMonte
Telephone: 330-497-9396

Analyses

Sample Identification	Sample Date	Sample Time	Matrix				Containers & Preservatives							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 Specific Notes / Special Instructions:			
			Air	Aqueous	Sediment	Solid	H2SO4	HNO3	HCl	NaOH	ZnAc	NaOH	Unpres											Other:		
MW-186S-041219	4/12/19	1055	X				X								X	X	X	X	X	X	X	X			6 VOAS	
MW-85SR-041219	4/12/19	1245	X				X								X	X	X	X	X	X	X	X			6 VOAS	
MW-187-041219	4/12/19	1945	X				X								X	X	X	X	X	X	X	X			6 VOAS	
MW-187S-041219	4/12/19	1610	X				X								X	X	X	X	X	X	X	X			6 VOAS	
TRIP BLANK																										TRIP BLANK



Possible Hazard Identification
 Non-Hazard Irritable In Irritant Unknown Poison B

Special Instructions/QC Requirements & Comments:
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months

Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203631
Level IV Reporting.

Relinquished by: [Signature]
Company: Arcadis
Date/Time: 4/12/19 1720
Received by: [Signature]
Company: Arcadis
Date/Time: 04/15/19 0900

Relinquished by: [Signature]
Company: E-TAC
Date/Time: 4-15-19 950
Received in Laboratory by: [Signature]

Relinquished by: [Signature]
Company: Arcadis
Date/Time: 4/12/19 1720
Received by: [Signature]
Company: Arcadis
Date/Time: 4-13-19 9:10

Relinquished by: [Signature]
Company: Arcadis
Date/Time: 4/12/19 1720
Received by: [Signature]
Company: Arcadis
Date/Time: 4/16/19 9:00

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TestAmerica Canton Sample Receipt Form/Narrative

Login #: 110998

Canton Facility

Client Arcadis Site Name Cooler unpacked by:
Cooler Received on 4/16/19 Opened on 4/16/19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # 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
IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.6 °C
IR GUN #36 (CF +0.7°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# HC984738
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 # N/A 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: JP

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: