

## ANALYTICAL REPORT

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Laboratory Job ID: 240-119759-1

Client Project/Site: Ford LTP Livonia MI - E203728

**For:**

ARCADIS U.S., Inc.  
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Novi, Michigan 48377

Attn: Kristoffer Hinskey



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Authorized for release by:  
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*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 . . . . .	14
QC Sample Results . . . . .	15
QC Association Summary . . . . .	24
Lab Chronicle . . . . .	25
Certification Summary . . . . .	26
Chain of Custody . . . . .	27



# Definitions/Glossary

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

Job ID: 240-119759-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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: 240-119759-1

**Job ID: 240-119759-1**

**Laboratory: Eurofins TestAmerica, Canton**

## Narrative

### CASE NARRATIVE

**Client: ARCADIS U.S., Inc.**

**Project: Ford LTP Livonia MI - E203728**

**Report Number: 240-119759-1**

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 10/1/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.3° C.

#### **VOLATILE ORGANIC COMPOUNDS (GCMS)**

Samples MW-15-59D\_092719 (240-119759-1), MW-15-60D\_092719 (240-119759-2), MW-5\_092719 (240-119759-3), MW-10\_092719 (240-119759-4) and TRIP BLANK (240-119759-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/10/2019 and 10/11/2019.

1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane and 1,2-Dibromoethane failed the recovery criteria low for LCS 240-405078/4. Cyclohexane failed the recovery criteria high. Refer to the QC report for details.

Sample MW-10\_092719 (240-119759-4)[200X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The laboratory control sample (LCS) for analytical batch 240-405078 recovered outside control limits for the following analyte: Cyclohexane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported: MW-15-59D\_092719 (240-119759-1), MW-15-60D\_092719 (240-119759-2), MW-5\_092719 (240-119759-3), TRIP BLANK (240-119759-5) and (LCS 240-405078/4).

The laboratory control sample (LCS) for analytical batch 240-405078 recovered outside control limits for the following analyte: Ethylene

# Case Narrative

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

Job ID: 240-119759-1

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## Job ID: 240-119759-1 (Continued)

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### Laboratory: Eurofins TestAmerica, Canton (Continued)

Dibromide. Ethylene Dibromide has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed: MW-15-59D\_092719 (240-119759-1), MW-15-60D\_092719 (240-119759-2), MW-5\_092719 (240-119759-3), TRIP BLANK (240-119759-5) and (LCS 240-405078/4).

The laboratory control sample (LCS) analyzed in batch 240-405078 was below the recovery control criteria for the following analytes: 1,1,2,2-Tetrachloroethane and 1,1,2-Trichloroethane. This variance only affects results measured above the reporting limit. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. This demonstrates the analyte reporting limit is valid, and it is acceptable to report ND results (non-detects). The samples associated with the LCS were non-detects for the affected analytes; therefore, the results were reported. The following samples are impacted: MW-15-59D\_092719 (240-119759-1), MW-15-60D\_092719 (240-119759-2), MW-5\_092719 (240-119759-3), TRIP BLANK (240-119759-5) and (LCS 240-405078/4).

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

### VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-15-59D\_092719 (240-119759-1), MW-15-60D\_092719 (240-119759-2), MW-5\_092719 (240-119759-3) and MW-10\_092719 (240-119759-4) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 10/04/2019 and 10/07/2019.

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

# Method Summary

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

Job ID: 240-119759-1

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: 240-119759-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119759-1	MW-15-59D_092719	Water	09/27/19 12:59	10/01/19 09:30	
240-119759-2	MW-15-60D_092719	Water	09/27/19 14:46	10/01/19 09:30	
240-119759-3	MW-5_092719	Water	09/27/19 09:17	10/01/19 09:30	
240-119759-4	MW-10_092719	Water	09/27/19 16:46	10/01/19 09:30	
240-119759-5	TRIP BLANK	Water	09/27/19 00:00	10/01/19 09:30	

- 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: 240-119759-1

**Client Sample ID: MW-15-59D\_092719**

**Lab Sample ID: 240-119759-1**

No Detections.

**Client Sample ID: MW-15-60D\_092719**

**Lab Sample ID: 240-119759-2**

No Detections.

**Client Sample ID: MW-5\_092719**

**Lab Sample ID: 240-119759-3**

No Detections.

**Client Sample ID: MW-10\_092719**

**Lab Sample ID: 240-119759-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.0		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	3000		200	40	ug/L	200		8260B	Total/NA

**Client Sample ID: TRIP BLANK**

**Lab Sample ID: 240-119759-5**

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 - E203728

Job ID: 240-119759-1

**Client Sample ID: MW-15-59D\_092719**

**Lab Sample ID: 240-119759-1**

Date Collected: 09/27/19 12:59

Matrix: Water

Date Received: 10/01/19 09:30

**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			10/04/19 22:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125					10/04/19 22:06	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			10/10/19 17:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 17:40	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 17:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 17:40	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 17:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 17:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		59 - 120					10/10/19 17:40	1
Dibromofluoromethane (Surr)	98		75 - 128					10/10/19 17:40	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 121					10/10/19 17:40	1
Toluene-d8 (Surr)	95		70 - 123					10/10/19 17:40	1

# Client Sample Results

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

Job ID: 240-119759-1

**Client Sample ID: MW-15-60D\_092719**

**Lab Sample ID: 240-119759-2**

Date Collected: 09/27/19 14:46

Matrix: Water

Date Received: 10/01/19 09:30

**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			10/04/19 22:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		63 - 125		10/04/19 22:31	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			10/10/19 18:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 18:05	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 18:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 18:05	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 18:05	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 18:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		59 - 120		10/10/19 18:05	1
Dibromofluoromethane (Surr)	97		75 - 128		10/10/19 18:05	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 121		10/10/19 18:05	1
Toluene-d8 (Surr)	96		70 - 123		10/10/19 18:05	1

# Client Sample Results

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

Job ID: 240-119759-1

**Client Sample ID: MW-5\_092719**

**Lab Sample ID: 240-119759-3**

Date Collected: 09/27/19 09:17

Matrix: Water

Date Received: 10/01/19 09:30

**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			10/04/19 22:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 125		10/04/19 22:56	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			10/10/19 18:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 18:30	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 18:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 18:30	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 18:30	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 18:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		59 - 120		10/10/19 18:30	1
Dibromofluoromethane (Surr)	102		75 - 128		10/10/19 18:30	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 121		10/10/19 18:30	1
Toluene-d8 (Surr)	95		70 - 123		10/10/19 18:30	1

# Client Sample Results

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

Job ID: 240-119759-1

**Client Sample ID: MW-10\_092719**

**Lab Sample ID: 240-119759-4**

Date Collected: 09/27/19 16:46

Matrix: Water

Date Received: 10/01/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.0		2.0	0.86	ug/L			10/07/19 13:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		63 - 125		10/07/19 13:36	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	200	U	200	38	ug/L			10/11/19 15:06	200
cis-1,2-Dichloroethene	200	U	200	32	ug/L			10/11/19 15:06	200
Tetrachloroethene	200	U	200	30	ug/L			10/11/19 15:06	200
trans-1,2-Dichloroethene	200	U	200	38	ug/L			10/11/19 15:06	200
Trichloroethene	200	U	200	20	ug/L			10/11/19 15:06	200
Vinyl chloride	3000		200	40	ug/L			10/11/19 15:06	200

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		59 - 120		10/11/19 15:06	200
Dibromofluoromethane (Surr)	115		75 - 128		10/11/19 15:06	200
1,2-Dichloroethane-d4 (Surr)	96		70 - 121		10/11/19 15:06	200
Toluene-d8 (Surr)	90		70 - 123		10/11/19 15:06	200

# Client Sample Results

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

Job ID: 240-119759-1

**Client Sample ID: TRIP BLANK**

**Lab Sample ID: 240-119759-5**

**Date Collected: 09/27/19 00:00**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

**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			10/10/19 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 19:21	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 19:21	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 19:21	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 19:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	70		59 - 120		10/10/19 19:21	1
Dibromofluoromethane (Surr)	101		75 - 128		10/10/19 19:21	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 121		10/10/19 19:21	1
Toluene-d8 (Surr)	90		70 - 123		10/10/19 19:21	1

# Surrogate Summary

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

Job ID: 240-119759-1

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

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (59-120)	DBFM (75-128)	DCA (70-121)	TOL (70-123)
240-119675-B-6 MS	Matrix Spike	99	99	83	99
240-119675-B-6 MSD	Matrix Spike Duplicate	95	97	79	98
240-119753-D-2 MSD	Matrix Spike Duplicate	78	106	99	96
240-119753-H-2 MS	Matrix Spike	75	109	97	98
240-119759-1	MW-15-59D_092719	75	98	97	95
240-119759-2	MW-15-60D_092719	78	97	98	96
240-119759-3	MW-5_092719	74	102	101	95
240-119759-4	MW-10_092719	75	115	96	90
240-119759-5	TRIP BLANK	70	101	97	90
LCS 240-405078/4	Lab Control Sample	79	102	94	98
LCS 240-405284/4	Lab Control Sample	94	99	78	95
MB 240-405078/7	Method Blank	74	101	99	94
MB 240-405284/7	Method Blank	77	109	91	91

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)  
 DBFM = Dibromofluoromethane (Surr)  
 DCA = 1,2-Dichloroethane-d4 (Surr)  
 TOL = Toluene-d8 (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)
240-119751-A-8 MS	Matrix Spike	105
240-119751-A-8 MSD	Matrix Spike Duplicate	103
240-119753-C-2 MS	Matrix Spike	103
240-119753-C-2 MSD	Matrix Spike Duplicate	104
240-119759-1	MW-15-59D_092719	106
240-119759-2	MW-15-60D_092719	105
240-119759-3	MW-5_092719	106
240-119759-4	MW-10_092719	111
LCS 240-404131/4	Lab Control Sample	98
LCS 240-404405/4	Lab Control Sample	100
MB 240-404131/5	Method Blank	97
MB 240-404405/5	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 - E203728

Job ID: 240-119759-1

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

**Lab Sample ID: MB 240-405078/7**

**Matrix: Water**

**Analysis Batch: 405078**

**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			10/10/19 14:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 14:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 14:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 14:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 14:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		59 - 120		10/10/19 14:14	1
Dibromofluoromethane (Surr)	101		75 - 128		10/10/19 14:14	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 121		10/10/19 14:14	1
Toluene-d8 (Surr)	94		70 - 123		10/10/19 14:14	1

**Lab Sample ID: LCS 240-405078/4**

**Matrix: Water**

**Analysis Batch: 405078**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.4		ug/L		104	69 - 134
1,1,1,2-Tetrachloroethane	10.0	5.52	*	ug/L		55	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.2		ug/L		122	50 - 156
1,1,2-Trichloroethane	10.0	7.69	*	ug/L		77	78 - 133
1,1-Dichloroethane	10.0	13.3		ug/L		133	75 - 133
1,1-Dichloroethene	10.0	10.4		ug/L		104	65 - 139
1,2,4-Trichlorobenzene	10.0	9.68		ug/L		97	42 - 133
1,2,4-Trimethylbenzene	10.0	8.93		ug/L		89	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	6.65		ug/L		66	46 - 132
1,2-Dibromoethane	10.0	7.12	*	ug/L		71	77 - 123
1,2-Dichlorobenzene	10.0	9.74		ug/L		97	78 - 120
1,2-Dichloroethane	10.0	11.8		ug/L		118	71 - 135
1,2-Dichloropropane	10.0	12.9		ug/L		129	78 - 133
1,3,5-Trimethylbenzene	10.0	9.05		ug/L		90	75 - 121
1,3-Dichlorobenzene	10.0	9.98		ug/L		100	78 - 120
1,4-Dichlorobenzene	10.0	10.7		ug/L		107	78 - 120
2-Butanone (MEK)	20.0	16.7		ug/L		84	39 - 163
2-Hexanone	20.0	15.9		ug/L		79	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	17.2		ug/L		86	49 - 143
Acetone	20.0	20.7		ug/L		104	21 - 162
Benzene	10.0	9.97		ug/L		100	80 - 123
Bromodichloromethane	10.0	8.70		ug/L		87	77 - 125
Bromoform	10.0	6.19		ug/L		62	49 - 141
Bromomethane	10.0	8.34		ug/L		83	41 - 175
Carbon disulfide	10.0	9.50		ug/L		95	60 - 138
Carbon tetrachloride	10.0	11.1		ug/L		111	63 - 140
Chlorobenzene	10.0	9.92		ug/L		99	80 - 121
Chloroethane	10.0	9.37		ug/L		94	33 - 173
Chloroform	10.0	9.43		ug/L		94	79 - 127

Eurofins TestAmerica, Canton

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: LCS 240-405078/4**  
**Matrix: Water**  
**Analysis Batch: 405078**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	10.0	11.0		ug/L		110	54 - 143
cis-1,2-Dichloroethene	10.0	10.7		ug/L		107	76 - 128
cis-1,3-Dichloropropene	10.0	8.23		ug/L		82	64 - 132
Cyclohexane	10.0	15.3	*	ug/L		153	58 - 145
Dibromochloromethane	10.0	8.15		ug/L		81	70 - 132
Dichlorodifluoromethane	10.0	5.41		ug/L		54	29 - 148
Diethyl ether	10.0	14.0		ug/L		140	70 - 146
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
Isopropylbenzene	10.0	9.99		ug/L		100	74 - 120
Methyl acetate	20.0	18.7		ug/L		93	52 - 145
Methyl tert-butyl ether	10.0	7.24		ug/L		72	51 - 133
Methylcyclohexane	10.0	9.91		ug/L		99	60 - 125
Methylene Chloride	10.0	9.13		ug/L		91	70 - 134
Styrene	10.0	9.13		ug/L		91	79 - 120
Tetrachloroethene	10.0	12.1		ug/L		121	74 - 130
Toluene	10.0	10.5		ug/L		105	78 - 129
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	78 - 133
trans-1,3-Dichloropropene	10.0	6.57		ug/L		66	55 - 128
Trichloroethene	10.0	11.6		ug/L		116	76 - 125
Trichlorofluoromethane	10.0	8.85		ug/L		88	51 - 164
Vinyl chloride	10.0	10.9		ug/L		109	58 - 143
Xylenes, Total	20.0	20.4		ug/L		102	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	79		59 - 120
Dibromofluoromethane (Surr)	102		75 - 128
1,2-Dichloroethane-d4 (Surr)	94		70 - 121
Toluene-d8 (Surr)	98		70 - 123

**Lab Sample ID: 240-119753-D-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 405078**

**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
1,1,1-Trichloroethane	1.0	U	10.0	9.82		ug/L		98	51 - 138	2	27
1,1,1,2,2-Tetrachloroethane	1.0	U * F1	10.0	4.96	F1	ug/L		50	60 - 137	6	31
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	12.2		ug/L		122	31 - 156	2	35
1,1,2-Trichloroethane	1.0	U * F1	10.0	6.92	F1	ug/L		69	76 - 132	2	25
1,1-Dichloroethane	1.0	U F1	10.0	13.7	F1	ug/L		137	63 - 136	9	23
1,1-Dichloroethene	1.0	U	10.0	10.1		ug/L		101	53 - 140	9	35
1,2,4-Trichlorobenzene	1.0	U	10.0	7.76		ug/L		78	30 - 126	6	35
1,2,4-Trimethylbenzene	1.0	U	10.0	8.11		ug/L		81	62 - 120	5	27
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	5.07		ug/L		51	38 - 124	13	35
1,2-Dibromoethane	1.0	U * F1	10.0	6.75	F1	ug/L		68	71 - 123	6	27
1,2-Dichlorobenzene	1.0	U	10.0	8.15		ug/L		81	64 - 120	2	30
1,2-Dichloroethane	1.0	U	10.0	11.4		ug/L		114	65 - 135	2	24
1,2-Dichloropropane	1.0	U F1	10.0	13.5	F1	ug/L		135	70 - 132	9	26
1,3,5-Trimethylbenzene	1.0	U	10.0	7.46		ug/L		75	64 - 120	0	23

Eurofins TestAmerica, Canton



# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119753-D-2 MSD**

**Client Sample ID: Matrix Spike Duplicate**

**Matrix: Water**

**Prep Type: Total/NA**

**Analysis Batch: 405078**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier		Added	Result				Qualifier		
1,3-Dichlorobenzene	1.0	U	10.0	8.22		ug/L		82	62 - 120	3	31
1,4-Dichlorobenzene	1.0	U	10.0	8.79		ug/L		88	63 - 120	1	28
2-Butanone (MEK)	10	U	20.0	16.1		ug/L		81	37 - 156	17	35
2-Hexanone	10	U	20.0	14.2		ug/L		71	42 - 150	3	35
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.2		ug/L		86	44 - 143	0	35
Acetone	10	U	20.0	18.7		ug/L		93	10 - 168	15	35
Benzene	1.0	U	10.0	9.49		ug/L		95	71 - 122	1	22
Bromodichloromethane	1.0	U	10.0	7.92		ug/L		79	64 - 125	7	27
Bromoform	1.0	U	10.0	6.44		ug/L		64	44 - 129	8	28
Bromomethane	1.0	U	10.0	7.79		ug/L		78	19 - 187	1	35
Carbon disulfide	5.0	U	10.0	8.89		ug/L		89	43 - 144	1	33
Carbon tetrachloride	1.0	U	10.0	11.1		ug/L		111	41 - 143	8	30
Chlorobenzene	1.0	U	10.0	9.26		ug/L		93	70 - 123	7	23
Chloroethane	1.0	U	10.0	9.93		ug/L		99	11 - 189	12	35
Chloroform	1.0	U	10.0	9.08		ug/L		91	68 - 130	5	23
Chloromethane	1.0	U	10.0	10.1		ug/L		101	31 - 154	2	35
cis-1,2-Dichloroethene	1.0	U	10.0	10.9		ug/L		109	64 - 130	11	21
cis-1,3-Dichloropropene	1.0	U	10.0	7.61		ug/L		76	48 - 127	2	30
Cyclohexane	1.0	U * F1	10.0	15.5	F1	ug/L		155	42 - 135	4	35
Dibromochloromethane	1.0	U	10.0	7.38		ug/L		74	60 - 129	5	26
Dichlorodifluoromethane	1.0	U	10.0	6.15		ug/L		61	28 - 136	8	35
Diethyl ether	1.0	U F1	10.0	13.8	F1	ug/L		138	65 - 134	7	33
Ethylbenzene	1.0	U	10.0	9.22		ug/L		92	66 - 120	1	24
Isopropylbenzene	1.0	U	10.0	8.94		ug/L		89	59 - 120	1	31
Methyl acetate	10	U	20.0	17.5		ug/L		87	41 - 142	5	35
Methyl tert-butyl ether	1.0	U	10.0	7.09		ug/L		71	41 - 136	4	29
Methylcyclohexane	1.0	U	10.0	9.96		ug/L		100	37 - 123	3	35
Methylene Chloride	5.0	U	10.0	8.47		ug/L		85	61 - 130	9	29
Styrene	1.0	U	10.0	8.55		ug/L		86	68 - 120	8	26
Tetrachloroethene	1.0	U	10.0	11.9		ug/L		119	51 - 136	9	23
Toluene	1.0	U	10.0	9.05		ug/L		91	62 - 132	7	23
trans-1,2-Dichloroethene	1.0	U	10.0	9.98		ug/L		100	68 - 133	4	24
trans-1,3-Dichloropropene	1.0	U	10.0	6.07		ug/L		61	40 - 125	7	27
Trichloroethene	1.0	U	10.0	10.5		ug/L		105	55 - 131	2	23
Trichlorofluoromethane	1.0	U	10.0	10.4		ug/L		104	37 - 174	3	35
Vinyl chloride	1.0	U	10.0	12.7		ug/L		127	43 - 154	3	29
Xylenes, Total	2.0	U	20.0	17.8		ug/L		89	67 - 120	1	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	78		59 - 120
Dibromofluoromethane (Surr)	106		75 - 128
1,2-Dichloroethane-d4 (Surr)	99		70 - 121
Toluene-d8 (Surr)	96		70 - 123

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119753-H-2 MS**

**Matrix: Water**

**Analysis Batch: 405078**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
1,1,1-Trichloroethane	1.0	U	10.0	9.63		ug/L		96	51 - 138
1,1,1,2-Tetrachloroethane	1.0	U * F1	10.0	5.26	F1	ug/L		53	60 - 137
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	12.0		ug/L		120	31 - 156
1,1,2-Trichloroethane	1.0	U * F1	10.0	6.79	F1	ug/L		68	76 - 132
1,1-Dichloroethane	1.0	U F1	10.0	12.6		ug/L		126	63 - 136
1,1-Dichloroethene	1.0	U	10.0	11.1		ug/L		111	53 - 140
1,2,4-Trichlorobenzene	1.0	U	10.0	7.31		ug/L		73	30 - 126
1,2,4-Trimethylbenzene	1.0	U	10.0	7.73		ug/L		77	62 - 120
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	5.79		ug/L		58	38 - 124
1,2-Dibromoethane	1.0	U * F1	10.0	6.38	F1	ug/L		64	71 - 123
1,2-Dichlorobenzene	1.0	U	10.0	8.34		ug/L		83	64 - 120
1,2-Dichloroethane	1.0	U	10.0	11.3		ug/L		113	65 - 135
1,2-Dichloropropane	1.0	U F1	10.0	12.3		ug/L		123	70 - 132
1,3,5-Trimethylbenzene	1.0	U	10.0	7.43		ug/L		74	64 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.49		ug/L		85	62 - 120
1,4-Dichlorobenzene	1.0	U	10.0	8.73		ug/L		87	63 - 120
2-Butanone (MEK)	10	U	20.0	13.6		ug/L		68	37 - 156
2-Hexanone	10	U	20.0	13.9		ug/L		69	42 - 150
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.3		ug/L		86	44 - 143
Acetone	10	U	20.0	21.7		ug/L		109	10 - 168
Benzene	1.0	U	10.0	9.58		ug/L		96	71 - 122
Bromodichloromethane	1.0	U	10.0	7.42		ug/L		74	64 - 125
Bromoform	1.0	U	10.0	5.96		ug/L		60	44 - 129
Bromomethane	1.0	U	10.0	7.70		ug/L		77	19 - 187
Carbon disulfide	5.0	U	10.0	8.78		ug/L		88	43 - 144
Carbon tetrachloride	1.0	U	10.0	10.2		ug/L		102	41 - 143
Chlorobenzene	1.0	U	10.0	8.67		ug/L		87	70 - 123
Chloroethane	1.0	U	10.0	8.77		ug/L		88	11 - 189
Chloroform	1.0	U	10.0	8.68		ug/L		87	68 - 130
Chloromethane	1.0	U	10.0	9.83		ug/L		98	31 - 154
cis-1,2-Dichloroethene	1.0	U	10.0	9.75		ug/L		98	64 - 130
cis-1,3-Dichloropropene	1.0	U	10.0	7.47		ug/L		75	48 - 127
Cyclohexane	1.0	U * F1	10.0	14.9	F1	ug/L		149	42 - 135
Dibromochloromethane	1.0	U	10.0	7.04		ug/L		70	60 - 129
Dichlorodifluoromethane	1.0	U	10.0	6.68		ug/L		67	28 - 136
Diethyl ether	1.0	U F1	10.0	13.0		ug/L		130	65 - 134
Ethylbenzene	1.0	U	10.0	9.12		ug/L		91	66 - 120
Isopropylbenzene	1.0	U	10.0	9.01		ug/L		90	59 - 120
Methyl acetate	10	U	20.0	18.3		ug/L		92	41 - 142
Methyl tert-butyl ether	1.0	U	10.0	6.83		ug/L		68	41 - 136
Methylcyclohexane	1.0	U	10.0	10.2		ug/L		102	37 - 123
Methylene Chloride	5.0	U	10.0	7.72		ug/L		77	61 - 130
Styrene	1.0	U	10.0	7.89		ug/L		79	68 - 120
Tetrachloroethene	1.0	U	10.0	10.8		ug/L		108	51 - 136
Toluene	1.0	U	10.0	8.48		ug/L		85	62 - 132
trans-1,2-Dichloroethene	1.0	U	10.0	9.57		ug/L		96	68 - 133
trans-1,3-Dichloropropene	1.0	U	10.0	5.64		ug/L		56	40 - 125
Trichloroethene	1.0	U	10.0	10.8		ug/L		108	55 - 131

Eurofins TestAmerica, Canton

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119753-H-2 MS**

**Matrix: Water**

**Analysis Batch: 405078**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				
Trichlorofluoromethane	1.0	U	10.0	10.1		ug/L		101	37 - 174
Vinyl chloride	1.0	U	10.0	13.1		ug/L		131	43 - 154
Xylenes, Total	2.0	U	20.0	17.7		ug/L		89	67 - 120
<b>MS MS</b>									
Surrogate	%Recovery	Qualifier	Limits						
4-Bromofluorobenzene (Surr)	75		59 - 120						
Dibromofluoromethane (Surr)	109		75 - 128						
1,2-Dichloroethane-d4 (Surr)	97		70 - 121						
Toluene-d8 (Surr)	98		70 - 123						

**Lab Sample ID: MB 240-405284/7**

**Matrix: Water**

**Analysis Batch: 405284**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/11/19 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/11/19 13:29	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/11/19 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/11/19 13:29	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/11/19 13:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/11/19 13:29	1
<b>MB MB</b>									
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
4-Bromofluorobenzene (Surr)	77		59 - 120		10/11/19 13:29	1			
Dibromofluoromethane (Surr)	109		75 - 128		10/11/19 13:29	1			
1,2-Dichloroethane-d4 (Surr)	91		70 - 121		10/11/19 13:29	1			
Toluene-d8 (Surr)	91		70 - 123		10/11/19 13:29	1			

**Lab Sample ID: LCS 240-405284/4**

**Matrix: Water**

**Analysis Batch: 405284**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
1,1,1-Trichloroethane	10.0	10.1		ug/L		101	69 - 134
1,1,2,2-Tetrachloroethane	10.0	9.10		ug/L		91	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	11.5		ug/L		115	50 - 156
1,1,2-Trichloroethane	10.0	10.0		ug/L		100	78 - 133
1,1-Dichloroethane	10.0	9.25		ug/L		93	75 - 133
1,1-Dichloroethene	10.0	10.5		ug/L		105	65 - 139
1,2,4-Trichlorobenzene	10.0	8.74		ug/L		87	42 - 133
1,2,4-Trimethylbenzene	10.0	8.47		ug/L		85	74 - 120
1,2-Dibromo-3-Chloropropane	10.0	10.3		ug/L		103	46 - 132
1,2-Dibromoethane	10.0	10.1		ug/L		101	77 - 123
1,2-Dichlorobenzene	10.0	9.46		ug/L		95	78 - 120
1,2-Dichloroethane	10.0	8.90		ug/L		89	71 - 135
1,2-Dichloropropane	10.0	9.85		ug/L		99	78 - 133
1,3,5-Trimethylbenzene	10.0	8.49		ug/L		85	75 - 121

Eurofins TestAmerica, Canton

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: LCS 240-405284/4**  
**Matrix: Water**  
**Analysis Batch: 405284**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	9.47		ug/L		95	78 - 120
1,4-Dichlorobenzene	10.0	8.98		ug/L		90	78 - 120
2-Butanone (MEK)	20.0	19.8		ug/L		99	39 - 163
2-Hexanone	20.0	17.6		ug/L		88	43 - 148
4-Methyl-2-pentanone (MIBK)	20.0	19.7		ug/L		98	49 - 143
Acetone	20.0	15.6		ug/L		78	21 - 162
Benzene	10.0	9.90		ug/L		99	80 - 123
Bromodichloromethane	10.0	9.91		ug/L		99	77 - 125
Bromoform	10.0	11.3		ug/L		113	49 - 141
Bromomethane	10.0	6.50		ug/L		65	41 - 175
Carbon disulfide	10.0	10.0		ug/L		100	60 - 138
Carbon tetrachloride	10.0	10.8		ug/L		108	63 - 140
Chlorobenzene	10.0	9.79		ug/L		98	80 - 121
Chloroethane	10.0	5.34		ug/L		53	33 - 173
Chloroform	10.0	9.65		ug/L		97	79 - 127
Chloromethane	10.0	6.06		ug/L		61	54 - 143
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	76 - 128
cis-1,3-Dichloropropene	10.0	10.3		ug/L		103	64 - 132
Cyclohexane	10.0	9.70		ug/L		97	58 - 145
Dibromochloromethane	10.0	10.8		ug/L		108	70 - 132
Dichlorodifluoromethane	10.0	5.63		ug/L		56	29 - 148
Diethyl ether	10.0	9.45		ug/L		94	70 - 146
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120
Isopropylbenzene	10.0	10.2		ug/L		102	74 - 120
Methyl acetate	20.0	18.6		ug/L		93	52 - 145
Methyl tert-butyl ether	10.0	9.62		ug/L		96	51 - 133
Methylcyclohexane	10.0	10.2		ug/L		102	60 - 125
Methylene Chloride	10.0	10.5		ug/L		105	70 - 134
Styrene	10.0	10.3		ug/L		103	79 - 120
Tetrachloroethene	10.0	10.5		ug/L		105	74 - 130
Toluene	10.0	9.86		ug/L		99	78 - 129
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	78 - 133
trans-1,3-Dichloropropene	10.0	8.69		ug/L		87	55 - 128
Trichloroethene	10.0	11.0		ug/L		110	76 - 125
Trichlorofluoromethane	10.0	8.04		ug/L		80	51 - 164
Vinyl chloride	10.0	6.30		ug/L		63	58 - 143
Xylenes, Total	20.0	21.3		ug/L		107	80 - 120

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	94		59 - 120
Dibromofluoromethane (Surr)	99		75 - 128
1,2-Dichloroethane-d4 (Surr)	78		70 - 121
Toluene-d8 (Surr)	95		70 - 123

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119675-B-6 MS**

**Matrix: Water**

**Analysis Batch: 405284**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
1,1,1-Trichloroethane	67	U	667	678		ug/L		102	51 - 138
1,1,2,2-Tetrachloroethane	67	U	667	605		ug/L		91	60 - 137
1,1-Dichloroethane	67	U	667	625		ug/L		94	63 - 136
1,1-Dichloroethene	67	U	667	687		ug/L		103	53 - 140
2-Butanone (MEK)	670	U	1330	1150		ug/L		86	37 - 156
Acetone	670	U	1330	1120		ug/L		84	10 - 168
Benzene	67	U	667	652		ug/L		98	71 - 122
Carbon disulfide	330	U	667	677		ug/L		101	43 - 144
Chloroform	12	J	667	641		ug/L		94	68 - 130
cis-1,2-Dichloroethene	240		667	878		ug/L		96	64 - 130
Ethylbenzene	67	U	667	735		ug/L		110	66 - 120
Methylene Chloride	330	U	667	710		ug/L		107	61 - 130
Styrene	67	U	667	734		ug/L		110	68 - 120
Tetrachloroethene	2200		667	2790	E	ug/L		91	51 - 136
Toluene	67	U	667	688		ug/L		103	62 - 132
trans-1,2-Dichloroethene	67	U	667	729		ug/L		109	68 - 133
Trichloroethene	56	J	667	802		ug/L		112	55 - 131
Vinyl chloride	67	U	667	419		ug/L		63	43 - 154
Xylenes, Total	130	U	1330	1470		ug/L		110	67 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		59 - 120
Dibromofluoromethane (Surr)	99		75 - 128
1,2-Dichloroethane-d4 (Surr)	83		70 - 121
Toluene-d8 (Surr)	99		70 - 123

**Lab Sample ID: 240-119675-B-6 MSD**

**Matrix: Water**

**Analysis Batch: 405284**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier						
1,1,1-Trichloroethane	67	U	667	665		ug/L		100	51 - 138	2	27
1,1,2,2-Tetrachloroethane	67	U	667	584		ug/L		88	60 - 137	3	31
1,1-Dichloroethane	67	U	667	620		ug/L		93	63 - 136	1	23
1,1-Dichloroethene	67	U	667	678		ug/L		102	53 - 140	1	35
2-Butanone (MEK)	670	U	1330	1190		ug/L		89	37 - 156	3	35
Acetone	670	U	1330	995		ug/L		75	10 - 168	12	35
Benzene	67	U	667	660		ug/L		99	71 - 122	1	22
Carbon disulfide	330	U	667	677		ug/L		102	43 - 144	0	33
Chloroform	12	J	667	639		ug/L		94	68 - 130	0	23
cis-1,2-Dichloroethene	240		667	910		ug/L		101	64 - 130	4	21
Ethylbenzene	67	U	667	716		ug/L		107	66 - 120	3	24
Methylene Chloride	330	U	667	700		ug/L		105	61 - 130	1	29
Styrene	67	U	667	724		ug/L		109	68 - 120	1	26
Tetrachloroethene	2200		667	2690	E	ug/L		74	51 - 136	4	23
Toluene	67	U	667	670		ug/L		100	62 - 132	3	23
trans-1,2-Dichloroethene	67	U	667	707		ug/L		106	68 - 133	3	24
Trichloroethene	56	J	667	791		ug/L		110	55 - 131	1	23

Eurofins TestAmerica, Canton

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119675-B-6 MSD**  
**Matrix: Water**  
**Analysis Batch: 405284**

**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
Vinyl chloride	67	U	667	403		ug/L		60	43 - 154	4	29
Xylenes, Total	130	U	1330	1440		ug/L		108	67 - 120	2	25
<b>Surrogate</b>	<b>MSD %Recovery</b>	<b>MSD Qualifier</b>	<b>Limits</b>								
4-Bromofluorobenzene (Surr)	95		59 - 120								
Dibromofluoromethane (Surr)	97		75 - 128								
1,2-Dichloroethane-d4 (Surr)	79		70 - 121								
Toluene-d8 (Surr)	98		70 - 123								

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

**Lab Sample ID: MB 240-404131/5**  
**Matrix: Water**  
**Analysis Batch: 404131**

**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			10/04/19 13:00	1
<b>Surrogate</b>	<b>MB %Recovery</b>	<b>MB Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichloroethane-d4 (Surr)	97		63 - 125					10/04/19 13:00	1

**Lab Sample ID: LCS 240-404131/4**  
**Matrix: Water**  
**Analysis Batch: 404131**

**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	11.6		ug/L		116	59 - 131
<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>				
1,2-Dichloroethane-d4 (Surr)	98		63 - 125				

**Lab Sample ID: 240-119751-A-8 MS**  
**Matrix: Water**  
**Analysis Batch: 404131**

**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	1.2	J	10.0	10.8		ug/L		97	52 - 129
<b>Surrogate</b>	<b>MS %Recovery</b>	<b>MS Qualifier</b>	<b>Limits</b>						
1,2-Dichloroethane-d4 (Surr)	105		63 - 125						

**Lab Sample ID: 240-119751-A-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 404131**

**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	1.2	J	10.0	12.4		ug/L		112	52 - 129	13	13

Eurofins TestAmerica, Canton

# QC Sample Results

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

Job ID: 240-119759-1

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

**Lab Sample ID: 240-119751-A-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 404131**

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

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

**Lab Sample ID: MB 240-404405/5**  
**Matrix: Water**  
**Analysis Batch: 404405**

**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			10/07/19 12:46	1

  

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		63 - 125		10/07/19 12:46	1

**Lab Sample ID: LCS 240-404405/4**  
**Matrix: Water**  
**Analysis Batch: 404405**

**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	11.8		ug/L		118	59 - 131

  

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		63 - 125

**Lab Sample ID: 240-119753-C-2 MS**  
**Matrix: Water**  
**Analysis Batch: 404405**

**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	4.4		10.0	15.3		ug/L		108	52 - 129

  

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		63 - 125

**Lab Sample ID: 240-119753-C-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 404405**

**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	4.4		10.0	14.7		ug/L		103	52 - 129	4	13

  

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		63 - 125



# QC Association Summary

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

Job ID: 240-119759-1

## GC/MS VOA

### Analysis Batch: 404131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119759-1	MW-15-59D_092719	Total/NA	Water	8260B SIM	
240-119759-2	MW-15-60D_092719	Total/NA	Water	8260B SIM	
240-119759-3	MW-5_092719	Total/NA	Water	8260B SIM	
MB 240-404131/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-404131/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119751-A-8 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119751-A-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

### Analysis Batch: 404405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119759-4	MW-10_092719	Total/NA	Water	8260B SIM	
MB 240-404405/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-404405/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119753-C-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119753-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

### Analysis Batch: 405078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119759-1	MW-15-59D_092719	Total/NA	Water	8260B	
240-119759-2	MW-15-60D_092719	Total/NA	Water	8260B	
240-119759-3	MW-5_092719	Total/NA	Water	8260B	
240-119759-5	TRIP BLANK	Total/NA	Water	8260B	
MB 240-405078/7	Method Blank	Total/NA	Water	8260B	
LCS 240-405078/4	Lab Control Sample	Total/NA	Water	8260B	
240-119753-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-119753-H-2 MS	Matrix Spike	Total/NA	Water	8260B	

### Analysis Batch: 405284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119759-4	MW-10_092719	Total/NA	Water	8260B	
MB 240-405284/7	Method Blank	Total/NA	Water	8260B	
LCS 240-405284/4	Lab Control Sample	Total/NA	Water	8260B	
240-119675-B-6 MS	Matrix Spike	Total/NA	Water	8260B	
240-119675-B-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	



# Lab Chronicle

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

Job ID: 240-119759-1

**Client Sample ID: MW-15-59D\_092719**

**Lab Sample ID: 240-119759-1**

**Date Collected: 09/27/19 12:59**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405078	10/10/19 17:40	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	404131	10/04/19 22:06	SAM	TAL CAN

**Client Sample ID: MW-15-60D\_092719**

**Lab Sample ID: 240-119759-2**

**Date Collected: 09/27/19 14:46**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405078	10/10/19 18:05	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	404131	10/04/19 22:31	SAM	TAL CAN

**Client Sample ID: MW-5\_092719**

**Lab Sample ID: 240-119759-3**

**Date Collected: 09/27/19 09:17**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405078	10/10/19 18:30	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	404131	10/04/19 22:56	SAM	TAL CAN

**Client Sample ID: MW-10\_092719**

**Lab Sample ID: 240-119759-4**

**Date Collected: 09/27/19 16:46**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	405284	10/11/19 15:06	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	404405	10/07/19 13:36	SAM	TAL CAN

**Client Sample ID: TRIP BLANK**

**Lab Sample ID: 240-119759-5**

**Date Collected: 09/27/19 00:00**

**Matrix: Water**

**Date Received: 10/01/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405078	10/10/19 19:21	LRW	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: 240-119759-1

## 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

**Chain of Custody Record**

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

<b>Client Contact</b> Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240		<b>Regulatory program:</b> <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
<b>Client Project Manager: Kris Hinskey</b> Telephone: 248-994-2240 Email: kristoffer.hinskey@arcadis.com		<b>Site Contact: Angela DeGrandis</b> Telephone: 734-320-0065	
<b>Project Name: Ford LTP</b> Project Number: M1001454.0004.00001 PO # M1001454.0004.00001		<b>Lab Contact: Mike DeMonico</b> Telephone: 330-497-9396	
<b>Method of Shipment/Carrier:</b> Shipping/Tracking No:		<b>Analyses</b> Walk-in client <input type="checkbox"/> Lab sampling <input type="checkbox"/> Job/SDG No:	
<b>Analysis Turnaround Time</b> TAT if different from below: 10 day <input checked="" type="checkbox"/> 3 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 weeks <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day <input type="checkbox"/>		For lab use only COC's	
<b>Matrix</b> Air <input type="checkbox"/> Aqueous <input type="checkbox"/> Sediment <input type="checkbox"/> Solid <input type="checkbox"/> Other:		<b>Containers &amp; Preservatives</b> H2SO4 <input type="checkbox"/> HNO3 <input type="checkbox"/> HCl <input type="checkbox"/> NaOH <input type="checkbox"/> ZnAc/NaOH <input type="checkbox"/> Ureter <input type="checkbox"/> Other:	
<b>Sample Identification</b> Sample Date Sample Time		<b>Filtered Sample (Y/N)</b> Composite C / Grab G	
MW-15-59D-092719 MW-15-60D-092719 MW-5-092719 MW-10-092719 Trip Blank		VOCs 8260B 1,4-Dioxane 8260B SIM	
9/27/19 1259 1446 917 1646		Y G N G N G N G	
Sample Specific Notes / Special Instructions: 6 bottles 6 bottles 6 bottles 6 bottles		Barcode: 240-119759 Chain of Custody	
<b>Possible Hazard Identification</b> <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown			
<b>Special Instructions/QC Requirements &amp; Comments:</b> Submit all results through Cadena at jim.tomalia@cadena.com. Cadena #E203728 Level IV Reporting.			
Relinquished by: <i>John Mallick</i> Relinquished by: <i>Bob Wisen</i> Relinquished by: <i>Molly Maxson</i>		Received by: <i>Nov. Cold Storage</i> Received by: <i>Moely Maxson</i> Received in Laboratory: <i>[Signature]</i>	
Company: Arcadis Company: ARCADIS Company: ATAL-MI		Company: Arcadis Company: ATAL-MI Company: BTAC	
Date/Time: <del>9/27/19</del> 9/28/19 Date/Time: 09/30/19 1049 Date/Time: 9/30/19 1420		Date/Time: 7/28/19/1638 Date/Time: 9/30/19 1049 Date/Time: 9/30-01-19 930	

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**Eurofins TestAmerica Canton Sample Receipt Form/Narrative**  
**Canton Facility**

Login # : 119759

Client Arcadis Site Name \_\_\_\_\_  
 Cooler Received on 10-01-19 Opened on 10-01-19  
 FedEx: 1<sup>st</sup>  Grd  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 # 1A 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. 4.6 °C Corrected Cooler Temp. 5.3 °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 4 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
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 # NA 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: MS  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**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: \_\_\_\_\_