TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

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

TestAmerica Job ID: 240-104174-1
Client Project/Site: Ford LTP Livonia MI - E203728
Revision: 1

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

Attn: Kristoffer Hinskey

*Authorized for release by:*
*12/3/2018 4:09:08 PM*

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# Table of Contents

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD Recovery is outside acceptance limits. |
| F2 | MS/MSD RPD exceeds control limits |
| 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| U | Indicates the analyte was analyzed for but not detected. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## 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) |

## Job ID: 240-104174-1

**Laboratory: TestAmerica Canton**

**Narrative**

# CASE NARRATIVE

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

## Project: Ford LTP Livonia MI - E203728

## Report Number: 240-104174-1

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.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. 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 TestAmerica and its client.

**RECEIPT**

The samples were received on 11/9/2018 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

**VOLATILE ORGANIC COMPOUNDS (GCMS)**

Samples MW-64-110518 (240-104174-1), MW-69-110518 (240-104174-2), MW-71-110518 (240-104174-3), MW-32-110518 (240-104174-4) and MW-10-110518 (240-104174-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 11/18/2018.

cis-1,2-Dichloroethene failed the recovery criteria low for the MS of sample 240-104000-6 in batch 240-355972.

Dichlorodifluoromethane exceeded the RPD limit for the MSD of sample 240-104000-6 in batch 240-355972. Refer to the QC report for details.

Sample MW-10-110518 (240-104174-5)[250X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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-64-110518 (240-104174-1), MW-69-110518 (240-104174-2), MW-71-110518 (240-104174-3), MW-32-110518

## Job ID: 240-104174-1 (Continued)

### Laboratory: TestAmerica Canton (Continued)

(240-104174-4) and MW-10-110518 (240-104174-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 11/16/2018.

1,4-Dioxane failed the recovery criteria low for the MS of sample 240-104167-6 in batch 240-355798. 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.

# Method Summary

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

TestAmerica Job ID: 240-104174-1

| 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 = 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

TestAmerica Job ID: 240-104174-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 240-104174-1 | MW-64-110518 | Water | 11/05/18 15:27 | 11/09/18 08:50 |
| 240-104174-2 | MW-69-110618 | Water | 11/06/18 11:17 | 11/09/18 08:50 |
| 240-104174-3 | MW-71-110618 | Water | 11/06/18 12:22 | 11/09/18 08:50 |
| 240-104174-4 | MW-32-110718 | Water | 11/07/18 14:57 | 11/09/18 08:50 |
| 240-104174-5 | MW-10-110718 | Water | 11/07/18 16:46 | 11/09/18 08:50 |

# Detection Summary

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

TestAmerica Job ID: 240-104174-1

## Client Sample ID: MW-64-110518 — Lab Sample ID: 240-104174-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 0.32 | J | 1.0 | 0.16 | ug/L | 1 | | 8260B | Total/NA |
| Vinyl chloride | 3.0 | | 1.0 | 0.20 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: MW-69-110618 — Lab Sample ID: 240-104174-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 12 | | 2.0 | 0.86 | ug/L | 1 | | 8260B SIM | Total/NA |
| Vinyl chloride | 1.4 | | 1.0 | 0.20 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: MW-71-110618 — Lab Sample ID: 240-104174-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 1.1 | J | 2.0 | 0.86 | ug/L | 1 | | 8260B SIM | Total/NA |
| cis-1,2-Dichloroethene | 0.36 | J | 1.0 | 0.16 | ug/L | 1 | | 8260B | Total/NA |
| 1,3-Dichlorobenzene | 0.16 | J | 1.0 | 0.15 | ug/L | 1 | | 8260B | Total/NA |
| Vinyl chloride | 0.31 | J | 1.0 | 0.20 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: MW-32-110718 — Lab Sample ID: 240-104174-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 0.38 | J | 1.0 | 0.16 | ug/L | 1 | | 8260B | Total/NA |
| Vinyl chloride | 0.38 | J | 1.0 | 0.20 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: MW-10-110718 — Lab Sample ID: 240-104174-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 5.5 | | 2.0 | 0.86 | ug/L | 1 | | 8260B SIM | Total/NA |
| Vinyl chloride | 3100 | | 250 | 50 | ug/L | 250 | | 8260B | Total/NA |

This Detection Summary does not include radiochemical test results.

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-64-110518**
**Date Collected: 11/05/18 15:27**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-1**
**Matrix: Water**

## 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 | | | 11/16/18 15:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *106* | | *63 - 125* | | *11/16/18 15:06* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10 | U | 10 | 5.4 | ug/L | | | 11/18/18 18:42 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 18:42 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 18:42 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.76 | ug/L | | | 11/18/18 18:42 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.42 | ug/L | | | 11/18/18 18:42 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.2 | ug/L | | | 11/18/18 18:42 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 0.28 | ug/L | | | 11/18/18 18:42 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 18:42 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 18:42 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.83 | ug/L | | | 11/18/18 18:42 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 18:42 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 18:42 | 1 |
| **cis-1,2-Dichloroethene** | **0.32** | **J** | 1.0 | 0.16 | ug/L | | | 11/18/18 18:42 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.61 | ug/L | | | 11/18/18 18:42 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 18:42 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.91 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 18:42 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 18:42 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.11 | ug/L | | | 11/18/18 18:42 | 1 |
| 2-Hexanone | 10 | U | 10 | 0.54 | ug/L | | | 11/18/18 18:42 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 18:42 | 1 |
| Methyl acetate | 10 | U | 10 | 1.7 | ug/L | | | 11/18/18 18:42 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.33 | ug/L | | | 11/18/18 18:42 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.6 | ug/L | | | 11/18/18 18:42 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 10 | 0.42 | ug/L | | | 11/18/18 18:42 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 18:42 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 18:42 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 18:42 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 18:42 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 18:42 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.67 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 18:42 | 1 |

**Client Sample ID: MW-64-110518**
**Date Collected: 11/05/18 15:27**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-1**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 18:42 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.45 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2,3-Trimethylbenzene | 5.0 | U | 5.0 | 0.14 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 18:42 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 18:42 | 1 |
| **Vinyl chloride** | **3.0** | | 1.0 | 0.20 | ug/L | | | 11/18/18 18:42 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.15 | ug/L | | | 11/18/18 18:42 | 1 |
| Diethyl ether | 2.0 | U | 2.0 | 0.19 | ug/L | | | 11/18/18 18:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *72* | | *59 - 120* | | *11/18/18 18:42* | *1* |
| *Dibromofluoromethane (Surr)* | *111* | | *75 - 128* | | *11/18/18 18:42* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *93* | | *70 - 121* | | *11/18/18 18:42* | *1* |
| *Toluene-d8 (Surr)* | *86* | | *70 - 123* | | *11/18/18 18:42* | *1* |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-69-110618**
**Date Collected: 11/06/18 11:17**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-2**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 12 | | 2.0 | 0.86 | ug/L | | | 11/16/18 15:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *105* | | *63 - 125* | | *11/16/18 15:32* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10 | U | 10 | 5.4 | ug/L | | | 11/18/18 19:04 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:04 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:04 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.76 | ug/L | | | 11/18/18 19:04 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.42 | ug/L | | | 11/18/18 19:04 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.2 | ug/L | | | 11/18/18 19:04 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 0.28 | ug/L | | | 11/18/18 19:04 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:04 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:04 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.83 | ug/L | | | 11/18/18 19:04 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:04 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 19:04 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 19:04 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.61 | ug/L | | | 11/18/18 19:04 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:04 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.91 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 19:04 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:04 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.11 | ug/L | | | 11/18/18 19:04 | 1 |
| 2-Hexanone | 10 | U | 10 | 0.54 | ug/L | | | 11/18/18 19:04 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:04 | 1 |
| Methyl acetate | 10 | U | 10 | 1.7 | ug/L | | | 11/18/18 19:04 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.33 | ug/L | | | 11/18/18 19:04 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.6 | ug/L | | | 11/18/18 19:04 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 10 | 0.42 | ug/L | | | 11/18/18 19:04 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:04 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:04 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:04 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:04 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:04 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.67 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:04 | 1 |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-69-110618**
**Date Collected: 11/06/18 11:17**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-2**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:04 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.45 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2,3-Trimethylbenzene | 5.0 | U | 5.0 | 0.14 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:04 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:04 | 1 |
| **Vinyl chloride** | **1.4** | | 1.0 | 0.20 | ug/L | | | 11/18/18 19:04 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.15 | ug/L | | | 11/18/18 19:04 | 1 |
| Diethyl ether | 2.0 | U | 2.0 | 0.19 | ug/L | | | 11/18/18 19:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *74* | | *59 - 120* | | *11/18/18 19:04* | *1* |
| *Dibromofluoromethane (Surr)* | *111* | | *75 - 128* | | *11/18/18 19:04* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *70 - 121* | | *11/18/18 19:04* | *1* |
| *Toluene-d8 (Surr)* | *87* | | *70 - 123* | | *11/18/18 19:04* | *1* |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-71-110618**
**Date Collected: 11/06/18 12:22**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-3**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 1.1 | J | 2.0 | 0.86 | ug/L | | | 11/16/18 15:59 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *63 - 125* | | *11/16/18 15:59* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10 | U | 10 | 5.4 | ug/L | | | 11/18/18 19:26 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:26 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:26 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.76 | ug/L | | | 11/18/18 19:26 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.42 | ug/L | | | 11/18/18 19:26 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.2 | ug/L | | | 11/18/18 19:26 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 0.28 | ug/L | | | 11/18/18 19:26 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:26 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:26 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.83 | ug/L | | | 11/18/18 19:26 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:26 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 19:26 | 1 |
| cis-1,2-Dichloroethene | 0.36 | J | 1.0 | 0.16 | ug/L | | | 11/18/18 19:26 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.61 | ug/L | | | 11/18/18 19:26 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:26 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.91 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,3-Dichlorobenzene | 0.16 | J | 1.0 | 0.15 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 19:26 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:26 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.11 | ug/L | | | 11/18/18 19:26 | 1 |
| 2-Hexanone | 10 | U | 10 | 0.54 | ug/L | | | 11/18/18 19:26 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:26 | 1 |
| Methyl acetate | 10 | U | 10 | 1.7 | ug/L | | | 11/18/18 19:26 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.33 | ug/L | | | 11/18/18 19:26 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.6 | ug/L | | | 11/18/18 19:26 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 10 | 0.42 | ug/L | | | 11/18/18 19:26 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:26 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:26 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:26 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:26 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:26 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.67 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:26 | 1 |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-71-110618**
**Date Collected: 11/06/18 12:22**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-3**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:26 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.45 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2,3-Trimethylbenzene | 5.0 | U | 5.0 | 0.14 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:26 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:26 | 1 |
| **Vinyl chloride** | **0.31** | **J** | 1.0 | 0.20 | ug/L | | | 11/18/18 19:26 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.15 | ug/L | | | 11/18/18 19:26 | 1 |
| Diethyl ether | 2.0 | U | 2.0 | 0.19 | ug/L | | | 11/18/18 19:26 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *70* | | *59 - 120* | | *11/18/18 19:26* | *1* |
| *Dibromofluoromethane (Surr)* | *110* | | *75 - 128* | | *11/18/18 19:26* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *70 - 121* | | *11/18/18 19:26* | *1* |
| *Toluene-d8 (Surr)* | *86* | | *70 - 123* | | *11/18/18 19:26* | *1* |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-32-110718**
**Date Collected: 11/07/18 14:57**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-4**
**Matrix: Water**

## 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 | | | 11/16/18 16:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *106* | | *63 - 125* | | *11/16/18 16:24* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10 | U | 10 | 5.4 | ug/L | | | 11/18/18 19:47 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:47 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:47 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.76 | ug/L | | | 11/18/18 19:47 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.42 | ug/L | | | 11/18/18 19:47 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.2 | ug/L | | | 11/18/18 19:47 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 0.28 | ug/L | | | 11/18/18 19:47 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:47 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:47 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.83 | ug/L | | | 11/18/18 19:47 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:47 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 19:47 | 1 |
| **cis-1,2-Dichloroethene** | **0.38** | **J** | 1.0 | 0.16 | ug/L | | | 11/18/18 19:47 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.61 | ug/L | | | 11/18/18 19:47 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:47 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.91 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 19:47 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:47 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.11 | ug/L | | | 11/18/18 19:47 | 1 |
| 2-Hexanone | 10 | U | 10 | 0.54 | ug/L | | | 11/18/18 19:47 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:47 | 1 |
| Methyl acetate | 10 | U | 10 | 1.7 | ug/L | | | 11/18/18 19:47 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.33 | ug/L | | | 11/18/18 19:47 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.6 | ug/L | | | 11/18/18 19:47 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 10 | 0.42 | ug/L | | | 11/18/18 19:47 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:47 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 19:47 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 19:47 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 19:47 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 19:47 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.67 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 19:47 | 1 |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-32-110718**
**Date Collected: 11/07/18 14:57**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-4**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 19:47 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.45 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2,3-Trimethylbenzene | 5.0 | U | 5.0 | 0.14 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 19:47 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 19:47 | 1 |
| **Vinyl chloride** | **0.38** | **J** | 1.0 | 0.20 | ug/L | | | 11/18/18 19:47 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.15 | ug/L | | | 11/18/18 19:47 | 1 |
| Diethyl ether | 2.0 | U | 2.0 | 0.19 | ug/L | | | 11/18/18 19:47 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *74* | | *59 - 120* | | *11/18/18 19:47* | *1* |
| *Dibromofluoromethane (Surr)* | *115* | | *75 - 128* | | *11/18/18 19:47* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *99* | | *70 - 121* | | *11/18/18 19:47* | *1* |
| *Toluene-d8 (Surr)* | *89* | | *70 - 123* | | *11/18/18 19:47* | *1* |

## Client Sample ID: MW-10-110718

**Date Collected: 11/07/18 16:46**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-5

**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 5.5 | | 2.0 | 0.86 | ug/L | | | 11/16/18 16:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *63 - 125* | | *11/16/18 16:50* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 2500 | U | 2500 | 1400 | ug/L | | | 11/18/18 20:09 | 250 |
| Benzene | 250 | U | 250 | 33 | ug/L | | | 11/18/18 20:09 | 250 |
| Bromodichloromethane | 250 | U | 250 | 43 | ug/L | | | 11/18/18 20:09 | 250 |
| Bromoform | 250 | U | 250 | 190 | ug/L | | | 11/18/18 20:09 | 250 |
| Bromomethane | 250 | U | 250 | 110 | ug/L | | | 11/18/18 20:09 | 250 |
| 2-Butanone (MEK) | 2500 | U | 2500 | 290 | ug/L | | | 11/18/18 20:09 | 250 |
| Carbon disulfide | 1300 | U | 1300 | 70 | ug/L | | | 11/18/18 20:09 | 250 |
| Carbon tetrachloride | 250 | U | 250 | 65 | ug/L | | | 11/18/18 20:09 | 250 |
| Chlorobenzene | 250 | U | 250 | 35 | ug/L | | | 11/18/18 20:09 | 250 |
| Chloroethane | 250 | U | 250 | 210 | ug/L | | | 11/18/18 20:09 | 250 |
| Chloroform | 250 | U | 250 | 33 | ug/L | | | 11/18/18 20:09 | 250 |
| Chloromethane | 250 | U | 250 | 50 | ug/L | | | 11/18/18 20:09 | 250 |
| cis-1,2-Dichloroethene | 250 | U | 250 | 40 | ug/L | | | 11/18/18 20:09 | 250 |
| cis-1,3-Dichloropropene | 250 | U | 250 | 150 | ug/L | | | 11/18/18 20:09 | 250 |
| Cyclohexane | 250 | U | 250 | 60 | ug/L | | | 11/18/18 20:09 | 250 |
| Dibromochloromethane | 250 | U | 250 | 98 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2-Dibromo-3-Chloropropane | 250 | U | 250 | 230 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2-Dibromoethane | 250 | U | 250 | 30 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2-Dichlorobenzene | 250 | U | 250 | 38 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,3-Dichlorobenzene | 250 | U | 250 | 38 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,4-Dichlorobenzene | 250 | U | 250 | 40 | ug/L | | | 11/18/18 20:09 | 250 |
| Dichlorodifluoromethane | 250 | U | 250 | 88 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1-Dichloroethane | 250 | U | 250 | 43 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2-Dichloroethane | 250 | U | 250 | 53 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1-Dichloroethene | 250 | U | 250 | 48 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2-Dichloropropane | 250 | U | 250 | 38 | ug/L | | | 11/18/18 20:09 | 250 |
| Ethylbenzene | 250 | U | 250 | 28 | ug/L | | | 11/18/18 20:09 | 250 |
| 2-Hexanone | 2500 | U | 2500 | 140 | ug/L | | | 11/18/18 20:09 | 250 |
| Isopropylbenzene | 250 | U | 250 | 23 | ug/L | | | 11/18/18 20:09 | 250 |
| Methyl acetate | 2500 | U | 2500 | 430 | ug/L | | | 11/18/18 20:09 | 250 |
| Methylcyclohexane | 250 | U | 250 | 83 | ug/L | | | 11/18/18 20:09 | 250 |
| Methylene Chloride | 1300 | U | 1300 | 660 | ug/L | | | 11/18/18 20:09 | 250 |
| 4-Methyl-2-pentanone (MIBK) | 2500 | U | 2500 | 110 | ug/L | | | 11/18/18 20:09 | 250 |
| Methyl tert-butyl ether | 250 | U | 250 | 18 | ug/L | | | 11/18/18 20:09 | 250 |
| Styrene | 250 | U | 250 | 25 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1,2,2-Tetrachloroethane | 250 | U | 250 | 33 | ug/L | | | 11/18/18 20:09 | 250 |
| Tetrachloroethene | 250 | U | 250 | 38 | ug/L | | | 11/18/18 20:09 | 250 |
| Toluene | 250 | U | 250 | 35 | ug/L | | | 11/18/18 20:09 | 250 |
| trans-1,2-Dichloroethene | 250 | U | 250 | 48 | ug/L | | | 11/18/18 20:09 | 250 |
| trans-1,3-Dichloropropene | 250 | U | 250 | 170 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2,4-Trichlorobenzene | 250 | U | 250 | 65 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1,1-Trichloroethane | 250 | U | 250 | 60 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1,2-Trichloroethane | 250 | U | 250 | 23 | ug/L | | | 11/18/18 20:09 | 250 |

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

TestAmerica Job ID: 240-104174-1

**Client Sample ID: MW-10-110718**
**Date Collected: 11/07/18 16:46**
**Date Received: 11/09/18 08:50**

**Lab Sample ID: 240-104174-5**
**Matrix: Water**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 250 | U | 250 | 25 | ug/L | | | 11/18/18 20:09 | 250 |
| Trichlorofluoromethane | 250 | U | 250 | 110 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 250 | U | 250 | 100 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2,3-Trimethylbenzene | 1300 | U | 1300 | 35 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,2,4-Trimethylbenzene | 250 | U | 250 | 18 | ug/L | | | 11/18/18 20:09 | 250 |
| 1,3,5-Trimethylbenzene | 250 | U | 250 | 30 | ug/L | | | 11/18/18 20:09 | 250 |
| **Vinyl chloride** | **3100** | | 250 | 50 | ug/L | | | 11/18/18 20:09 | 250 |
| Xylenes, Total | 500 | U | 500 | 38 | ug/L | | | 11/18/18 20:09 | 250 |
| Diethyl ether | 500 | U | 500 | 48 | ug/L | | | 11/18/18 20:09 | 250 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *68* | | *59 - 120* | | *11/18/18 20:09* | *250* |
| *Dibromofluoromethane (Surr)* | *112* | | *75 - 128* | | *11/18/18 20:09* | *250* |
| *1,2-Dichloroethane-d4 (Surr)* | *96* | | *70 - 121* | | *11/18/18 20:09* | *250* |
| *Toluene-d8 (Surr)* | *80* | | *70 - 123* | | *11/18/18 20:09* | *250* |

# Surrogate Summary

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

TestAmerica Job ID: 240-104174-1

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

**Matrix: Water** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | BFB | DBFM | DCA | TOL |
| Lab Sample ID | Client Sample ID | (59-120) | (75-128) | (70-121) | (70-123) |
| 240-104000-A-6 MS | Matrix Spike | 97 | 105 | 88 | 103 |
| 240-104000-A-6 MSD | Matrix Spike Duplicate | 94 | 102 | 86 | 99 |
| 240-104174-1 | MW-64-110518 | 72 | 111 | 93 | 86 |
| 240-104174-2 | MW-69-110618 | 74 | 111 | 98 | 87 |
| 240-104174-3 | MW-71-110618 | 70 | 110 | 98 | 86 |
| 240-104174-4 | MW-32-110718 | 74 | 115 | 99 | 89 |
| 240-104174-5 | MW-10-110718 | 68 | 112 | 96 | 80 |
| LCS 240-355972/4 | Lab Control Sample | 96 | 101 | 85 | 101 |
| MB 240-355972/6 | Method Blank | 77 | 116 | 101 | 90 |

**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) | |
|---|---|---|---|
| | | DCA | |
| Lab Sample ID | Client Sample ID | (63-125) | |
| 240-104167-D-6 MS | Matrix Spike | 103 | |
| 240-104167-D-6 MSD | Matrix Spike Duplicate | 104 | |
| 240-104174-1 | MW-64-110518 | 106 | |
| 240-104174-2 | MW-69-110618 | 105 | |
| 240-104174-3 | MW-71-110618 | 107 | |
| 240-104174-4 | MW-32-110718 | 106 | |
| 240-104174-5 | MW-10-110718 | 107 | |
| LCS 240-355798/4 | Lab Control Sample | 101 | |
| MB 240-355798/5 | Method Blank | 105 | |

**Surrogate Legend**

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

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

**Lab Sample ID: MB 240-355972/6**
**Matrix: Water**
**Analysis Batch: 355972**

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

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10 | U | 10 | 5.4 | ug/L | | | 11/18/18 13:34 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 13:34 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 13:34 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.76 | ug/L | | | 11/18/18 13:34 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.42 | ug/L | | | 11/18/18 13:34 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.2 | ug/L | | | 11/18/18 13:34 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 0.28 | ug/L | | | 11/18/18 13:34 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 13:34 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 13:34 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.83 | ug/L | | | 11/18/18 13:34 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 13:34 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 13:34 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 13:34 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.61 | ug/L | | | 11/18/18 13:34 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 13:34 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.91 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/18/18 13:34 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.17 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 13:34 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.11 | ug/L | | | 11/18/18 13:34 | 1 |
| 2-Hexanone | 10 | U | 10 | 0.54 | ug/L | | | 11/18/18 13:34 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 13:34 | 1 |
| Methyl acetate | 10 | U | 10 | 1.7 | ug/L | | | 11/18/18 13:34 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.33 | ug/L | | | 11/18/18 13:34 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.6 | ug/L | | | 11/18/18 13:34 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 10 | 0.42 | ug/L | | | 11/18/18 13:34 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 13:34 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.13 | ug/L | | | 11/18/18 13:34 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.15 | ug/L | | | 11/18/18 13:34 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.14 | ug/L | | | 11/18/18 13:34 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/18/18 13:34 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.67 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.24 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.090 | ug/L | | | 11/18/18 13:34 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.10 | ug/L | | | 11/18/18 13:34 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.45 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2,3-Trimethylbenzene | 5.0 | U | 5.0 | 0.14 | ug/L | | | 11/18/18 13:34 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.070 | ug/L | | | 11/18/18 13:34 | 1 |

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

**Lab Sample ID: MB 240-355972/6**
**Matrix: Water**
**Analysis Batch: 355972**

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

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.12 | ug/L | | | 11/18/18 13:34 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.20 | ug/L | | | 11/18/18 13:34 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.15 | ug/L | | | 11/18/18 13:34 | 1 |
| Diethyl ether | 2.0 | U | 2.0 | 0.19 | ug/L | | | 11/18/18 13:34 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *77* | | *59 - 120* | | *11/18/18 13:34* | *1* |
| *Dibromofluoromethane (Surr)* | *116* | | *75 - 128* | | *11/18/18 13:34* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *101* | | *70 - 121* | | *11/18/18 13:34* | *1* |
| *Toluene-d8 (Surr)* | *90* | | *70 - 123* | | *11/18/18 13:34* | *1* |

**Lab Sample ID: LCS 240-355972/4**
**Matrix: Water**
**Analysis Batch: 355972**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Acetone | 20.0 | 15.3 | | ug/L | | 77 | 21 - 162 |
| Benzene | 10.0 | 9.44 | | ug/L | | 94 | 80 - 123 |
| Bromodichloromethane | 10.0 | 9.02 | | ug/L | | 90 | 77 - 125 |
| Bromoform | 10.0 | 9.97 | | ug/L | | 100 | 49 - 141 |
| Bromomethane | 10.0 | 6.99 | | ug/L | | 70 | 41 - 175 |
| 2-Butanone (MEK) | 20.0 | 13.6 | | ug/L | | 68 | 39 - 163 |
| Carbon disulfide | 10.0 | 8.62 | | ug/L | | 86 | 60 - 138 |
| Carbon tetrachloride | 10.0 | 10.7 | | ug/L | | 107 | 63 - 140 |
| Chlorobenzene | 10.0 | 9.69 | | ug/L | | 97 | 80 - 121 |
| Chloroethane | 10.0 | 7.42 | | ug/L | | 74 | 33 - 173 |
| Chloroform | 10.0 | 9.57 | | ug/L | | 96 | 79 - 127 |
| Chloromethane | 10.0 | 10.3 | | ug/L | | 103 | 54 - 143 |
| cis-1,2-Dichloroethene | 10.0 | 9.62 | | ug/L | | 96 | 76 - 128 |
| cis-1,3-Dichloropropene | 10.0 | 7.31 | | ug/L | | 73 | 64 - 132 |
| Cyclohexane | 10.0 | 8.65 | | ug/L | | 86 | 58 - 145 |
| Dibromochloromethane | 10.0 | 10.1 | | ug/L | | 101 | 70 - 132 |
| 1,2-Dibromo-3-Chloropropane | 10.0 | 8.55 | | ug/L | | 86 | 46 - 132 |
| 1,2-Dibromoethane | 10.0 | 8.77 | | ug/L | | 88 | 77 - 123 |
| 1,2-Dichlorobenzene | 10.0 | 9.91 | | ug/L | | 99 | 78 - 120 |
| 1,3-Dichlorobenzene | 10.0 | 9.33 | | ug/L | | 93 | 78 - 120 |
| 1,4-Dichlorobenzene | 10.0 | 9.46 | | ug/L | | 95 | 78 - 120 |
| Dichlorodifluoromethane | 10.0 | 9.02 | | ug/L | | 90 | 29 - 148 |
| 1,1-Dichloroethane | 10.0 | 9.40 | | ug/L | | 94 | 75 - 133 |
| 1,2-Dichloroethane | 10.0 | 8.49 | | ug/L | | 85 | 71 - 135 |
| 1,1-Dichloroethene | 10.0 | 8.75 | | ug/L | | 87 | 65 - 139 |
| 1,2-Dichloropropane | 10.0 | 9.14 | | ug/L | | 91 | 78 - 133 |
| Ethylbenzene | 10.0 | 9.22 | | ug/L | | 92 | 80 - 120 |
| 2-Hexanone | 20.0 | 14.9 | | ug/L | | 75 | 43 - 148 |
| Isopropylbenzene | 10.0 | 8.79 | | ug/L | | 88 | 74 - 120 |
| Methyl acetate | 20.0 | 14.1 | | ug/L | | 71 | 52 - 145 |
| Methylcyclohexane | 10.0 | 7.32 | | ug/L | | 73 | 60 - 125 |
| Methylene Chloride | 10.0 | 10.3 | | ug/L | | 103 | 70 - 134 |

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

**Lab Sample ID: LCS 240-355972/4**
**Matrix: Water**
**Analysis Batch: 355972**

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

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| 4-Methyl-2-pentanone (MIBK) | 20.0 | 12.6 | | ug/L | | 63 | 49 - 143 |
| Methyl tert-butyl ether | 10.0 | 6.51 | | ug/L | | 65 | 51 - 133 |
| Styrene | 10.0 | 9.41 | | ug/L | | 94 | 79 - 120 |
| 1,1,2,2-Tetrachloroethane | 10.0 | 8.64 | | ug/L | | 86 | 65 - 139 |
| Tetrachloroethene | 10.0 | 10.7 | | ug/L | | 107 | 74 - 130 |
| Toluene | 10.0 | 9.91 | | ug/L | | 99 | 78 - 129 |
| trans-1,2-Dichloroethene | 10.0 | 10.1 | | ug/L | | 101 | 78 - 133 |
| trans-1,3-Dichloropropene | 10.0 | 7.41 | | ug/L | | 74 | 55 - 128 |
| 1,2,4-Trichlorobenzene | 10.0 | 9.29 | | ug/L | | 93 | 42 - 133 |
| 1,1,1-Trichloroethane | 10.0 | 9.84 | | ug/L | | 98 | 69 - 134 |
| 1,1,2-Trichloroethane | 10.0 | 10.0 | | ug/L | | 100 | 78 - 133 |
| Trichloroethene | 10.0 | 9.38 | | ug/L | | 94 | 76 - 125 |
| Trichlorofluoromethane | 10.0 | 8.38 | | ug/L | | 84 | 51 - 164 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 10.0 | 10.2 | | ug/L | | 102 | 50 - 156 |
| 1,2,4-Trimethylbenzene | 10.0 | 8.66 | | ug/L | | 87 | 74 - 120 |
| 1,3,5-Trimethylbenzene | 10.0 | 8.41 | | ug/L | | 84 | 75 - 121 |
| Vinyl chloride | 10.0 | 7.95 | | ug/L | | 79 | 58 - 143 |
| Xylenes, Total | 20.0 | 18.6 | | ug/L | | 93 | 80 - 120 |
| Diethyl ether | 10.0 | 9.56 | | ug/L | | 96 | 70 - 146 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *96* | | *59 - 120* |
| *Dibromofluoromethane (Surr)* | *101* | | *75 - 128* |
| *1,2-Dichloroethane-d4 (Surr)* | *85* | | *70 - 121* |
| *Toluene-d8 (Surr)* | *101* | | *70 - 123* |

**Lab Sample ID: 240-104000-A-6 MS**
**Matrix: Water**
**Analysis Batch: 355972**

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 33 | U | 66.6 | 51.6 | | ug/L | | 78 | 10 - 168 |
| Benzene | 0.94 | J | 33.3 | 32.1 | | ug/L | | 94 | 71 - 122 |
| Bromodichloromethane | 3.3 | U | 33.3 | 29.9 | | ug/L | | 90 | 64 - 125 |
| Bromoform | 3.3 | U | 33.3 | 34.3 | | ug/L | | 103 | 44 - 129 |
| Bromomethane | 3.3 | U | 33.3 | 24.6 | | ug/L | | 74 | 19 - 187 |
| 2-Butanone (MEK) | 33 | U | 66.6 | 53.8 | | ug/L | | 81 | 37 - 156 |
| Carbon disulfide | 17 | U | 33.3 | 28.3 | | ug/L | | 85 | 43 - 144 |
| Carbon tetrachloride | 3.3 | U | 33.3 | 32.8 | | ug/L | | 98 | 41 - 143 |
| Chlorobenzene | 3.3 | U | 33.3 | 32.3 | | ug/L | | 97 | 70 - 123 |
| Chloroethane | 3.3 | U | 33.3 | 23.3 | | ug/L | | 70 | 11 - 189 |
| Chloroform | 3.3 | U | 33.3 | 32.9 | | ug/L | | 99 | 68 - 130 |
| Chloromethane | 3.3 | U | 33.3 | 30.8 | | ug/L | | 93 | 31 - 154 |
| cis-1,2-Dichloroethene | 77 | F1 | 33.3 | 98.0 | F1 | ug/L | | 62 | 64 - 130 |
| cis-1,3-Dichloropropene | 3.3 | U | 33.3 | 21.5 | | ug/L | | 64 | 48 - 127 |
| Cyclohexane | | | 33.3 | 21.6 | | ug/L | | | |
| Dibromochloromethane | 3.3 | U | 33.3 | 33.8 | | ug/L | | 102 | 60 - 129 |

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

**Lab Sample ID: 240-104000-A-6 MS**
**Matrix: Water**
**Analysis Batch: 355972**

**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 |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromo-3-Chloropropane | | | 33.3 | 25.9 | | ug/L | | | |
| 1,2-Dibromoethane | | | 33.3 | 29.4 | | ug/L | | | |
| 1,2-Dichlorobenzene | 3.3 | U | 33.3 | 31.3 | | ug/L | | 94 | 64 - 120 |
| 1,3-Dichlorobenzene | 3.3 | U | 33.3 | 28.7 | | ug/L | | 86 | 62 - 120 |
| 1,4-Dichlorobenzene | 3.3 | U | 33.3 | 28.9 | | ug/L | | 87 | 63 - 120 |
| Dichlorodifluoromethane | 3.3 | U F2 | 33.3 | 13.9 | | ug/L | | 42 | 28 - 136 |
| 1,1-Dichloroethane | 4.0 | | 33.3 | 35.0 | | ug/L | | 93 | 63 - 136 |
| 1,2-Dichloroethane | 5.8 | | 33.3 | 34.6 | | ug/L | | 86 | 65 - 135 |
| 1,1-Dichloroethene | 3.3 | U | 33.3 | 28.9 | | ug/L | | 87 | 53 - 140 |
| 1,2-Dichloropropane | 3.3 | U | 33.3 | 29.5 | | ug/L | | 88 | 70 - 132 |
| Ethylbenzene | 3.3 | U | 33.3 | 29.5 | | ug/L | | 89 | 66 - 120 |
| 2-Hexanone | 33 | U | 66.6 | 52.5 | | ug/L | | 79 | 42 - 150 |
| Isopropylbenzene | | | 33.3 | 26.5 | | ug/L | | | |
| Methyl acetate | | | 66.6 | 48.8 | | ug/L | | | |
| Methylcyclohexane | | | 33.3 | 17.0 | | ug/L | | | |
| Methylene Chloride | 17 | U | 33.3 | 36.2 | | ug/L | | 109 | 61 - 130 |
| 4-Methyl-2-pentanone (MIBK) | 33 | U | 66.6 | 41.4 | | ug/L | | 62 | 44 - 143 |
| Methyl tert-butyl ether | | | 33.3 | 20.8 | | ug/L | | | |
| Styrene | 3.3 | U | 33.3 | 30.8 | | ug/L | | 92 | 68 - 120 |
| 1,1,2,2-Tetrachloroethane | 3.3 | U | 33.3 | 29.4 | | ug/L | | 88 | 60 - 137 |
| Tetrachloroethene | 46 | | 33.3 | 71.8 | | ug/L | | 78 | 51 - 136 |
| Toluene | 3.3 | U | 33.3 | 32.2 | | ug/L | | 97 | 62 - 132 |
| trans-1,2-Dichloroethene | 2.0 | J | 33.3 | 35.6 | | ug/L | | 101 | 68 - 133 |
| trans-1,3-Dichloropropene | 3.3 | U | 33.3 | 23.1 | | ug/L | | 69 | 40 - 125 |
| 1,2,4-Trichlorobenzene | | | 33.3 | 26.0 | | ug/L | | | |
| 1,1,1-Trichloroethane | 1.8 | J | 33.3 | 32.8 | | ug/L | | 93 | 51 - 138 |
| 1,1,2-Trichloroethane | 3.3 | U | 33.3 | 34.2 | | ug/L | | 103 | 76 - 132 |
| Trichloroethene | 13 | | 33.3 | 40.2 | | ug/L | | 82 | 55 - 131 |
| Trichlorofluoromethane | 3.3 | U | 33.3 | 19.6 | | ug/L | | 59 | 37 - 174 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | | | 33.3 | 25.4 | | ug/L | | | |
| 1,2,4-Trimethylbenzene | | | 33.3 | 26.3 | | ug/L | | | |
| 1,3,5-Trimethylbenzene | | | 33.3 | 25.9 | | ug/L | | | |
| Vinyl chloride | 20 | | 33.3 | 43.9 | | ug/L | | 73 | 43 - 154 |
| Xylenes, Total | 6.7 | U | 66.6 | 59.1 | | ug/L | | 89 | 67 - 120 |
| Diethyl ether | | | 33.3 | 42.1 | | ug/L | | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *97* | | *59 - 120* |
| *Dibromofluoromethane (Surr)* | *105* | | *75 - 128* |
| *1,2-Dichloroethane-d4 (Surr)* | *88* | | *70 - 121* |
| *Toluene-d8 (Surr)* | *103* | | *70 - 123* |

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

**Lab Sample ID: 240-104000-A-6 MSD**
**Matrix: Water**
**Analysis Batch: 355972**

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetone | 33 | U | 66.6 | 54.0 | | ug/L | | 81 | 10 - 168 | 4 | 35 |
| Benzene | 0.94 | J | 33.3 | 33.0 | | ug/L | | 96 | 71 - 122 | 3 | 22 |
| Bromodichloromethane | 3.3 | U | 33.3 | 29.7 | | ug/L | | 89 | 64 - 125 | 1 | 27 |
| Bromoform | 3.3 | U | 33.3 | 33.3 | | ug/L | | 100 | 44 - 129 | 3 | 28 |
| Bromomethane | 3.3 | U | 33.3 | 25.9 | | ug/L | | 78 | 19 - 187 | 5 | 35 |
| 2-Butanone (MEK) | 33 | U | 66.6 | 53.4 | | ug/L | | 80 | 37 - 156 | 1 | 35 |
| Carbon disulfide | 17 | U | 33.3 | 28.9 | | ug/L | | 87 | 43 - 144 | 2 | 33 |
| Carbon tetrachloride | 3.3 | U | 33.3 | 34.9 | | ug/L | | 105 | 41 - 143 | 6 | 30 |
| Chlorobenzene | 3.3 | U | 33.3 | 32.3 | | ug/L | | 97 | 70 - 123 | 0 | 23 |
| Chloroethane | 3.3 | U | 33.3 | 27.1 | | ug/L | | 81 | 11 - 189 | 15 | 35 |
| Chloroform | 3.3 | U | 33.3 | 33.1 | | ug/L | | 99 | 68 - 130 | 0 | 23 |
| Chloromethane | 3.3 | U | 33.3 | 31.8 | | ug/L | | 95 | 31 - 154 | 3 | 35 |
| cis-1,2-Dichloroethene | 77 | F1 | 33.3 | 98.8 | | ug/L | | 64 | 64 - 130 | 1 | 21 |
| cis-1,3-Dichloropropene | 3.3 | U | 33.3 | 22.2 | | ug/L | | 67 | 48 - 127 | 3 | 30 |
| Dibromochloromethane | 3.3 | U | 33.3 | 33.9 | | ug/L | | 102 | 60 - 129 | 0 | 26 |
| 1,2-Dichlorobenzene | 3.3 | U | 33.3 | 31.8 | | ug/L | | 95 | 64 - 120 | 1 | 30 |
| 1,3-Dichlorobenzene | 3.3 | U | 33.3 | 29.0 | | ug/L | | 87 | 62 - 120 | 1 | 31 |
| 1,4-Dichlorobenzene | 3.3 | U | 33.3 | 29.5 | | ug/L | | 89 | 63 - 120 | 2 | 28 |
| Dichlorodifluoromethane | 3.3 | U F2 | 33.3 | 25.3 | F2 | ug/L | | 76 | 28 - 136 | 58 | 35 |
| 1,1-Dichloroethane | 4.0 | | 33.3 | 35.9 | | ug/L | | 96 | 63 - 136 | 3 | 23 |
| 1,2-Dichloroethane | 5.8 | | 33.3 | 34.2 | | ug/L | | 85 | 65 - 135 | 1 | 24 |
| 1,1-Dichloroethene | 3.3 | U | 33.3 | 31.5 | | ug/L | | 95 | 53 - 140 | 9 | 35 |
| 1,2-Dichloropropane | 3.3 | U | 33.3 | 30.2 | | ug/L | | 91 | 70 - 132 | 2 | 26 |
| Ethylbenzene | 3.3 | U | 33.3 | 29.5 | | ug/L | | 88 | 66 - 120 | 0 | 24 |
| 2-Hexanone | 33 | U | 66.6 | 51.8 | | ug/L | | 78 | 42 - 150 | 1 | 35 |
| Methylene Chloride | 17 | U | 33.3 | 36.6 | | ug/L | | 110 | 61 - 130 | 1 | 29 |
| 4-Methyl-2-pentanone (MIBK) | 33 | U | 66.6 | 43.0 | | ug/L | | 65 | 44 - 143 | 4 | 35 |
| Styrene | 3.3 | U | 33.3 | 30.1 | | ug/L | | 90 | 68 - 120 | 2 | 26 |
| 1,1,2,2-Tetrachloroethane | 3.3 | U | 33.3 | 29.5 | | ug/L | | 89 | 60 - 137 | 0 | 31 |
| Tetrachloroethene | 46 | | 33.3 | 71.3 | | ug/L | | 77 | 51 - 136 | 1 | 23 |
| Toluene | 3.3 | U | 33.3 | 32.5 | | ug/L | | 98 | 62 - 132 | 1 | 23 |
| trans-1,2-Dichloroethene | 2.0 | J | 33.3 | 36.1 | | ug/L | | 103 | 68 - 133 | 1 | 24 |
| trans-1,3-Dichloropropene | 3.3 | U | 33.3 | 23.4 | | ug/L | | 70 | 40 - 125 | 1 | 27 |
| 1,1,1-Trichloroethane | 1.8 | J | 33.3 | 34.7 | | ug/L | | 99 | 51 - 138 | 5 | 27 |
| 1,1,2-Trichloroethane | 3.3 | U | 33.3 | 34.5 | | ug/L | | 103 | 76 - 132 | 1 | 25 |
| Trichloroethene | 13 | | 33.3 | 40.7 | | ug/L | | 83 | 55 - 131 | 1 | 23 |
| Trichlorofluoromethane | 3.3 | U | 33.3 | 27.2 | | ug/L | | 82 | 37 - 174 | 33 | 35 |
| Vinyl chloride | 20 | | 33.3 | 45.3 | | ug/L | | 77 | 43 - 154 | 3 | 29 |
| Xylenes, Total | 6.7 | U | 66.6 | 59.7 | | ug/L | | 90 | 67 - 120 | 1 | 25 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *94* | | *59 - 120* |
| *Dibromofluoromethane (Surr)* | *102* | | *75 - 128* |
| *1,2-Dichloroethane-d4 (Surr)* | *86* | | *70 - 121* |
| *Toluene-d8 (Surr)* | *99* | | *70 - 123* |

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

**Lab Sample ID: MB 240-355798/5**
**Matrix: Water**
**Analysis Batch: 355798**

**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 | | | 11/16/18 12:31 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *105* | | *63 - 125* | | *11/16/18 12:31* | *1* |

**Lab Sample ID: LCS 240-355798/4**
**Matrix: Water**
**Analysis Batch: 355798**

**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 | 10.4 | | ug/L | | 104 | 59 - 131 | | |

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

**Lab Sample ID: 240-104167-D-6 MS**
**Matrix: Water**
**Analysis Batch: 355798**

**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 | 120 | | 10.0 | 122 | 4 | ug/L | | 43 | 52 - 129 | | |

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

**Lab Sample ID: 240-104167-D-6 MSD**
**Matrix: Water**
**Analysis Batch: 355798**

**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 | 120 | | 10.0 | 123 | 4 | ug/L | | 61 | 52 - 129 | 1 | 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

TestAmerica Job ID: 240-104174-1

## GC/MS VOA

### Analysis Batch: 355798

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 240-104174-1 | MW-64-110518 | Total/NA | Water | 8260B SIM | |
| 240-104174-2 | MW-69-110618 | Total/NA | Water | 8260B SIM | |
| 240-104174-3 | MW-71-110618 | Total/NA | Water | 8260B SIM | |
| 240-104174-4 | MW-32-110718 | Total/NA | Water | 8260B SIM | |
| 240-104174-5 | MW-10-110718 | Total/NA | Water | 8260B SIM | |
| MB 240-355798/5 | Method Blank | Total/NA | Water | 8260B SIM | |
| LCS 240-355798/4 | Lab Control Sample | Total/NA | Water | 8260B SIM | |
| 240-104167-D-6 MS | Matrix Spike | Total/NA | Water | 8260B SIM | |
| 240-104167-D-6 MSD | Matrix Spike Duplicate | Total/NA | Water | 8260B SIM | |

### Analysis Batch: 355972

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 240-104174-1 | MW-64-110518 | Total/NA | Water | 8260B | |
| 240-104174-2 | MW-69-110618 | Total/NA | Water | 8260B | |
| 240-104174-3 | MW-71-110618 | Total/NA | Water | 8260B | |
| 240-104174-4 | MW-32-110718 | Total/NA | Water | 8260B | |
| 240-104174-5 | MW-10-110718 | Total/NA | Water | 8260B | |
| MB 240-355972/6 | Method Blank | Total/NA | Water | 8260B | |
| LCS 240-355972/4 | Lab Control Sample | Total/NA | Water | 8260B | |
| 240-104000-A-6 MS | Matrix Spike | Total/NA | Water | 8260B | |
| 240-104000-A-6 MSD | Matrix Spike Duplicate | Total/NA | Water | 8260B | |

# Lab Chronicle

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

TestAmerica Job ID: 240-104174-1

## Client Sample ID: MW-64-110518
**Date Collected: 11/05/18 15:27**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-1
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 355972 | 11/18/18 18:42 | LEE | TAL CAN |
| Total/NA | Analysis | 8260B SIM | | 1 | 355798 | 11/16/18 15:06 | SAM | TAL CAN |

## Client Sample ID: MW-69-110618
**Date Collected: 11/06/18 11:17**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-2
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 355972 | 11/18/18 19:04 | LEE | TAL CAN |
| Total/NA | Analysis | 8260B SIM | | 1 | 355798 | 11/16/18 15:32 | SAM | TAL CAN |

## Client Sample ID: MW-71-110618
**Date Collected: 11/06/18 12:22**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-3
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 355972 | 11/18/18 19:26 | LEE | TAL CAN |
| Total/NA | Analysis | 8260B SIM | | 1 | 355798 | 11/16/18 15:59 | SAM | TAL CAN |

## Client Sample ID: MW-32-110718
**Date Collected: 11/07/18 14:57**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-4
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 355972 | 11/18/18 19:47 | LEE | TAL CAN |
| Total/NA | Analysis | 8260B SIM | | 1 | 355798 | 11/16/18 16:24 | SAM | TAL CAN |

## Client Sample ID: MW-10-110718
**Date Collected: 11/07/18 16:46**
**Date Received: 11/09/18 08:50**

## Lab Sample ID: 240-104174-5
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 250 | 355972 | 11/18/18 20:09 | LEE | TAL CAN |
| Total/NA | Analysis | 8260B SIM | | 1 | 355798 | 11/16/18 16:50 | SAM | TAL CAN |

**Laboratory References:**

TAL CAN = 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

TestAmerica Job ID: 240-104174-1

## Laboratory: 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 | 02-23-19 |
| 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 | 01-31-19 |
| Kentucky (UST) | State Program | 4 | 58 | 02-23-19 |
| Kentucky (WW) | State Program | 4 | 98016 | 12-31-18 * |
| Minnesota | NELAP | 5 | 039-999-348 | 12-31-18 * |
| 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 | 03-31-19 |
| Ohio VAP | State Program | 5 | CL0024 | 09-06-19 |
| Oregon | NELAP | 10 | 4062 | 02-23-19 |
| 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 | 01-12-19 |
| West Virginia DEP | State Program | 3 | 210 | 12-31-18 * |

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

**TestAmerica Canton**
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

MICHIGAN 190

# Chain of Custody Record

1.0 1.9

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

| Client Information | Sampler: | Lab PM: DelMonico, Michael | Carrier Tracking No(s): | COC No: 240-55264-23811.7 |
|---|---|---|---|---|
| Client Contact: Angela DeGrandis | Phone: | E-Mail: michael.delmonico@testamericainc.com | | Page: Page 7 of 20 |
| Company: ARCADIS U.S., Inc. | | | | Job #: |

| Address: 28550 Cabot Drive Suite 500 | Due Date Requested: |
|---|---|
| City: Novi | TAT Requested (days): |
| State, Zip: MI, 48377 | |
| Phone: | PO #: MI001318.0002.00002 |
| Email: angela.degrandis@arcadis-us.com | WO #: Cadena #: E203631 |
| Project Name: Ford LTP Livonia MI | Project #: 24015353 |
| Site: | SSOW#: |

**Analysis Requested**

**Preservation Codes:**

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 8260B - (MOD) 8260B,TCL OLM03.1/4.2 VOCs w/o/TMB | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | | |
| MW-64_110518 | 11/05/18 | 1527 | G | Water | | | 6 | | |
| MW-69_110618 | 11/06/18 | 1117 | G | Water | | | 6 | | |
| MW-71_110618 | 11/06/18 | 1222 | G | Water | | | 6 | | |
| MW-32_110718 | 11/07/18 | 1457 | G | Water | | | 6 | | |
| MW-10_110718 | 11/07/18 | 1646 | G | Water | | | 6 | | |
| | | | | Water | | | | | |
| | | | | Water | | | | | |
| | | | | Water | | | | | |
| | | | | Water | | | | | |
| | | | | Water | | | | | |
| | | | | Water | | | | | |

240-104174 Chain of Custody

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| Relinquished by: Korey Pearson | Date/Time: 11/7/18 1800 | Company: ARCADIS | Received by: NOVI, OFFICE | Date/Time: COLD STORAGE | Company |
|---|---|---|---|---|---|
| Relinquished by: Martha K. Kamys | Date/Time: 11/8/18 1215 | Company: Arcadis | Received by: Jeri Heal | Date/Time: 11/8/18 1715 | Company: TAL |
| Relinquished by: Jeri Heal | Date/Time: 11-8-18 1330 | Company: TAL | Received by: | Date/Time: 11-9-18 8:30 | Company: TAL |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

**TestAmerica Canton Sample Receipt Form/Narrative** **Login # :** _____
**Canton Facility**

Client ARCADIS Site Name _____ Cooler unpacked by: Steve Jay

Cooler Received on 11-9-18 Opened on _____

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 ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.9** °C) Observed Cooler Temp. 1.0 °C Corrected Cooler Temp. 1.9 °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 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# HC850248 |
| 13. Were VOAs on the COC? | Yes | No |
| 14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. | Yes | No NA |
| 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ | Yes | No |
| 16. Was a LL Hg or Me Hg trip blank present? _____ | Yes | No |

**Tests that are not checked for pH by Receiving:**

**VOAs**
**Oil and Grease**
**TOC**

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

Concerning _____

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

**18. SAMPLE CONDITION**

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

**19. SAMPLE PRESERVATION**

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

*WI-NC-099*