

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS US Inc
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 8/11/2023 9:36:00 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-189526-1

Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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Authorized for release by
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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Qualifiers

GC/MS VOA

| Qualifier | Qualifier Description |
|-----------|--|
| S1+ | Surrogate recovery exceeds control limits, high biased. |
| 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 |
| CFU | Colony Forming Unit |
| 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) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| 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) |
| TNTC | Too Numerous To Count |

Case Narrative

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Job ID: 240-189526-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-189526-1

Receipt

The samples were received on 8/3/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.5°C

GC/MS VOA

Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_59 (240-189526-1) and MW-110S_073123 (240-189526-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample: TRIP BLANK_59 (240-189526-1) and MW-110S_073123 (240-189526-2).

Method 8260D_SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with analytical batch 240-582950 were outside control limits for the internal standards, this was due to the internal standard running out when the MS/MSD were analyzed: MW-110S_073123 (240-189526-2). The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method 8260D_SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-110S_073123 (240-189526-2). This sample did not contain any target analytes above the reporting limit; therefore, re-extraction and/or re-analysis was not performed.

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

| Method | Method Description | Protocol | Laboratory |
|-----------|-------------------------------------|----------|------------|
| 8260D | Volatile Organic Compounds by GC/MS | SW846 | EET CLE |
| 8260D SIM | Volatile Organic Compounds (GC/MS) | SW846 | EET CLE |
| 5030C | Purge and Trap | SW846 | EET CLE |

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 240-189526-1 | TRIP BLANK_59 | Water | 07/31/23 00:00 | 08/03/23 08:00 |
| 240-189526-2 | MW-110S_073123 | Water | 07/31/23 14:25 | 08/03/23 08:00 |

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Detection Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Client Sample ID: TRIP BLANK_59

Lab Sample ID: 240-189526-1

No Detections.

Client Sample ID: MW-110S_073123

Lab Sample ID: 240-189526-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cleveland

Client Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Client Sample ID: TRIP BLANK_59

Lab Sample ID: 240-189526-1

Date Collected: 07/31/23 00:00

Matrix: Water

Date Received: 08/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.49 | ug/L | | | 08/09/23 11:11 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 08/09/23 11:11 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 11:11 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 08/09/23 11:11 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 11:11 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.45 | ug/L | | | 08/09/23 11:11 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 62 - 137 | | 08/09/23 11:11 | 1 |
| 4-Bromofluorobenzene (Surr) | 104 | | 56 - 136 | | 08/09/23 11:11 | 1 |
| Toluene-d8 (Surr) | 102 | | 78 - 122 | | 08/09/23 11:11 | 1 |
| Dibromofluoromethane (Surr) | 113 | | 73 - 120 | | 08/09/23 11:11 | 1 |

Client Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Client Sample ID: MW-110S_073123

Lab Sample ID: 240-189526-2

Date Collected: 07/31/23 14:25

Matrix: Water

Date Received: 08/03/23 08:00

Method: SW846 8260D 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 | | | 08/04/23 16:24 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 1,2-Dichloroethane-d4 (Surr) | 125 | S1+ | 66 - 120 | | | | | 08/04/23 16:24 | 1 |

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|------|---|----------|----------------|---------|
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.49 | ug/L | | | 08/09/23 13:46 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 08/09/23 13:46 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 13:46 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 08/09/23 13:46 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 13:46 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.45 | ug/L | | | 08/09/23 13:46 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 1,2-Dichloroethane-d4 (Surr) | 117 | | 62 - 137 | | | | | 08/09/23 13:46 | 1 |
| 4-Bromofluorobenzene (Surr) | 105 | | 56 - 136 | | | | | 08/09/23 13:46 | 1 |
| Toluene-d8 (Surr) | 102 | | 78 - 122 | | | | | 08/09/23 13:46 | 1 |
| Dibromofluoromethane (Surr) | 114 | | 73 - 120 | | | | | 08/09/23 13:46 | 1 |

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID | Client Sample ID | Percent Surrogate Recovery (Acceptance Limits) | | | |
|------------------|--------------------|--|-----------------|-----------------|------------------|
| | | DCA (62-137) | BFB (56-136) | TOL (78-122) | DBFM (73-120) |
| 240-189526-1 | TRIP BLANK_59 | 118 | 104 | 102 | 113 |
| 240-189526-2 | MW-110S_073123 | 117 | 105 | 102 | 114 |
| LCS 240-583310/5 | Lab Control Sample | 113 | 99 | 102 | 113 |
| MB 240-583310/9 | Method Blank | 115 | 102 | 101 | 111 |

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID | Client Sample ID | Percent Surrogate Recovery (Acceptance Limits) | | | |
|------------------|--------------------|--|--|--|--|
| | | DCA (66-120) | | | |
| 240-189526-2 | MW-110S_073123 | 125 S1+ | | | |
| LCS 240-582950/5 | Lab Control Sample | 105 | | | |
| MB 240-582950/7 | Method Blank | 106 | | | |

Surrogate Legend

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

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-583310/9

Matrix: Water

Analysis Batch: 583310

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 | 0.49 | ug/L | | | 08/09/23 09:11 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 08/09/23 09:11 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 09:11 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 08/09/23 09:11 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 09:11 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.45 | ug/L | | | 08/09/23 09:11 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|--------------|--------------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 115 | | 62 - 137 | | 08/09/23 09:11 | 1 |
| 4-Bromofluorobenzene (Surr) | 102 | | 56 - 136 | | 08/09/23 09:11 | 1 |
| Toluene-d8 (Surr) | 101 | | 78 - 122 | | 08/09/23 09:11 | 1 |
| Dibromofluoromethane (Surr) | 111 | | 73 - 120 | | 08/09/23 09:11 | 1 |

Lab Sample ID: LCS 240-583310/5

Matrix: Water

Analysis Batch: 583310

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|--------------------------|-------------|------------|---------------|------|---|------|-------------|
| 1,1-Dichloroethene | 20.0 | 23.2 | | ug/L | | 116 | 63 - 134 |
| cis-1,2-Dichloroethene | 20.0 | 21.4 | | ug/L | | 107 | 77 - 123 |
| Tetrachloroethene | 20.0 | 19.9 | | ug/L | | 100 | 76 - 123 |
| trans-1,2-Dichloroethene | 20.0 | 22.2 | | ug/L | | 111 | 75 - 124 |
| Trichloroethene | 20.0 | 19.5 | | ug/L | | 98 | 70 - 122 |
| Vinyl chloride | 20.0 | 21.1 | | ug/L | | 106 | 60 - 144 |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|------------------------------|---------------|---------------|----------|
| 1,2-Dichloroethane-d4 (Surr) | 113 | | 62 - 137 |
| 4-Bromofluorobenzene (Surr) | 99 | | 56 - 136 |
| Toluene-d8 (Surr) | 102 | | 78 - 122 |
| Dibromofluoromethane (Surr) | 113 | | 73 - 120 |

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

Lab Sample ID: MB 240-582950/7

Matrix: Water

Analysis Batch: 582950

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 | | | 08/04/23 14:49 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|--------------|--------------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 106 | | 66 - 120 | | 08/04/23 14:49 | 1 |

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QC Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

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

Lab Sample ID: LCS 240-582950/5

Matrix: Water

Analysis Batch: 582950

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 | 9.76 | | ug/L | | 98 | 80 - 122 |
| | | | | | | | |
| Surrogate | LCS %Recovery | LCS Qualifier | Limits | | | | |
| 1,2-Dichloroethane-d4 (Surr) | 105 | | 66 - 120 | | | | |

QC Association Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

GC/MS VOA

Analysis Batch: 582950

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|-----------|------------|
| 240-189526-2 | MW-110S_073123 | Total/NA | Water | 8260D SIM | |
| MB 240-582950/7 | Method Blank | Total/NA | Water | 8260D SIM | |
| LCS 240-582950/5 | Lab Control Sample | Total/NA | Water | 8260D SIM | |

Analysis Batch: 583310

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 240-189526-1 | TRIP BLANK_59 | Total/NA | Water | 8260D | |
| 240-189526-2 | MW-110S_073123 | Total/NA | Water | 8260D | |
| MB 240-583310/9 | Method Blank | Total/NA | Water | 8260D | |
| LCS 240-583310/5 | Lab Control Sample | Total/NA | Water | 8260D | |

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Client Sample ID: TRIP BLANK_59
Date Collected: 07/31/23 00:00
Date Received: 08/03/23 08:00

Lab Sample ID: 240-189526-1
Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA | Analysis | 8260D | | 1 | 583310 | AJS | EET CLE | 08/09/23 11:11 |

Client Sample ID: MW-110S_073123
Date Collected: 07/31/23 14:25
Date Received: 08/03/23 08:00

Lab Sample ID: 240-189526-2
Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA | Analysis | 8260D | | 1 | 583310 | AJS | EET CLE | 08/09/23 13:46 |
| Total/NA | Analysis | 8260D SIM | | 1 | 582950 | MRL | EET CLE | 08/04/23 16:24 |

Laboratory References:

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Laboratory: Eurofins Cleveland

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 | 02-27-24 |
| Georgia | State | 4062 | 02-27-24 |
| Illinois | NELAP | 200004 | 07-31-24 |
| Iowa | State | 421 | 06-01-25 |
| Kentucky (UST) | State | 112225 | 02-28-24 |
| Kentucky (WW) | State | KY98016 | 12-31-23 |
| Michigan | State | 9135 | 02-27-24 |
| Minnesota | NELAP | 039-999-348 | 12-31-23 |
| Minnesota (Petrofund) | State | 3506 | 08-01-23 * |
| New Jersey | NELAP | OH001 | 07-01-24 |
| New York | NELAP | 10975 | 04-02-24 |
| Ohio | State | 8303 | 02-27-24 |
| Ohio VAP | State | ORELAP 4062 | 02-27-24 |
| Oregon | NELAP | 4062 | 02-27-24 |
| Pennsylvania | NELAP | 68-00340 | 08-31-24 |
| Texas | NELAP | T104704517-22-17 | 08-31-23 |
| Virginia | NELAP | 460175 | 09-14-23 |
| West Virginia DEP | State | 210 | 12-31-23 |

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

Eurofins Cleveland

[illegible]

Eurofins – Cleveland Sample Receipt Form/Narrative Login # : 189520

Barberton Facility

Client ARCADIS Site Name 8.3.23 Cooler unpacked by: M. Khan

Cooler Received on 8.3.23 Opened on 8.3.23

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other

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

Eurofins Cooler # 22 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 # 22 (CF 0.1 °C) Observed Cooler Temp 6.6 °C Corrected Cooler Temp 6.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No

9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No

10. Were correct bottle(s) used for the test(s) indicated? Yes No

11. Sufficient quantity received to perform indicated analyses? Yes No

12. Are these work share samples and all listed on the COC? Yes No

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC312502

14. Were VOAs on the COC? Yes No

15. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this.

16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No

17. Was a LL Hg or Me Hg trip blank present? Yes No

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

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page Samples processed by: _____

19. 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)

20. 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: _____

DATA VERIFICATION REPORT



August 11, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631

Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater

Project number: 30167538.402.04 off-site

Event Specific Scope of Work References: Sample COC

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory submittal: 189526-1

Sample date: 2023-07-31

Report received by CADENA: 2023-08-11

Initial Data Verification completed by CADENA: 2023-08-11

Number of Samples:2

Sample Matrices:Water

Test Categories:GCMS VOC

Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM sample -002 surrogate recovery outliers did not result in qualification of client sample data.

GCMS VOC QC batch INTERNAL STANDARD response outliers and MS/MSD ISSUES as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

| Valid Qualifiers | Description |
|------------------|--|
| < | Less than the reported concentration. |
| > | Greater than the reported concentration. |
| B | The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration. |
| E | The analyte / Compound reported exceeds the calibration range and is considered estimated. |
| EMPC | Estimated Minimum Potential Contamination - Dioxin/Furan analyses only. |
| J | Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies. |
| J- | The result is an estimated quantity, but the result may be biased low. |
| JB | NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED |
| JH | The sample result is considered estimated and is potentially biased high. |
| JL | The sample result is considered estimated and is potentially biased low. |
| JUB | NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED |
| NJ | Tentatively identified compound with approximated concentration. |
| R | Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.) |
| TNTC | Too Numerous to Count - Asbestos and Microbiological Results. |
| U | Indicates that the analyte / compound was analyzed for, but not detected. |
| UB | The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL. |
| UJ | The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample. |

Analytical Results Summary

CADENA Project ID: E203631

Laboratory: Eurofins Environment Testing LLC - Cleveland

Laboratory Submittal: 189526-1

Sample Name: TRIP BLANK_59

Lab Sample ID: 2401895261

Sample Date: 7/31/2023

MW-110S_073123

2401895262

7/31/2023

| Analyte | Cas No. | Report | | Units | Valid Qualifier | Report | | Units | Valid Qualifier |
|---------|---------|--------|-------|-------|--------------------|--------|-------|-------|--------------------|
| | | Result | Limit | | | Result | Limit | | |

GC/MS VOC

OSW-8260D

| | | | | | | | | | |
|--------------------------|----------|----|-----|------|-----|----|-----|------|-----|
| 1,1-Dichloroethene | 75-35-4 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |
| cis-1,2-Dichloroethene | 156-59-2 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |
| Tetrachloroethene | 127-18-4 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |
| trans-1,2-Dichloroethene | 156-60-5 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |
| Trichloroethene | 79-01-6 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |
| Vinyl chloride | 75-01-4 | ND | 1.0 | ug/l | --- | ND | 1.0 | ug/l | --- |

OSW-8260DSIM

| | | | | | | | | | |
|-------------|----------|--|--|--|--|----|-----|------|-----|
| 1,4-Dioxane | 123-91-1 | | | | | ND | 2.0 | ug/l | --- |
|-------------|----------|--|--|--|--|----|-----|------|-----|

Ford Motor Company – Livonia Transmission Project

Data Review

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-189526-1

CADENA Verification Report: 2023-08-11

Analyses Performed By:
Eurofins Cleveland
Barberton, Ohio

Report # 50973R
Review Level: Tier III
Project: 30167538.402.02

DATA REVIEW

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-189526-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

| Sample ID | Lab ID | Matrix | Sample Collection Date | Parent Sample | Analysis | |
|----------------|--------------|--------|------------------------|---------------|----------|---------|
| | | | | | VOC | VOC SIM |
| TRIP BLANK_59 | 240-189526-1 | Water | 07/31/2023 | | X | |
| MW-110S_073123 | 240-189526-2 | Water | 07/31/2023 | | X | X |

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

| Items Reviewed | Reported | | Performance Acceptable | | Not Required |
|--|----------|-----|------------------------|-----|--------------|
| | No | Yes | No | Yes | |
| 1. Sample receipt condition | | X | | X | |
| 2. Requested analyses and sample results | | X | | X | |
| 3. Master tracking list | | X | | X | |
| 4. Methods of analysis | | X | | X | |
| 5. Reporting limits | | X | | X | |
| 6. Sample collection date | | X | | X | |
| 7. Laboratory sample received date | | X | | X | |
| 8. Sample preservation verification (as applicable) | | X | | X | |
| 9. Sample preparation/extraction/analysis dates | | X | | X | |
| 10. Fully executed Chain-of-Custody (COC) form | | X | | X | |
| 11. Narrative summary of Quality Assurance or sample problems provided | | X | | X | |
| 12. Data Package Completeness and Compliance | | X | | X | |

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
 - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

| Method | Matrix | Holding Time | Preservation |
|------------------------|--------|-------------------------------------|---------------------------------|
| SW-846 8260D/8260D-SIM | Water | 14 days from collection to analysis | Cool to < 6 °C; pH < 2 with HCl |

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

| VOCs: 8260D/8260D-SIM | Reported | | Performance Acceptable | | Not Required |
|---|----------|-----|------------------------|-----|--------------|
| | No | Yes | No | Yes | |
| GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS) | | | | | |
| Tier II Validation | | | | | |
| Holding times/Preservation | | X | | X | |
| Tier III Validation | | | | | |
| System performance and column resolution | | X | | X | |
| Initial calibration %RSDs | | X | | X | |
| Continuing calibration RRFs | | X | | X | |
| Continuing calibration %Ds | | X | | X | |
| Instrument tune and performance check | | X | | X | |
| Ion abundance criteria for each instrument used | | X | | X | |
| Field Duplicate RPD | X | | | | X |
| Internal standard | | X | | X | |
| Compound identification and quantitation | | | | | |
| A. Reconstructed ion chromatograms | | X | | X | |
| B. Quantitation Reports | | X | | X | |
| C. RT of sample compounds within the established RT windows | | X | | X | |
| D. Transcription/calculation errors present | | X | | X | |
| E. Reporting limits adjusted to reflect sample dilutions | | X | | X | |

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Bindu Sree M B

SIGNATURE: 

DATE: September 11, 2023

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2023

**NO CORRECTIONS/QUALIFERS ADDED
TO SAMPLE ANALYSIS DATA SHEETS**



**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**



Client Sample Results

Client: ARCADIS US Inc
Project/Site: Ford LTP - Off Site

Job ID: 240-189526-1

Client Sample ID: TRIP BLANK_59

Lab Sample ID: 240-189526-1

Date Collected: 07/31/23 00:00

Matrix: Water

Date Received: 08/03/23 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.49 | ug/L | | | 08/09/23 11:11 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 08/09/23 11:11 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 11:11 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 08/09/23 11:11 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 11:11 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.45 | ug/L | | | 08/09/23 11:11 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 62 - 137 | | 08/09/23 11:11 | 1 |
| 4-Bromofluorobenzene (Surr) | 104 | | 56 - 136 | | 08/09/23 11:11 | 1 |
| Toluene-d8 (Surr) | 102 | | 78 - 122 | | 08/09/23 11:11 | 1 |
| Dibromofluoromethane (Surr) | 113 | | 73 - 120 | | 08/09/23 11:11 | 1 |

Client Sample ID: MW-110S_073123

Lab Sample ID: 240-189526-2

Date Collected: 07/31/23 14:25

Matrix: Water

Date Received: 08/03/23 08:00

Method: SW846 8260D 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 | | | 08/04/23 16:24 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 125 | S1+ | 66 - 120 | | 08/04/23 16:24 | 1 |

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.49 | ug/L | | | 08/09/23 13:46 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 08/09/23 13:46 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 13:46 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 08/09/23 13:46 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.44 | ug/L | | | 08/09/23 13:46 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.45 | ug/L | | | 08/09/23 13:46 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 117 | | 62 - 137 | | 08/09/23 13:46 | 1 |
| 4-Bromofluorobenzene (Surr) | 105 | | 56 - 136 | | 08/09/23 13:46 | 1 |
| Toluene-d8 (Surr) | 102 | | 78 - 122 | | 08/09/23 13:46 | 1 |
| Dibromofluoromethane (Surr) | 114 | | 73 - 120 | | 08/09/23 13:46 | 1 |