



# HALL ENGINEERING COMPANY

**Consulting Engineers**  
Since 1903

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June 3, 2025

Iowa Department of Natural Resources  
Attn: Mike Smith  
Wallace State Office Building  
502 E. 9<sup>th</sup> Street  
Des Moines, Iowa 50319

RE: Appanoose County Sanitary Landfill  
Closure Permit No. 04-SDP-01-76C

Dear Mike:

Attached is the laboratory analytical report for the Spring 2025 groundwater sampling at the North Unit of the Appanoose County Landfill.

The statistical assessment of the groundwater monitoring will be forwarded to you when completed within 45 days of the date of the groundwater analysis report.

Sincerely,

HALL ENGINEERING COMPANY

*Bill Buss*

Bill Buss

Copy: Dane Blozovich, Director  
RASWC

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Bill Buss  
Hall Engineering Company  
PO BOX 825  
Centerville, Iowa 52544  
Generated 5/29/2025 1:09:11 PM

## JOB DESCRIPTION

Appanoose County Landfill - Spring 2025

## JOB NUMBER

310-306752-1

# Eurofins Cedar Falls

## 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  
Samuel Miller, Project Management Assistant I  
[Samuel.Miller@et.eurofinsus.com](mailto:Samuel.Miller@et.eurofinsus.com)  
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# Case Narrative

Client: Hall Engineering Company  
Project: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

**Job ID: 310-306752-1**

**Eurofins Cedar Falls**

## Job Narrative 310-306752-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

### Receipt

The samples were received on 5/20/2025 9:05 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 3.6°C.

### GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-455314 recovered above the upper control limit for Carbon tetrachloride (21.6%D). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated sample is:(CCV 310-455314/3).

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

### Pesticides

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

### Metals

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

### General Chemistry

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

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## Sample Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       |
|---------------|------------------|--------|----------------|----------------|
| 310-306752-1  | MW-51            | Water  | 05/18/25 09:34 | 05/20/25 09:05 |
| 310-306752-2  | MW-60            | Water  | 05/18/25 06:54 | 05/20/25 09:05 |
| 310-306752-3  | MW-27            | Water  | 05/18/25 11:10 | 05/20/25 09:05 |
| 310-306752-4  | MW-50R           | Water  | 05/18/25 12:30 | 05/20/25 09:05 |
| 310-306752-5  | Trip Blank       | Water  | 05/18/25 00:00 | 05/20/25 09:05 |
| 310-306752-6  | Field Blank      | Water  | 05/18/25 09:42 | 05/20/25 09:05 |

## Detection Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### Client Sample ID: MW-51

Lab Sample ID: 310-306752-1

| Analyte                | Result   | Qualifier | RL      | MDL      | Unit | Dil Fac | D | Method    | Prep Type |
|------------------------|----------|-----------|---------|----------|------|---------|---|-----------|-----------|
| Antimony               | 0.00625  | J         | 0.00800 | 0.00400  | mg/L | 4       |   | 6020B     | Total/NA  |
| Barium                 | 0.00575  | F1        | 0.00200 | 0.000660 | mg/L | 1       |   | 6020B     | Total/NA  |
| Nickel                 | 0.00744  | F1        | 0.00500 | 0.00230  | mg/L | 1       |   | 6020B     | Total/NA  |
| Thallium               | 0.000686 | J F1 F2   | 0.00100 | 0.000570 | mg/L | 1       |   | 6020B     | Total/NA  |
| Zinc                   | 0.272    | F1        | 0.0200  | 0.0130   | mg/L | 1       |   | 6020B     | Total/NA  |
| Total Suspended Solids | 2.50     |           | 1.88    | 1.31     | mg/L | 1       |   | I-3765-85 | Total/NA  |

### Client Sample ID: MW-60

Lab Sample ID: 310-306752-2

| Analyte                | Result   | Qualifier | RL       | MDL      | Unit | Dil Fac | D | Method    | Prep Type |
|------------------------|----------|-----------|----------|----------|------|---------|---|-----------|-----------|
| 2-Butanone (MEK)       | 10.4     |           | 10.0     | 2.10     | ug/L | 1       |   | 8260D     | Total/NA  |
| Acetone                | 20.1     |           | 10.0     | 3.10     | ug/L | 1       |   | 8260D     | Total/NA  |
| Carbon disulfide       | 0.640    | J         | 1.00     | 0.450    | ug/L | 1       |   | 8260D     | Total/NA  |
| Antimony               | 0.00916  |           | 0.00200  | 0.00100  | mg/L | 1       |   | 6020B     | Total/NA  |
| Arsenic                | 0.00437  |           | 0.00200  | 0.000530 | mg/L | 1       |   | 6020B     | Total/NA  |
| Barium                 | 0.0205   |           | 0.00200  | 0.000660 | mg/L | 1       |   | 6020B     | Total/NA  |
| Cobalt                 | 0.000380 | J         | 0.000500 | 0.000170 | mg/L | 1       |   | 6020B     | Total/NA  |
| Selenium               | 0.00186  | J         | 0.00500  | 0.00140  | mg/L | 1       |   | 6020B     | Total/NA  |
| Thallium               | 0.000843 | J         | 0.00100  | 0.000570 | mg/L | 1       |   | 6020B     | Total/NA  |
| Zinc                   | 1.10     |           | 0.0200   | 0.0130   | mg/L | 1       |   | 6020B     | Total/NA  |
| Sulfide                | 2.00     | J         | 3.00     | 1.41     | mg/L | 1       |   | 9034      | Total/NA  |
| Total Suspended Solids | 8.75     |           | 3.75     | 2.63     | mg/L | 1       |   | I-3765-85 | Total/NA  |

### Client Sample ID: MW-27

Lab Sample ID: 310-306752-3

| Analyte                | Result   | Qualifier | RL       | MDL      | Unit | Dil Fac | D | Method    | Prep Type |
|------------------------|----------|-----------|----------|----------|------|---------|---|-----------|-----------|
| Benzene                | 0.262    | J         | 0.500    | 0.220    | ug/L | 1       |   | 8260D     | Total/NA  |
| cis-1,2-Dichloroethene | 1.53     |           | 1.00     | 0.210    | ug/L | 1       |   | 8260D     | Total/NA  |
| Antimony               | 0.00113  | J         | 0.00200  | 0.00100  | mg/L | 1       |   | 6020B     | Total/NA  |
| Arsenic                | 0.00120  | J         | 0.00200  | 0.000530 | mg/L | 1       |   | 6020B     | Total/NA  |
| Barium                 | 0.0811   |           | 0.00200  | 0.000660 | mg/L | 1       |   | 6020B     | Total/NA  |
| Cadmium                | 0.000223 |           | 0.000200 | 0.000100 | mg/L | 1       |   | 6020B     | Total/NA  |
| Cobalt                 | 0.0123   |           | 0.000500 | 0.000170 | mg/L | 1       |   | 6020B     | Total/NA  |
| Nickel                 | 0.0201   |           | 0.00500  | 0.00230  | mg/L | 1       |   | 6020B     | Total/NA  |
| Zinc                   | 0.0689   |           | 0.0200   | 0.0130   | mg/L | 1       |   | 6020B     | Total/NA  |
| Total Suspended Solids | 22.0     |           | 5.00     | 3.50     | mg/L | 1       |   | I-3765-85 | Total/NA  |

### Client Sample ID: MW-50R

Lab Sample ID: 310-306752-4

| Analyte                | Result   | Qualifier | RL       | MDL      | Unit | Dil Fac | D | Method    | Prep Type |
|------------------------|----------|-----------|----------|----------|------|---------|---|-----------|-----------|
| Arsenic                | 0.000926 | J         | 0.00200  | 0.000530 | mg/L | 1       |   | 6020B     | Total/NA  |
| Barium                 | 0.0420   |           | 0.00200  | 0.000660 | mg/L | 1       |   | 6020B     | Total/NA  |
| Cobalt                 | 0.000736 |           | 0.000500 | 0.000170 | mg/L | 1       |   | 6020B     | Total/NA  |
| Zinc                   | 0.0379   |           | 0.0200   | 0.0130   | mg/L | 1       |   | 6020B     | Total/NA  |
| Total Suspended Solids | 16.0     |           | 3.75     | 2.63     | mg/L | 1       |   | I-3765-85 | Total/NA  |

### Client Sample ID: Trip Blank

Lab Sample ID: 310-306752-5

No Detections.

### Client Sample ID: Field Blank

Lab Sample ID: 310-306752-6

| Analyte | Result | Qualifier | RL   | MDL  | Unit | Dil Fac | D | Method | Prep Type |
|---------|--------|-----------|------|------|------|---------|---|--------|-----------|
| Acetone | 3.68   | J         | 10.0 | 3.10 | ug/L | 1       |   | 8260D  | Total/NA  |

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-51

Lab Sample ID: 310-306752-1

Date Collected: 05/18/25 09:34

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                     | Result | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380 |           | 1.00  | 0.380 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,1,1-Trichloroethane       | <0.190 |           | 1.00  | 0.190 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470 |           | 1.00  | 0.470 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,1,2-Trichloroethane       | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,1-Dichloroethane          | <0.220 |           | 1.00  | 0.220 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,1-Dichloroethene          | <0.560 |           | 2.00  | 0.560 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2,3-Trichloropropane      | <0.590 |           | 1.00  | 0.590 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20  |           | 5.00  | 1.20  | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340 |           | 1.00  | 0.340 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2-Dichlorobenzene         | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2-Dichloroethane          | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,2-Dichloropropane         | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 1,4-Dichlorobenzene         | <0.230 |           | 1.00  | 0.230 | ug/L |   |          | 05/21/25 16:23 | 1       |
| 2-Butanone (MEK)            | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/21/25 16:23 | 1       |
| 2-Hexanone                  | <2.00  |           | 10.0  | 2.00  | ug/L |   |          | 05/21/25 16:23 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Acetone                     | <3.10  |           | 10.0  | 3.10  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Acrylonitrile               | <2.20  |           | 5.00  | 2.20  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Benzene                     | <0.220 |           | 0.500 | 0.220 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Bromochloromethane          | <0.540 |           | 5.00  | 0.540 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Bromodichloromethane        | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Bromoform                   | <0.780 |           | 5.00  | 0.780 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Bromomethane                | <1.10  |           | 4.00  | 1.10  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Carbon disulfide            | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Carbon tetrachloride        | <0.650 |           | 2.00  | 0.650 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Chlorobenzene               | <0.400 |           | 1.00  | 0.400 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Chlorodibromomethane        | <0.750 |           | 5.00  | 0.750 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Chloroethane                | <0.790 |           | 4.00  | 0.790 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Chloroform                  | <1.30  |           | 3.00  | 1.30  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Chloromethane               | <0.610 |           | 3.00  | 0.610 | ug/L |   |          | 05/21/25 16:23 | 1       |
| cis-1,2-Dichloroethene      | <0.210 |           | 1.00  | 0.210 | ug/L |   |          | 05/21/25 16:23 | 1       |
| cis-1,3-Dichloropropene     | <0.250 |           | 5.00  | 0.250 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Dibromomethane              | <0.330 |           | 1.00  | 0.330 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Ethylbenzene                | <0.310 |           | 1.00  | 0.310 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Iodomethane                 | <7.00  |           | 10.0  | 7.00  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Methylene Chloride          | <1.70  |           | 5.00  | 1.70  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Styrene                     | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Tetrachloroethene           | <0.480 |           | 1.00  | 0.480 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Toluene                     | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/21/25 16:23 | 1       |
| trans-1,2-Dichloroethene    | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/21/25 16:23 | 1       |
| trans-1,3-Dichloropropene   | <0.560 |           | 5.00  | 0.560 | ug/L |   |          | 05/21/25 16:23 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10  |           | 10.0  | 1.10  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Trichloroethene             | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Trichlorofluoromethane      | <0.380 |           | 4.00  | 0.380 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Vinyl acetate               | <2.50  |           | 10.0  | 2.50  | ug/L |   |          | 05/21/25 16:23 | 1       |
| Vinyl chloride              | <0.180 |           | 1.00  | 0.180 | ug/L |   |          | 05/21/25 16:23 | 1       |
| Xylenes, Total              | <0.400 |           | 3.00  | 0.400 | ug/L |   |          | 05/21/25 16:23 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 113       |           | 76 - 130 |          | 05/21/25 16:23 | 1       |

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# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-51

Lab Sample ID: 310-306752-1

Date Collected: 05/18/25 09:34

Matrix: Water

Date Received: 05/20/25 09:05

## Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 96        |           | 80 - 120 |          | 05/21/25 16:23 | 1       |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |          | 05/21/25 16:23 | 1       |

## Method: SW846 6020B - Metals (ICP/MS)

| Analyte   | Result    | Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|-----------|-----------|----------|----------|------|---|----------------|----------------|---------|
| Antimony  | 0.00625   | J         | 0.00800  | 0.00400  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:43 | 4       |
| Arsenic   | <0.000530 | F1        | 0.00200  | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Barium    | 0.00575   | F1        | 0.00200  | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Beryllium | <0.00132  |           | 0.00400  | 0.00132  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:43 | 4       |
| Cadmium   | <0.000100 | F1        | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Chromium  | <0.00180  | F1        | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Cobalt    | <0.000170 | F1        | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Copper    | <0.00320  | F1        | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Lead      | <0.000330 | F1        | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Nickel    | 0.00744   | F1        | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Selenium  | <0.00140  | F1        | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Silver    | <0.000500 | F1        | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Thallium  | 0.000686  | J F1 F2   | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Vanadium  | <0.00170  | F1        | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |
| Zinc      | 0.272     | F1        | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 19:04 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Sulfide (SW846 9034)                    | <1.41  |           | 3.00 | 1.41 | mg/L |   | 05/22/25 10:48 | 05/22/25 14:47 | 1       |
| Total Suspended Solids (USGS I-3765-85) | 2.50   |           | 1.88 | 1.31 | mg/L |   |                | 05/20/25 16:10 | 1       |

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-60

Lab Sample ID: 310-306752-2

Date Collected: 05/18/25 06:54

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                     | Result  | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|---------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380  |           | 1.00  | 0.380 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,1,1-Trichloroethane       | <0.190  |           | 1.00  | 0.190 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470  |           | 1.00  | 0.470 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,1,2-Trichloroethane       | <0.450  |           | 1.00  | 0.450 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,1-Dichloroethane          | <0.220  |           | 1.00  | 0.220 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,1-Dichloroethene          | <0.560  |           | 2.00  | 0.560 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2,3-Trichloropropane      | <0.590  |           | 1.00  | 0.590 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20   |           | 5.00  | 1.20  | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340  |           | 1.00  | 0.340 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2-Dichlorobenzene         | <0.370  |           | 1.00  | 0.370 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2-Dichloroethane          | <0.390  |           | 1.00  | 0.390 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,2-Dichloropropane         | <0.270  |           | 1.00  | 0.270 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 1,4-Dichlorobenzene         | <0.230  |           | 1.00  | 0.230 | ug/L |   |          | 05/21/25 16:45 | 1       |
| 2-Butanone (MEK)            | 10.4    |           | 10.0  | 2.10  | ug/L |   |          | 05/21/25 16:45 | 1       |
| 2-Hexanone                  | <2.00   |           | 10.0  | 2.00  | ug/L |   |          | 05/21/25 16:45 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10   |           | 10.0  | 2.10  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Acetone                     | 20.1    |           | 10.0  | 3.10  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Acrylonitrile               | <2.20   |           | 5.00  | 2.20  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Benzene                     | <0.220  |           | 0.500 | 0.220 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Bromochloromethane          | <0.540  |           | 5.00  | 0.540 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Bromodichloromethane        | <0.390  |           | 1.00  | 0.390 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Bromoform                   | <0.780  |           | 5.00  | 0.780 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Bromomethane                | <1.10   |           | 4.00  | 1.10  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Carbon disulfide            | 0.640 J |           | 1.00  | 0.450 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Carbon tetrachloride        | <0.650  |           | 2.00  | 0.650 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Chlorobenzene               | <0.400  |           | 1.00  | 0.400 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Chlorodibromomethane        | <0.750  |           | 5.00  | 0.750 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Chloroethane                | <0.790  |           | 4.00  | 0.790 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Chloroform                  | <1.30   |           | 3.00  | 1.30  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Chloromethane               | <0.610  |           | 3.00  | 0.610 | ug/L |   |          | 05/21/25 16:45 | 1       |
| cis-1,2-Dichloroethene      | <0.210  |           | 1.00  | 0.210 | ug/L |   |          | 05/21/25 16:45 | 1       |
| cis-1,3-Dichloropropene     | <0.250  |           | 5.00  | 0.250 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Dibromomethane              | <0.330  |           | 1.00  | 0.330 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Ethylbenzene                | <0.310  |           | 1.00  | 0.310 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Iodomethane                 | <7.00   |           | 10.0  | 7.00  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Methylene Chloride          | <1.70   |           | 5.00  | 1.70  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Styrene                     | <0.370  |           | 1.00  | 0.370 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Tetrachloroethene           | <0.480  |           | 1.00  | 0.480 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Toluene                     | <0.430  |           | 1.00  | 0.430 | ug/L |   |          | 05/21/25 16:45 | 1       |
| trans-1,2-Dichloroethene    | <0.270  |           | 1.00  | 0.270 | ug/L |   |          | 05/21/25 16:45 | 1       |
| trans-1,3-Dichloropropene   | <0.560  |           | 5.00  | 0.560 | ug/L |   |          | 05/21/25 16:45 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10   |           | 10.0  | 1.10  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Trichloroethene             | <0.430  |           | 1.00  | 0.430 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Trichlorofluoromethane      | <0.380  |           | 4.00  | 0.380 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Vinyl acetate               | <2.50   |           | 10.0  | 2.50  | ug/L |   |          | 05/21/25 16:45 | 1       |
| Vinyl chloride              | <0.180  |           | 1.00  | 0.180 | ug/L |   |          | 05/21/25 16:45 | 1       |
| Xylenes, Total              | <0.400  |           | 3.00  | 0.400 | ug/L |   |          | 05/21/25 16:45 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 110       |           | 76 - 130 |          | 05/21/25 16:45 | 1       |

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# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-60

Lab Sample ID: 310-306752-2

Date Collected: 05/18/25 06:54

Matrix: Water

Date Received: 05/20/25 09:05

## Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 94        |           | 80 - 120 |          | 05/21/25 16:45 | 1       |
| 4-Bromofluorobenzene (Surr) | 96        |           | 80 - 120 |          | 05/21/25 16:45 | 1       |

## Method: SW846 6020B - Metals (ICP/MS)

| Analyte   | Result    | Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|-----------|-----------|----------|----------|------|---|----------------|----------------|---------|
| Antimony  | 0.00916   |           | 0.00200  | 0.00100  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:53 | 1       |
| Arsenic   | 0.00437   |           | 0.00200  | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Barium    | 0.0205    |           | 0.00200  | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Beryllium | <0.000330 |           | 0.00100  | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/28/25 11:53 | 1       |
| Cadmium   | <0.000100 |           | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Chromium  | <0.00180  |           | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Cobalt    | 0.000380  | J         | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Copper    | <0.00320  |           | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Lead      | <0.000330 |           | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Nickel    | <0.00230  |           | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Selenium  | 0.00186   | J         | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Silver    | <0.000500 |           | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Thallium  | 0.000843  | J         | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Vanadium  | <0.00170  |           | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |
| Zinc      | 1.10      |           | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 19:13 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Sulfide (SW846 9034)                    | 2.00   | J         | 3.00 | 1.41 | mg/L |   | 05/22/25 10:48 | 05/22/25 14:47 | 1       |
| Total Suspended Solids (USGS I-3765-85) | 8.75   |           | 3.75 | 2.63 | mg/L |   |                | 05/20/25 16:10 | 1       |

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-27

Lab Sample ID: 310-306752-3

Date Collected: 05/18/25 11:10

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                       | Result       | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-------------------------------|--------------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane     | <0.380       |           | 1.00  | 0.380 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,1,1-Trichloroethane         | <0.190       |           | 1.00  | 0.190 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,1,2,2-Tetrachloroethane     | <0.470       |           | 1.00  | 0.470 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,1,2-Trichloroethane         | <0.450       |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,1-Dichloroethane            | <0.220       |           | 1.00  | 0.220 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,1-Dichloroethene            | <0.560       |           | 2.00  | 0.560 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2,3-Trichloropropane        | <0.590       |           | 1.00  | 0.590 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2-Dibromo-3-Chloropropane   | <1.20        |           | 5.00  | 1.20  | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2-Dibromoethane (EDB)       | <0.340       |           | 1.00  | 0.340 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2-Dichlorobenzene           | <0.370       |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2-Dichloroethane            | <0.390       |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,2-Dichloropropane           | <0.270       |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 1,4-Dichlorobenzene           | <0.230       |           | 1.00  | 0.230 | ug/L |   |          | 05/22/25 23:58 | 1       |
| 2-Butanone (MEK)              | <2.10        |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 23:58 | 1       |
| 2-Hexanone                    | <2.00        |           | 10.0  | 2.00  | ug/L |   |          | 05/22/25 23:58 | 1       |
| 4-Methyl-2-pentanone (MIBK)   | <2.10        |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Acetone                       | <3.10        |           | 10.0  | 3.10  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Acrylonitrile                 | <2.20        |           | 5.00  | 2.20  | ug/L |   |          | 05/22/25 23:58 | 1       |
| <b>Benzene</b>                | <b>0.262</b> | <b>J</b>  | 0.500 | 0.220 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Bromochloromethane            | <0.540       |           | 5.00  | 0.540 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Bromodichloromethane          | <0.390       |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Bromoform                     | <0.780       |           | 5.00  | 0.780 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Bromomethane                  | <1.10        |           | 4.00  | 1.10  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Carbon disulfide              | <0.450       |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Carbon tetrachloride          | <0.650       |           | 2.00  | 0.650 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Chlorobenzene                 | <0.400       |           | 1.00  | 0.400 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Chlorodibromomethane          | <0.750       |           | 5.00  | 0.750 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Chloroethane                  | <0.790       |           | 4.00  | 0.790 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Chloroform                    | <1.30        |           | 3.00  | 1.30  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Chloromethane                 | <0.610       |           | 3.00  | 0.610 | ug/L |   |          | 05/22/25 23:58 | 1       |
| <b>cis-1,2-Dichloroethene</b> | <b>1.53</b>  |           | 1.00  | 0.210 | ug/L |   |          | 05/22/25 23:58 | 1       |
| cis-1,3-Dichloropropene       | <0.250       |           | 5.00  | 0.250 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Dibromomethane                | <0.330       |           | 1.00  | 0.330 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Ethylbenzene                  | <0.310       |           | 1.00  | 0.310 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Iodomethane                   | <7.00        |           | 10.0  | 7.00  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Methylene Chloride            | <1.70        |           | 5.00  | 1.70  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Styrene                       | <0.370       |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Tetrachloroethene             | <0.480       |           | 1.00  | 0.480 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Toluene                       | <0.430       |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 23:58 | 1       |
| trans-1,2-Dichloroethene      | <0.270       |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 23:58 | 1       |
| trans-1,3-Dichloropropene     | <0.560       |           | 5.00  | 0.560 | ug/L |   |          | 05/22/25 23:58 | 1       |
| trans-1,4-Dichloro-2-butene   | <1.10        |           | 10.0  | 1.10  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Trichloroethene               | <0.430       |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Trichlorofluoromethane        | <0.380       |           | 4.00  | 0.380 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Vinyl acetate                 | <2.50        |           | 10.0  | 2.50  | ug/L |   |          | 05/22/25 23:58 | 1       |
| Vinyl chloride                | <0.180       |           | 1.00  | 0.180 | ug/L |   |          | 05/22/25 23:58 | 1       |
| Xylenes, Total                | <0.400       |           | 3.00  | 0.400 | ug/L |   |          | 05/22/25 23:58 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 118       |           | 76 - 130 |          | 05/22/25 23:58 | 1       |

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# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-27

Lab Sample ID: 310-306752-3

Date Collected: 05/18/25 11:10

Matrix: Water

Date Received: 05/20/25 09:05

## Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 94        |           | 80 - 120 |          | 05/22/25 23:58 | 1       |
| 4-Bromofluorobenzene (Surr) | 100       |           | 80 - 120 |          | 05/22/25 23:58 | 1       |

## Method: SW846 8081B - Organochlorine Pesticides (GC)

| Analyte            | Result  | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------|---------|-----------|--------|--------|------|---|----------------|----------------|---------|
| beta-BHC           | <0.0407 |           | 0.0970 | 0.0407 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| delta-BHC          | <0.0310 |           | 0.0970 | 0.0310 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| Dieldrin           | <0.0204 |           | 0.0970 | 0.0204 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| Endosulfan sulfate | <0.0175 |           | 0.0970 | 0.0175 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| Endrin             | <0.0271 |           | 0.0970 | 0.0271 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| Endrin aldehyde    | <0.0262 |           | 0.0970 | 0.0262 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:24 | 1       |

| Surrogate                     | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-------------------------------|-----------|-----------|----------|----------------|----------------|---------|
| DCB Decachlorobiphenyl (Surr) | 72        |           | 10 - 150 | 05/22/25 13:17 | 05/28/25 18:24 | 1       |
| Tetrachloro-m-xylene (Surr)   | 64        |           | 17 - 150 | 05/22/25 13:17 | 05/28/25 18:24 | 1       |

## Method: SW846 6020B - Metals (ICP/MS)

| Analyte   | Result    | Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|-----------|-----------|----------|----------|------|---|----------------|----------------|---------|
| Antimony  | 0.00113   | J         | 0.00200  | 0.00100  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:56 | 1       |
| Arsenic   | 0.00120   | J         | 0.00200  | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Barium    | 0.0811    |           | 0.00200  | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Beryllium | <0.000330 |           | 0.00100  | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/28/25 11:56 | 1       |
| Cadmium   | 0.000223  |           | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Chromium  | <0.00180  |           | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Cobalt    | 0.0123    |           | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Copper    | <0.00320  |           | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Lead      | <0.000330 |           | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Nickel    | 0.0201    |           | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Selenium  | <0.00140  |           | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Silver    | <0.000500 |           | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Thallium  | <0.000570 |           | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Vanadium  | <0.00170  |           | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |
| Zinc      | 0.0689    |           | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 19:16 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Sulfide (SW846 9034)                    | <1.41  |           | 3.00 | 1.41 | mg/L |   | 05/22/25 10:48 | 05/22/25 14:47 | 1       |
| Total Suspended Solids (USGS I-3765-85) | 22.0   |           | 5.00 | 3.50 | mg/L |   |                | 05/20/25 16:10 | 1       |

Eurofins Cedar Falls

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-50R

Lab Sample ID: 310-306752-4

Date Collected: 05/18/25 12:30

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                     | Result | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380 |           | 1.00  | 0.380 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,1,1-Trichloroethane       | <0.190 |           | 1.00  | 0.190 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470 |           | 1.00  | 0.470 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,1,2-Trichloroethane       | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,1-Dichloroethane          | <0.220 |           | 1.00  | 0.220 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,1-Dichloroethene          | <0.560 |           | 2.00  | 0.560 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2,3-Trichloropropane      | <0.590 |           | 1.00  | 0.590 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20  |           | 5.00  | 1.20  | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340 |           | 1.00  | 0.340 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2-Dichlorobenzene         | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2-Dichloroethane          | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,2-Dichloropropane         | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 1,4-Dichlorobenzene         | <0.230 |           | 1.00  | 0.230 | ug/L |   |          | 05/23/25 00:20 | 1       |
| 2-Butanone (MEK)            | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/23/25 00:20 | 1       |
| 2-Hexanone                  | <2.00  |           | 10.0  | 2.00  | ug/L |   |          | 05/23/25 00:20 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Acetone                     | <3.10  |           | 10.0  | 3.10  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Acrylonitrile               | <2.20  |           | 5.00  | 2.20  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Benzene                     | <0.220 |           | 0.500 | 0.220 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Bromochloromethane          | <0.540 |           | 5.00  | 0.540 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Bromodichloromethane        | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Bromoform                   | <0.780 |           | 5.00  | 0.780 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Bromomethane                | <1.10  |           | 4.00  | 1.10  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Carbon disulfide            | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Carbon tetrachloride        | <0.650 |           | 2.00  | 0.650 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Chlorobenzene               | <0.400 |           | 1.00  | 0.400 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Chlorodibromomethane        | <0.750 |           | 5.00  | 0.750 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Chloroethane                | <0.790 |           | 4.00  | 0.790 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Chloroform                  | <1.30  |           | 3.00  | 1.30  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Chloromethane               | <0.610 |           | 3.00  | 0.610 | ug/L |   |          | 05/23/25 00:20 | 1       |
| cis-1,2-Dichloroethene      | <0.210 |           | 1.00  | 0.210 | ug/L |   |          | 05/23/25 00:20 | 1       |
| cis-1,3-Dichloropropene     | <0.250 |           | 5.00  | 0.250 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Dibromomethane              | <0.330 |           | 1.00  | 0.330 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Ethylbenzene                | <0.310 |           | 1.00  | 0.310 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Iodomethane                 | <7.00  |           | 10.0  | 7.00  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Methylene Chloride          | <1.70  |           | 5.00  | 1.70  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Styrene                     | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Tetrachloroethene           | <0.480 |           | 1.00  | 0.480 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Toluene                     | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/23/25 00:20 | 1       |
| trans-1,2-Dichloroethene    | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/23/25 00:20 | 1       |
| trans-1,3-Dichloropropene   | <0.560 |           | 5.00  | 0.560 | ug/L |   |          | 05/23/25 00:20 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10  |           | 10.0  | 1.10  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Trichloroethene             | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Trichlorofluoromethane      | <0.380 |           | 4.00  | 0.380 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Vinyl acetate               | <2.50  |           | 10.0  | 2.50  | ug/L |   |          | 05/23/25 00:20 | 1       |
| Vinyl chloride              | <0.180 |           | 1.00  | 0.180 | ug/L |   |          | 05/23/25 00:20 | 1       |
| Xylenes, Total              | <0.400 |           | 3.00  | 0.400 | ug/L |   |          | 05/23/25 00:20 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 111       |           | 76 - 130 |          | 05/23/25 00:20 | 1       |

Eurofins Cedar Falls

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: MW-50R

Lab Sample ID: 310-306752-4

Date Collected: 05/18/25 12:30

Matrix: Water

Date Received: 05/20/25 09:05

## Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 92        |           | 80 - 120 |          | 05/23/25 00:20 | 1       |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |          | 05/23/25 00:20 | 1       |

## Method: SW846 6020B - Metals (ICP/MS)

| Analyte   | Result    | Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|-----------|-----------|----------|----------|------|---|----------------|----------------|---------|
| Antimony  | <0.00100  |           | 0.00200  | 0.00100  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:59 | 1       |
| Arsenic   | 0.000926  | J         | 0.00200  | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Barium    | 0.0420    |           | 0.00200  | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Beryllium | <0.000330 |           | 0.00100  | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/28/25 11:59 | 1       |
| Cadmium   | <0.000100 |           | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Chromium  | <0.00180  |           | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Cobalt    | 0.000736  |           | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Copper    | <0.00320  |           | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Lead      | <0.000330 |           | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Nickel    | <0.00230  |           | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Selenium  | <0.00140  |           | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Silver    | <0.000500 |           | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Thallium  | <0.000570 |           | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Vanadium  | <0.00170  |           | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |
| Zinc      | 0.0379    |           | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 19:18 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL   | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|------|------|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 16.0   |           | 3.75 | 2.63 | mg/L |   |          | 05/20/25 16:10 | 1       |

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-306752-5

Date Collected: 05/18/25 00:00

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                     | Result | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380 |           | 1.00  | 0.380 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,1,1-Trichloroethane       | <0.190 |           | 1.00  | 0.190 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470 |           | 1.00  | 0.470 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,1,2-Trichloroethane       | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,1-Dichloroethane          | <0.220 |           | 1.00  | 0.220 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,1-Dichloroethene          | <0.560 |           | 2.00  | 0.560 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2,3-Trichloropropane      | <0.590 |           | 1.00  | 0.590 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20  |           | 5.00  | 1.20  | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340 |           | 1.00  | 0.340 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2-Dichlorobenzene         | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2-Dichloroethane          | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,2-Dichloropropane         | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 1,4-Dichlorobenzene         | <0.230 |           | 1.00  | 0.230 | ug/L |   |          | 05/22/25 22:50 | 1       |
| 2-Butanone (MEK)            | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 22:50 | 1       |
| 2-Hexanone                  | <2.00  |           | 10.0  | 2.00  | ug/L |   |          | 05/22/25 22:50 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Acetone                     | <3.10  |           | 10.0  | 3.10  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Acrylonitrile               | <2.20  |           | 5.00  | 2.20  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Benzene                     | <0.220 |           | 0.500 | 0.220 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Bromochloromethane          | <0.540 |           | 5.00  | 0.540 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Bromodichloromethane        | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Bromoform                   | <0.780 |           | 5.00  | 0.780 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Bromomethane                | <1.10  |           | 4.00  | 1.10  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Carbon disulfide            | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Carbon tetrachloride        | <0.650 |           | 2.00  | 0.650 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Chlorobenzene               | <0.400 |           | 1.00  | 0.400 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Chlorodibromomethane        | <0.750 |           | 5.00  | 0.750 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Chloroethane                | <0.790 |           | 4.00  | 0.790 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Chloroform                  | <1.30  |           | 3.00  | 1.30  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Chloromethane               | <0.610 |           | 3.00  | 0.610 | ug/L |   |          | 05/22/25 22:50 | 1       |
| cis-1,2-Dichloroethene      | <0.210 |           | 1.00  | 0.210 | ug/L |   |          | 05/22/25 22:50 | 1       |
| cis-1,3-Dichloropropene     | <0.250 |           | 5.00  | 0.250 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Dibromomethane              | <0.330 |           | 1.00  | 0.330 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Ethylbenzene                | <0.310 |           | 1.00  | 0.310 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Iodomethane                 | <7.00  |           | 10.0  | 7.00  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Methylene Chloride          | <1.70  |           | 5.00  | 1.70  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Styrene                     | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Tetrachloroethene           | <0.480 |           | 1.00  | 0.480 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Toluene                     | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 22:50 | 1       |
| trans-1,2-Dichloroethene    | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 22:50 | 1       |
| trans-1,3-Dichloropropene   | <0.560 |           | 5.00  | 0.560 | ug/L |   |          | 05/22/25 22:50 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10  |           | 10.0  | 1.10  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Trichloroethene             | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Trichlorofluoromethane      | <0.380 |           | 4.00  | 0.380 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Vinyl acetate               | <2.50  |           | 10.0  | 2.50  | ug/L |   |          | 05/22/25 22:50 | 1       |
| Vinyl chloride              | <0.180 |           | 1.00  | 0.180 | ug/L |   |          | 05/22/25 22:50 | 1       |
| Xylenes, Total              | <0.400 |           | 3.00  | 0.400 | ug/L |   |          | 05/22/25 22:50 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 112       |           | 76 - 130 |          | 05/22/25 22:50 | 1       |

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Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-306752-5

Date Collected: 05/18/25 00:00

Matrix: Water

Date Received: 05/20/25 09:05

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

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 93        |           | 80 - 120 |          | 05/22/25 22:50 | 1       |
| 4-Bromofluorobenzene (Surr) | 100       |           | 80 - 120 |          | 05/22/25 22:50 | 1       |

# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

Client Sample ID: Field Blank

Lab Sample ID: 310-306752-6

Date Collected: 05/18/25 09:42

Matrix: Water

Date Received: 05/20/25 09:05

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

| Analyte                     | Result | Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------|-----------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380 |           | 1.00  | 0.380 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,1,1-Trichloroethane       | <0.190 |           | 1.00  | 0.190 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470 |           | 1.00  | 0.470 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,1,2-Trichloroethane       | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,1-Dichloroethane          | <0.220 |           | 1.00  | 0.220 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,1-Dichloroethene          | <0.560 |           | 2.00  | 0.560 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2,3-Trichloropropane      | <0.590 |           | 1.00  | 0.590 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20  |           | 5.00  | 1.20  | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340 |           | 1.00  | 0.340 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2-Dichlorobenzene         | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2-Dichloroethane          | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,2-Dichloropropane         | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 1,4-Dichlorobenzene         | <0.230 |           | 1.00  | 0.230 | ug/L |   |          | 05/22/25 23:13 | 1       |
| 2-Butanone (MEK)            | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 23:13 | 1       |
| 2-Hexanone                  | <2.00  |           | 10.0  | 2.00  | ug/L |   |          | 05/22/25 23:13 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10  |           | 10.0  | 2.10  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Acetone                     | 3.68   | J         | 10.0  | 3.10  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Acrylonitrile               | <2.20  |           | 5.00  | 2.20  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Benzene                     | <0.220 |           | 0.500 | 0.220 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Bromochloromethane          | <0.540 |           | 5.00  | 0.540 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Bromodichloromethane        | <0.390 |           | 1.00  | 0.390 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Bromoform                   | <0.780 |           | 5.00  | 0.780 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Bromomethane                | <1.10  |           | 4.00  | 1.10  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Carbon disulfide            | <0.450 |           | 1.00  | 0.450 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Carbon tetrachloride        | <0.650 |           | 2.00  | 0.650 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Chlorobenzene               | <0.400 |           | 1.00  | 0.400 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Chlorodibromomethane        | <0.750 |           | 5.00  | 0.750 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Chloroethane                | <0.790 |           | 4.00  | 0.790 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Chloroform                  | <1.30  |           | 3.00  | 1.30  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Chloromethane               | <0.610 |           | 3.00  | 0.610 | ug/L |   |          | 05/22/25 23:13 | 1       |
| cis-1,2-Dichloroethene      | <0.210 |           | 1.00  | 0.210 | ug/L |   |          | 05/22/25 23:13 | 1       |
| cis-1,3-Dichloropropene     | <0.250 |           | 5.00  | 0.250 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Dibromomethane              | <0.330 |           | 1.00  | 0.330 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Ethylbenzene                | <0.310 |           | 1.00  | 0.310 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Iodomethane                 | <7.00  |           | 10.0  | 7.00  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Methylene Chloride          | <1.70  |           | 5.00  | 1.70  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Styrene                     | <0.370 |           | 1.00  | 0.370 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Tetrachloroethene           | <0.480 |           | 1.00  | 0.480 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Toluene                     | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 23:13 | 1       |
| trans-1,2-Dichloroethene    | <0.270 |           | 1.00  | 0.270 | ug/L |   |          | 05/22/25 23:13 | 1       |
| trans-1,3-Dichloropropene   | <0.560 |           | 5.00  | 0.560 | ug/L |   |          | 05/22/25 23:13 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10  |           | 10.0  | 1.10  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Trichloroethene             | <0.430 |           | 1.00  | 0.430 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Trichlorofluoromethane      | <0.380 |           | 4.00  | 0.380 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Vinyl acetate               | <2.50  |           | 10.0  | 2.50  | ug/L |   |          | 05/22/25 23:13 | 1       |
| Vinyl chloride              | <0.180 |           | 1.00  | 0.180 | ug/L |   |          | 05/22/25 23:13 | 1       |
| Xylenes, Total              | <0.400 |           | 3.00  | 0.400 | ug/L |   |          | 05/22/25 23:13 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 112       |           | 76 - 130 |          | 05/22/25 23:13 | 1       |

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# Client Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

**Client Sample ID: Field Blank**

**Lab Sample ID: 310-306752-6**

Date Collected: 05/18/25 09:42

Matrix: Water

Date Received: 05/20/25 09:05

## Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Toluene-d8 (Surr)           | 92        |           | 80 - 120 |          | 05/22/25 23:13 | 1       |
| 4-Bromofluorobenzene (Surr) | 98        |           | 80 - 120 |          | 05/22/25 23:13 | 1       |

## Method: SW846 8081B - Organochlorine Pesticides (GC)

| Analyte            | Result  | Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------|---------|-----------|--------|--------|------|---|----------------|----------------|---------|
| beta-BHC           | <0.0391 |           | 0.0931 | 0.0391 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| delta-BHC          | <0.0298 |           | 0.0931 | 0.0298 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| Dieldrin           | <0.0195 |           | 0.0931 | 0.0195 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| Endosulfan sulfate | <0.0168 |           | 0.0931 | 0.0168 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| Endrin             | <0.0261 |           | 0.0931 | 0.0261 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| Endrin aldehyde    | <0.0251 |           | 0.0931 | 0.0251 | ug/L |   | 05/22/25 13:17 | 05/28/25 18:37 | 1       |

| Surrogate                     | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-------------------------------|-----------|-----------|----------|----------------|----------------|---------|
| DCB Decachlorobiphenyl (Surr) | 47        |           | 10 - 150 | 05/22/25 13:17 | 05/28/25 18:37 | 1       |
| Tetrachloro-m-xylene (Surr)   | 64        |           | 17 - 150 | 05/22/25 13:17 | 05/28/25 18:37 | 1       |

## Method: SW846 6020B - Metals (ICP/MS)

| Analyte   | Result    | Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|-----------|-----------|----------|----------|------|---|----------------|----------------|---------|
| Antimony  | <0.00100  |           | 0.00200  | 0.00100  | mg/L |   | 05/21/25 15:12 | 05/28/25 12:02 | 1       |
| Arsenic   | <0.000530 |           | 0.00200  | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Barium    | <0.000660 |           | 0.00200  | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Beryllium | <0.000330 |           | 0.00100  | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/28/25 12:02 | 1       |
| Cadmium   | <0.000100 |           | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Chromium  | <0.00180  |           | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Cobalt    | <0.000170 |           | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Copper    | <0.00320  |           | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Lead      | <0.000330 |           | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Nickel    | <0.00230  |           | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Selenium  | <0.00140  |           | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Silver    | <0.000500 |           | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Thallium  | <0.000570 |           | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Vanadium  | <0.00170  |           | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |
| Zinc      | <0.0130   |           | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 19:21 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Sulfide (SW846 9034)                    | <1.41  |           | 3.00 | 1.41 | mg/L |   | 05/22/25 10:48 | 05/22/25 14:47 | 1       |
| Total Suspended Solids (USGS I-3765-85) | <3.50  |           | 5.00 | 3.50 | mg/L |   |                | 05/20/25 16:10 | 1       |

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## Definitions/Glossary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### Qualifiers

#### GC/MS VOA

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

#### Metals

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| E         | Result exceeded calibration range.                                                                             |
| F1        | MS and/or MSD recovery exceeds control limits.                                                                 |
| F2        | MS/MSD RPD exceeds control limits                                                                              |
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

#### General Chemistry

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| 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                                                                                        |
| 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                                                                                       |

## Surrogate Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Matrix: Water

Prep Type: Total/NA

|                                    |                    | Percent Surrogate Recovery (Acceptance Limits) |          |          |
|------------------------------------|--------------------|------------------------------------------------|----------|----------|
| Lab Sample ID                      | Client Sample ID   | DBFM                                           | TOL      | BFB      |
|                                    |                    | (76-130)                                       | (80-120) | (80-120) |
| 310-306752-1                       | MW-51              | 113                                            | 96       | 98       |
| 310-306752-1 MS                    | MW-51              | 96                                             | 100      | 95       |
| 310-306752-1 MSD                   | MW-51              | 99                                             | 101      | 97       |
| 310-306752-2                       | MW-60              | 110                                            | 94       | 96       |
| 310-306752-3                       | MW-27              | 118                                            | 94       | 100      |
| 310-306752-3 MS                    | MW-27              | 94                                             | 99       | 99       |
| 310-306752-3 MSD                   | MW-27              | 100                                            | 101      | 98       |
| 310-306752-4                       | MW-50R             | 111                                            | 92       | 98       |
| 310-306752-5                       | Trip Blank         | 112                                            | 93       | 100      |
| 310-306752-6                       | Field Blank        | 112                                            | 92       | 98       |
| LCS 310-455314/7                   | Lab Control Sample | 100                                            | 101      | 97       |
| LCS 310-455314/8                   | Lab Control Sample | 112                                            | 95       | 99       |
| LCS 310-455442/7                   | Lab Control Sample | 99                                             | 98       | 96       |
| LCS 310-455442/8                   | Lab Control Sample | 117                                            | 95       | 97       |
| MB 310-455314/6                    | Method Blank       | 109                                            | 95       | 99       |
| MB 310-455442/6                    | Method Blank       | 115                                            | 94       | 103      |
| <b>Surrogate Legend</b>            |                    |                                                |          |          |
| DBFM = Dibromofluoromethane (Surr) |                    |                                                |          |          |
| TOL = Toluene-d8 (Surr)            |                    |                                                |          |          |
| BFB = 4-Bromofluorobenzene (Surr)  |                    |                                                |          |          |

### Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water

Prep Type: Total/NA

|                                     |                    | Percent Surrogate Recovery (Acceptance Limits) |          |
|-------------------------------------|--------------------|------------------------------------------------|----------|
| Lab Sample ID                       | Client Sample ID   | DCB2                                           | TCX2     |
|                                     |                    | (10-150)                                       | (17-150) |
| 310-306752-3                        | MW-27              | 72                                             | 64       |
| 310-306752-3 MS                     | MW-27              | 82                                             | 85       |
| 310-306752-3 MSD                    | MW-27              | 78                                             | 77       |
| 310-306752-6                        | Field Blank        | 47                                             | 64       |
| LCS 310-455488/2-A                  | Lab Control Sample | 60                                             | 66       |
| MB 310-455488/1-A                   | Method Blank       | 57                                             | 54       |
| <b>Surrogate Legend</b>             |                    |                                                |          |
| DCB = DCB Decachlorobiphenyl (Surr) |                    |                                                |          |
| TCX = Tetrachloro-m-xylene (Surr)   |                    |                                                |          |

# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: MB 310-455314/6

Matrix: Water

Analysis Batch: 455314

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                     | MB Result | MB Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|--------------|-------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380    |              | 1.00  | 0.380 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,1,1-Trichloroethane       | <0.190    |              | 1.00  | 0.190 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470    |              | 1.00  | 0.470 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,1,2-Trichloroethane       | <0.450    |              | 1.00  | 0.450 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,1-Dichloroethane          | <0.220    |              | 1.00  | 0.220 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,1-Dichloroethene          | <0.560    |              | 2.00  | 0.560 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2,3-Trichloropropane      | <0.590    |              | 1.00  | 0.590 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20     |              | 5.00  | 1.20  | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2-Dibromoethane (EDB)     | <0.340    |              | 1.00  | 0.340 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2-Dichlorobenzene         | <0.370    |              | 1.00  | 0.370 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2-Dichloroethane          | <0.390    |              | 1.00  | 0.390 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,2-Dichloropropane         | <0.270    |              | 1.00  | 0.270 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 1,4-Dichlorobenzene         | <0.230    |              | 1.00  | 0.230 | ug/L |   |          | 05/21/25 13:00 | 1       |
| 2-Butanone (MEK)            | <2.10     |              | 10.0  | 2.10  | ug/L |   |          | 05/21/25 13:00 | 1       |
| 2-Hexanone                  | <2.00     |              | 10.0  | 2.00  | ug/L |   |          | 05/21/25 13:00 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10     |              | 10.0  | 2.10  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Acetone                     | <3.10     |              | 10.0  | 3.10  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Acrylonitrile               | <2.20     |              | 5.00  | 2.20  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Benzene                     | <0.220    |              | 0.500 | 0.220 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Bromochloromethane          | <0.540    |              | 5.00  | 0.540 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Bromodichloromethane        | <0.390    |              | 1.00  | 0.390 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Bromoform                   | <0.780    |              | 5.00  | 0.780 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Bromomethane                | <1.10     |              | 4.00  | 1.10  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Carbon disulfide            | <0.450    |              | 1.00  | 0.450 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Carbon tetrachloride        | <0.650    |              | 2.00  | 0.650 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Chlorobenzene               | <0.400    |              | 1.00  | 0.400 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Chlorodibromomethane        | <0.750    |              | 5.00  | 0.750 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Chloroethane                | <0.790    |              | 4.00  | 0.790 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Chloroform                  | <1.30     |              | 3.00  | 1.30  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Chloromethane               | <0.610    |              | 3.00  | 0.610 | ug/L |   |          | 05/21/25 13:00 | 1       |
| cis-1,2-Dichloroethene      | <0.210    |              | 1.00  | 0.210 | ug/L |   |          | 05/21/25 13:00 | 1       |
| cis-1,3-Dichloropropene     | <0.250    |              | 5.00  | 0.250 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Dibromomethane              | <0.330    |              | 1.00  | 0.330 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Ethylbenzene                | <0.310    |              | 1.00  | 0.310 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Iodomethane                 | <7.00     |              | 10.0  | 7.00  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Methylene Chloride          | <1.70     |              | 5.00  | 1.70  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Styrene                     | <0.370    |              | 1.00  | 0.370 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Tetrachloroethene           | <0.480    |              | 1.00  | 0.480 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Toluene                     | <0.430    |              | 1.00  | 0.430 | ug/L |   |          | 05/21/25 13:00 | 1       |
| trans-1,2-Dichloroethene    | <0.270    |              | 1.00  | 0.270 | ug/L |   |          | 05/21/25 13:00 | 1       |
| trans-1,3-Dichloropropene   | <0.560    |              | 5.00  | 0.560 | ug/L |   |          | 05/21/25 13:00 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10     |              | 10.0  | 1.10  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Trichloroethene             | <0.430    |              | 1.00  | 0.430 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Trichlorofluoromethane      | <0.380    |              | 4.00  | 0.380 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Vinyl acetate               | <2.50     |              | 10.0  | 2.50  | ug/L |   |          | 05/21/25 13:00 | 1       |
| Vinyl chloride              | <0.180    |              | 1.00  | 0.180 | ug/L |   |          | 05/21/25 13:00 | 1       |
| Xylenes, Total              | <0.400    |              | 3.00  | 0.400 | ug/L |   |          | 05/21/25 13:00 | 1       |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: MB 310-455314/6

Matrix: Water

Analysis Batch: 455314

Client Sample ID: Method Blank

Prep Type: Total/NA

| Surrogate                   | MB %Recovery | MB Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------------|--------------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 109          |              | 76 - 130 |          | 05/21/25 13:00 | 1       |
| Toluene-d8 (Surr)           | 95           |              | 80 - 120 |          | 05/21/25 13:00 | 1       |
| 4-Bromofluorobenzene (Surr) | 99           |              | 80 - 120 |          | 05/21/25 13:00 | 1       |

Lab Sample ID: LCS 310-455314/7

Matrix: Water

Analysis Batch: 455314

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                     | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|-------------|------------|---------------|------|---|------|-------------|
| 1,1,1,2-Tetrachloroethane   | 20.0        | 21.02      |               | ug/L |   | 105  | 70 - 121    |
| 1,1,1-Trichloroethane       | 20.0        | 22.40      |               | ug/L |   | 112  | 69 - 130    |
| 1,1,1,2,2-Tetrachloroethane | 20.0        | 19.73      |               | ug/L |   | 99   | 70 - 122    |
| 1,1,2-Trichloroethane       | 20.0        | 19.47      |               | ug/L |   | 97   | 75 - 121    |
| 1,1-Dichloroethane          | 20.0        | 20.99      |               | ug/L |   | 105  | 69 - 127    |
| 1,1-Dichloroethene          | 20.0        | 21.60      |               | ug/L |   | 108  | 64 - 134    |
| 1,2,3-Trichloropropane      | 20.0        | 18.98      |               | ug/L |   | 95   | 70 - 122    |
| 1,2-Dibromo-3-Chloropropane | 20.0        | 19.39      |               | ug/L |   | 97   | 62 - 132    |
| 1,2-Dibromoethane (EDB)     | 20.0        | 19.52      |               | ug/L |   | 98   | 74 - 122    |
| 1,2-Dichlorobenzene         | 20.0        | 19.57      |               | ug/L |   | 98   | 74 - 120    |
| 1,2-Dichloroethane          | 20.0        | 22.65      |               | ug/L |   | 113  | 68 - 125    |
| 1,2-Dichloropropane         | 20.0        | 19.80      |               | ug/L |   | 99   | 72 - 128    |
| 1,4-Dichlorobenzene         | 20.0        | 18.98      |               | ug/L |   | 95   | 72 - 120    |
| 2-Butanone (MEK)            | 40.0        | 42.56      |               | ug/L |   | 106  | 60 - 134    |
| 2-Hexanone                  | 40.0        | 39.66      |               | ug/L |   | 99   | 62 - 139    |
| 4-Methyl-2-pentanone (MIBK) | 40.0        | 42.83      |               | ug/L |   | 107  | 62 - 136    |
| Acetone                     | 40.0        | 49.10      |               | ug/L |   | 123  | 59 - 136    |
| Acrylonitrile               | 200         | 199.7      |               | ug/L |   | 100  | 50 - 150    |
| Benzene                     | 20.0        | 20.27      |               | ug/L |   | 101  | 71 - 125    |
| Bromochloromethane          | 20.0        | 21.29      |               | ug/L |   | 106  | 69 - 131    |
| Bromodichloromethane        | 20.0        | 20.40      |               | ug/L |   | 102  | 70 - 122    |
| Bromoform                   | 20.0        | 18.64      |               | ug/L |   | 93   | 62 - 122    |
| Carbon disulfide            | 20.0        | 21.27      |               | ug/L |   | 106  | 58 - 137    |
| Carbon tetrachloride        | 20.0        | 23.32      |               | ug/L |   | 117  | 63 - 136    |
| Chlorobenzene               | 20.0        | 20.09      |               | ug/L |   | 100  | 74 - 120    |
| Chlorodibromomethane        | 20.0        | 18.93      |               | ug/L |   | 95   | 69 - 121    |
| Chloroform                  | 20.0        | 22.63      |               | ug/L |   | 113  | 72 - 122    |
| cis-1,2-Dichloroethene      | 20.0        | 21.20      |               | ug/L |   | 106  | 72 - 123    |
| cis-1,3-Dichloropropene     | 20.0        | 19.29      |               | ug/L |   | 96   | 72 - 123    |
| Dibromomethane              | 20.0        | 22.32      |               | ug/L |   | 112  | 72 - 122    |
| Ethylbenzene                | 20.0        | 21.08      |               | ug/L |   | 105  | 75 - 120    |
| Iodomethane                 | 20.0        | 11.70      |               | ug/L |   | 58   | 18 - 150    |
| Methylene Chloride          | 20.0        | 20.72      |               | ug/L |   | 104  | 72 - 128    |
| Styrene                     | 20.0        | 18.87      |               | ug/L |   | 94   | 74 - 122    |
| Tetrachloroethene           | 20.0        | 20.53      |               | ug/L |   | 103  | 70 - 128    |
| Toluene                     | 20.0        | 21.85      |               | ug/L |   | 109  | 74 - 120    |
| trans-1,2-Dichloroethene    | 20.0        | 20.77      |               | ug/L |   | 104  | 67 - 127    |
| trans-1,3-Dichloropropene   | 20.0        | 18.79      |               | ug/L |   | 94   | 67 - 123    |
| trans-1,4-Dichloro-2-butene | 20.0        | 19.70      |               | ug/L |   | 99   | 50 - 150    |

Eurofins Cedar Falls

# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: LCS 310-455314/7

Matrix: Water

Analysis Batch: 455314

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte         | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------|-------------|------------|---------------|------|---|------|-------------|
| Trichloroethene | 20.0        | 19.76      |               | ug/L |   | 99   | 70 - 128    |
| Vinyl acetate   | 40.0        | 37.80      |               | ug/L |   | 95   | 50 - 150    |
| Xylenes, Total  | 40.0        | 42.39      |               | ug/L |   | 106  | 74 - 121    |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 100           |               | 76 - 130 |
| Toluene-d8 (Surr)           | 101           |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 97            |               | 80 - 120 |

Lab Sample ID: LCS 310-455314/8

Matrix: Water

Analysis Batch: 455314

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|------------------------|-------------|------------|---------------|------|---|------|-------------|
| Bromomethane           | 20.0        | 16.33      |               | ug/L |   | 82   | 33 - 138    |
| Chloroethane           | 20.0        | 19.25      |               | ug/L |   | 96   | 59 - 139    |
| Chloromethane          | 20.0        | 17.31      |               | ug/L |   | 87   | 52 - 146    |
| Trichlorofluoromethane | 20.0        | 23.31      |               | ug/L |   | 117  | 55 - 150    |
| Vinyl chloride         | 20.0        | 18.95      |               | ug/L |   | 95   | 60 - 142    |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 112           |               | 76 - 130 |
| Toluene-d8 (Surr)           | 95            |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 99            |               | 80 - 120 |

Lab Sample ID: 310-306752-1 MS

Matrix: Water

Analysis Batch: 455314

Client Sample ID: MW-51

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| 1,1,1,2-Tetrachloroethane   | <0.380        |                  | 25.0        | 23.00     |              | ug/L |   | 92   | 55 - 121    |
| 1,1,1-Trichloroethane       | <0.190        |                  | 25.0        | 23.34     |              | ug/L |   | 93   | 53 - 130    |
| 1,1,2,2-Tetrachloroethane   | <0.470        |                  | 25.0        | 21.81     |              | ug/L |   | 87   | 55 - 123    |
| 1,1,2-Trichloroethane       | <0.450        |                  | 25.0        | 20.89     |              | ug/L |   | 84   | 60 - 121    |
| 1,1-Dichloroethane          | <0.220        |                  | 25.0        | 21.86     |              | ug/L |   | 87   | 53 - 127    |
| 1,1-Dichloroethene          | <0.560        |                  | 25.0        | 21.38     |              | ug/L |   | 86   | 51 - 134    |
| 1,2,3-Trichloropropane      | <0.590        |                  | 25.0        | 21.10     |              | ug/L |   | 84   | 56 - 122    |
| 1,2-Dibromo-3-Chloropropane | <1.20         |                  | 25.0        | 23.10     |              | ug/L |   | 92   | 44 - 138    |
| 1,2-Dibromoethane (EDB)     | <0.340        |                  | 25.0        | 20.57     |              | ug/L |   | 82   | 60 - 122    |
| 1,2-Dichlorobenzene         | <0.370        |                  | 25.0        | 22.58     |              | ug/L |   | 90   | 60 - 120    |
| 1,2-Dichloroethane          | <0.390        |                  | 25.0        | 24.40     |              | ug/L |   | 98   | 48 - 128    |
| 1,2-Dichloropropane         | <0.270        |                  | 25.0        | 21.16     |              | ug/L |   | 85   | 59 - 128    |
| 1,4-Dichlorobenzene         | <0.230        |                  | 25.0        | 22.11     |              | ug/L |   | 88   | 58 - 120    |
| 2-Butanone (MEK)            | <2.10         |                  | 50.0        | 45.91     |              | ug/L |   | 92   | 46 - 134    |
| 2-Hexanone                  | <2.00         |                  | 50.0        | 43.99     |              | ug/L |   | 88   | 46 - 141    |
| 4-Methyl-2-pentanone (MIBK) | <2.10         |                  | 50.0        | 46.46     |              | ug/L |   | 93   | 49 - 138    |
| Acetone                     | <3.10         |                  | 50.0        | 51.40     |              | ug/L |   | 103  | 39 - 141    |
| Acrylonitrile               | <2.20         |                  | 250         | 211.4     |              | ug/L |   | 85   | 41 - 150    |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: 310-306752-1 MS

Matrix: Water

Analysis Batch: 455314

Client Sample ID: MW-51

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| Benzene                     | <0.220        |                  | 25.0        | 21.85     |              | ug/L |   | 87   | 48 - 125    |
| Bromochloromethane          | <0.540        |                  | 25.0        | 22.99     |              | ug/L |   | 92   | 55 - 131    |
| Bromodichloromethane        | <0.390        |                  | 25.0        | 21.77     |              | ug/L |   | 87   | 53 - 122    |
| Bromoform                   | <0.780        |                  | 25.0        | 20.63     |              | ug/L |   | 83   | 47 - 122    |
| Carbon disulfide            | <0.450        |                  | 25.0        | 23.38     |              | ug/L |   | 94   | 45 - 137    |
| Carbon tetrachloride        | <0.650        |                  | 25.0        | 23.79     |              | ug/L |   | 95   | 45 - 136    |
| Chlorobenzene               | <0.400        |                  | 25.0        | 22.48     |              | ug/L |   | 90   | 59 - 120    |
| Chlorodibromomethane        | <0.750        |                  | 25.0        | 20.59     |              | ug/L |   | 82   | 53 - 121    |
| Chloroform                  | <1.30         |                  | 25.0        | 23.62     |              | ug/L |   | 94   | 52 - 122    |
| cis-1,2-Dichloroethene      | <0.210        |                  | 25.0        | 22.37     |              | ug/L |   | 89   | 51 - 123    |
| cis-1,3-Dichloropropene     | <0.250        |                  | 25.0        | 20.33     |              | ug/L |   | 81   | 55 - 123    |
| Dibromomethane              | <0.330        |                  | 25.0        | 22.86     |              | ug/L |   | 91   | 57 - 122    |
| Ethylbenzene                | <0.310        |                  | 25.0        | 22.61     |              | ug/L |   | 90   | 53 - 120    |
| Iodomethane                 | <7.00         |                  | 25.0        | 27.67     |              | ug/L |   | 111  | 18 - 150    |
| Methylene Chloride          | <1.70         |                  | 25.0        | 22.39     |              | ug/L |   | 90   | 59 - 128    |
| Styrene                     | <0.370        |                  | 25.0        | 20.57     |              | ug/L |   | 82   | 50 - 125    |
| Tetrachloroethene           | <0.480        |                  | 25.0        | 21.54     |              | ug/L |   | 86   | 51 - 128    |
| Toluene                     | <0.430        |                  | 25.0        | 22.72     |              | ug/L |   | 91   | 52 - 120    |
| trans-1,2-Dichloroethene    | <0.270        |                  | 25.0        | 22.58     |              | ug/L |   | 90   | 53 - 127    |
| trans-1,3-Dichloropropene   | <0.560        |                  | 25.0        | 19.69     |              | ug/L |   | 79   | 50 - 123    |
| trans-1,4-Dichloro-2-butene | <1.10         |                  | 25.0        | 22.09     |              | ug/L |   | 88   | 28 - 150    |
| Trichloroethene             | <0.430        |                  | 25.0        | 20.73     |              | ug/L |   | 83   | 50 - 128    |
| Vinyl acetate               | <2.50         |                  | 50.0        | 37.27     |              | ug/L |   | 75   | 31 - 150    |
| Xylenes, Total              | <0.400        |                  | 50.0        | 45.64     |              | ug/L |   | 91   | 50 - 122    |

| Surrogate                   | MS %Recovery | MS Qualifier | Limits   |
|-----------------------------|--------------|--------------|----------|
| Dibromofluoromethane (Surr) | 96           |              | 76 - 130 |
| Toluene-d8 (Surr)           | 100          |              | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 95           |              | 80 - 120 |

Lab Sample ID: 310-306752-1 MSD

Matrix: Water

Analysis Batch: 455314

Client Sample ID: MW-51

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|-----------------------------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| 1,1,1,2-Tetrachloroethane   | <0.380        |                  | 25.0        | 23.53      |               | ug/L |   | 94   | 55 - 121    | 2   | 20        |
| 1,1,1-Trichloroethane       | <0.190        |                  | 25.0        | 23.24      |               | ug/L |   | 93   | 53 - 130    | 0   | 20        |
| 1,1,2,2-Tetrachloroethane   | <0.470        |                  | 25.0        | 22.08      |               | ug/L |   | 88   | 55 - 123    | 1   | 20        |
| 1,1,2-Trichloroethane       | <0.450        |                  | 25.0        | 21.82      |               | ug/L |   | 87   | 60 - 121    | 4   | 20        |
| 1,1-Dichloroethane          | <0.220        |                  | 25.0        | 22.00      |               | ug/L |   | 88   | 53 - 127    | 1   | 20        |
| 1,1-Dichloroethene          | <0.560        |                  | 25.0        | 22.35      |               | ug/L |   | 89   | 51 - 134    | 4   | 20        |
| 1,2,3-Trichloropropane      | <0.590        |                  | 25.0        | 21.68      |               | ug/L |   | 87   | 56 - 122    | 3   | 21        |
| 1,2-Dibromo-3-Chloropropane | <1.20         |                  | 25.0        | 24.08      |               | ug/L |   | 96   | 44 - 138    | 4   | 24        |
| 1,2-Dibromoethane (EDB)     | <0.340        |                  | 25.0        | 21.29      |               | ug/L |   | 85   | 60 - 122    | 3   | 20        |
| 1,2-Dichlorobenzene         | <0.370        |                  | 25.0        | 23.55      |               | ug/L |   | 94   | 60 - 120    | 4   | 20        |
| 1,2-Dichloroethane          | <0.390        |                  | 25.0        | 24.82      |               | ug/L |   | 99   | 48 - 128    | 2   | 20        |
| 1,2-Dichloropropane         | <0.270        |                  | 25.0        | 22.11      |               | ug/L |   | 88   | 59 - 128    | 4   | 20        |
| 1,4-Dichlorobenzene         | <0.230        |                  | 25.0        | 22.35      |               | ug/L |   | 89   | 58 - 120    | 1   | 20        |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: 310-306752-1 MSD

Matrix: Water

Analysis Batch: 455314

Client Sample ID: MW-51

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|-----------------------------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| 2-Butanone (MEK)            | <2.10         |                  | 50.0        | 50.23      |               | ug/L |   | 100  | 46 - 134    | 9   | 23        |
| 2-Hexanone                  | <2.00         |                  | 50.0        | 45.31      |               | ug/L |   | 91   | 46 - 141    | 3   | 20        |
| 4-Methyl-2-pentanone (MIBK) | <2.10         |                  | 50.0        | 48.79      |               | ug/L |   | 98   | 49 - 138    | 5   | 20        |
| Acetone                     | <3.10         |                  | 50.0        | 54.89      |               | ug/L |   | 110  | 39 - 141    | 7   | 23        |
| Acrylonitrile               | <2.20         |                  | 250         | 221.7      |               | ug/L |   | 89   | 41 - 150    | 5   | 20        |
| Benzene                     | <0.220        |                  | 25.0        | 22.17      |               | ug/L |   | 89   | 48 - 125    | 1   | 20        |
| Bromochloromethane          | <0.540        |                  | 25.0        | 23.27      |               | ug/L |   | 93   | 55 - 131    | 1   | 21        |
| Bromodichloromethane        | <0.390        |                  | 25.0        | 21.96      |               | ug/L |   | 88   | 53 - 122    | 1   | 20        |
| Bromoform                   | <0.780        |                  | 25.0        | 22.10      |               | ug/L |   | 88   | 47 - 122    | 7   | 20        |
| Carbon disulfide            | <0.450        |                  | 25.0        | 20.87      |               | ug/L |   | 83   | 45 - 137    | 11  | 24        |
| Carbon tetrachloride        | <0.650        |                  | 25.0        | 24.57      |               | ug/L |   | 98   | 45 - 136    | 3   | 20        |
| Chlorobenzene               | <0.400        |                  | 25.0        | 22.38      |               | ug/L |   | 90   | 59 - 120    | 0   | 20        |
| Chlorodibromomethane        | <0.750        |                  | 25.0        | 20.92      |               | ug/L |   | 84   | 53 - 121    | 2   | 20        |
| Chloroform                  | <1.30         |                  | 25.0        | 24.18      |               | ug/L |   | 97   | 52 - 122    | 2   | 20        |
| cis-1,2-Dichloroethene      | <0.210        |                  | 25.0        | 23.04      |               | ug/L |   | 92   | 51 - 123    | 3   | 20        |
| cis-1,3-Dichloropropene     | <0.250        |                  | 25.0        | 21.01      |               | ug/L |   | 84   | 55 - 123    | 3   | 20        |
| Dibromomethane              | <0.330        |                  | 25.0        | 24.69      |               | ug/L |   | 99   | 57 - 122    | 8   | 20        |
| Ethylbenzene                | <0.310        |                  | 25.0        | 23.26      |               | ug/L |   | 93   | 53 - 120    | 3   | 20        |
| Iodomethane                 | <7.00         |                  | 25.0        | 30.82      |               | ug/L |   | 123  | 18 - 150    | 11  | 32        |
| Methylene Chloride          | <1.70         |                  | 25.0        | 22.71      |               | ug/L |   | 91   | 59 - 128    | 1   | 20        |
| Styrene                     | <0.370        |                  | 25.0        | 20.98      |               | ug/L |   | 84   | 50 - 125    | 2   | 20        |
| Tetrachloroethene           | <0.480        |                  | 25.0        | 21.98      |               | ug/L |   | 88   | 51 - 128    | 2   | 20        |
| Toluene                     | <0.430        |                  | 25.0        | 23.86      |               | ug/L |   | 95   | 52 - 120    | 5   | 20        |
| trans-1,2-Dichloroethene    | <0.270        |                  | 25.0        | 22.45      |               | ug/L |   | 90   | 53 - 127    | 1   | 20        |
| trans-1,3-Dichloropropene   | <0.560        |                  | 25.0        | 20.68      |               | ug/L |   | 83   | 50 - 123    | 5   | 20        |
| trans-1,4-Dichloro-2-butene | <1.10         |                  | 25.0        | 22.83      |               | ug/L |   | 91   | 28 - 150    | 3   | 24        |
| Trichloroethene             | <0.430        |                  | 25.0        | 21.28      |               | ug/L |   | 85   | 50 - 128    | 3   | 20        |
| Vinyl acetate               | <2.50         |                  | 50.0        | 39.86      |               | ug/L |   | 80   | 31 - 150    | 7   | 25        |
| Xylenes, Total              | <0.400        |                  | 50.0        | 46.60      |               | ug/L |   | 93   | 50 - 122    | 2   | 20        |

| Surrogate                   | MSD %Recovery | MSD Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 99            |               | 76 - 130 |
| Toluene-d8 (Surr)           | 101           |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 97            |               | 80 - 120 |

Lab Sample ID: MB 310-455442/6

Matrix: Water

Analysis Batch: 455442

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                     | MB Result | MB Qualifier | RL   | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|--------------|------|-------|------|---|----------|----------------|---------|
| 1,1,1,2-Tetrachloroethane   | <0.380    |              | 1.00 | 0.380 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,1,1-Trichloroethane       | <0.190    |              | 1.00 | 0.190 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,1,2,2-Tetrachloroethane   | <0.470    |              | 1.00 | 0.470 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,1,2-Trichloroethane       | <0.450    |              | 1.00 | 0.450 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,1-Dichloroethane          | <0.220    |              | 1.00 | 0.220 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,1-Dichloroethene          | <0.560    |              | 2.00 | 0.560 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,2,3-Trichloropropane      | <0.590    |              | 1.00 | 0.590 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,2-Dibromo-3-Chloropropane | <1.20     |              | 5.00 | 1.20  | ug/L |   |          | 05/22/25 21:42 | 1       |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: MB 310-455442/6

Matrix: Water

Analysis Batch: 455442

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                     | MB Result | MB Qualifier | RL    | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|--------------|-------|-------|------|---|----------|----------------|---------|
| 1,2-Dibromoethane (EDB)     | <0.340    |              | 1.00  | 0.340 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,2-Dichlorobenzene         | <0.370    |              | 1.00  | 0.370 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,2-Dichloroethane          | <0.390    |              | 1.00  | 0.390 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,2-Dichloropropane         | <0.270    |              | 1.00  | 0.270 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 1,4-Dichlorobenzene         | <0.230    |              | 1.00  | 0.230 | ug/L |   |          | 05/22/25 21:42 | 1       |
| 2-Butanone (MEK)            | <2.10     |              | 10.0  | 2.10  | ug/L |   |          | 05/22/25 21:42 | 1       |
| 2-Hexanone                  | <2.00     |              | 10.0  | 2.00  | ug/L |   |          | 05/22/25 21:42 | 1       |
| 4-Methyl-2-pentanone (MIBK) | <2.10     |              | 10.0  | 2.10  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Acetone                     | <3.10     |              | 10.0  | 3.10  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Acrylonitrile               | <2.20     |              | 5.00  | 2.20  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Benzene                     | <0.220    |              | 0.500 | 0.220 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Bromochloromethane          | <0.540    |              | 5.00  | 0.540 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Bromodichloromethane        | <0.390    |              | 1.00  | 0.390 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Bromoform                   | <0.780    |              | 5.00  | 0.780 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Bromomethane                | <1.10     |              | 4.00  | 1.10  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Carbon disulfide            | <0.450    |              | 1.00  | 0.450 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Carbon tetrachloride        | <0.650    |              | 2.00  | 0.650 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Chlorobenzene               | <0.400    |              | 1.00  | 0.400 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Chlorodibromomethane        | <0.750    |              | 5.00  | 0.750 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Chloroethane                | <0.790    |              | 4.00  | 0.790 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Chloroform                  | <1.30     |              | 3.00  | 1.30  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Chloromethane               | <0.610    |              | 3.00  | 0.610 | ug/L |   |          | 05/22/25 21:42 | 1       |
| cis-1,2-Dichloroethene      | <0.210    |              | 1.00  | 0.210 | ug/L |   |          | 05/22/25 21:42 | 1       |
| cis-1,3-Dichloropropene     | <0.250    |              | 5.00  | 0.250 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Dibromomethane              | <0.330    |              | 1.00  | 0.330 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Ethylbenzene                | <0.310    |              | 1.00  | 0.310 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Iodomethane                 | <7.00     |              | 10.0  | 7.00  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Methylene Chloride          | <1.70     |              | 5.00  | 1.70  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Styrene                     | <0.370    |              | 1.00  | 0.370 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Tetrachloroethene           | <0.480    |              | 1.00  | 0.480 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Toluene                     | <0.430    |              | 1.00  | 0.430 | ug/L |   |          | 05/22/25 21:42 | 1       |
| trans-1,2-Dichloroethene    | <0.270    |              | 1.00  | 0.270 | ug/L |   |          | 05/22/25 21:42 | 1       |
| trans-1,3-Dichloropropene   | <0.560    |              | 5.00  | 0.560 | ug/L |   |          | 05/22/25 21:42 | 1       |
| trans-1,4-Dichloro-2-butene | <1.10     |              | 10.0  | 1.10  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Trichloroethene             | <0.430    |              | 1.00  | 0.430 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Trichlorofluoromethane      | <0.380    |              | 4.00  | 0.380 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Vinyl acetate               | <2.50     |              | 10.0  | 2.50  | ug/L |   |          | 05/22/25 21:42 | 1       |
| Vinyl chloride              | <0.180    |              | 1.00  | 0.180 | ug/L |   |          | 05/22/25 21:42 | 1       |
| Xylenes, Total              | <0.400    |              | 3.00  | 0.400 | ug/L |   |          | 05/22/25 21:42 | 1       |

| Surrogate                   | MB %Recovery | MB Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|--------------|--------------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 115          |              | 76 - 130 |          | 05/22/25 21:42 | 1       |
| Toluene-d8 (Surr)           | 94           |              | 80 - 120 |          | 05/22/25 21:42 | 1       |
| 4-Bromofluorobenzene (Surr) | 103          |              | 80 - 120 |          | 05/22/25 21:42 | 1       |

Eurofins Cedar Falls

# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: LCS 310-455442/7

Matrix: Water

Analysis Batch: 455442

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                     | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|-------------|------------|---------------|------|---|------|-------------|
| 1,1,1,2-Tetrachloroethane   | 20.0        | 18.30      |               | ug/L |   | 91   | 70 - 121    |
| 1,1,1-Trichloroethane       | 20.0        | 19.67      |               | ug/L |   | 98   | 69 - 130    |
| 1,1,2,2-Tetrachloroethane   | 20.0        | 17.28      |               | ug/L |   | 86   | 70 - 122    |
| 1,1,2-Trichloroethane       | 20.0        | 16.71      |               | ug/L |   | 84   | 75 - 121    |
| 1,1-Dichloroethane          | 20.0        | 18.54      |               | ug/L |   | 93   | 69 - 127    |
| 1,1-Dichloroethene          | 20.0        | 19.20      |               | ug/L |   | 96   | 64 - 134    |
| 1,2,3-Trichloropropane      | 20.0        | 17.01      |               | ug/L |   | 85   | 70 - 122    |
| 1,2-Dibromo-3-Chloropropane | 20.0        | 16.71      |               | ug/L |   | 84   | 62 - 132    |
| 1,2-Dibromoethane (EDB)     | 20.0        | 16.84      |               | ug/L |   | 84   | 74 - 122    |
| 1,2-Dichlorobenzene         | 20.0        | 18.47      |               | ug/L |   | 92   | 74 - 120    |
| 1,2-Dichloroethane          | 20.0        | 21.04      |               | ug/L |   | 105  | 68 - 125    |
| 1,2-Dichloropropane         | 20.0        | 17.86      |               | ug/L |   | 89   | 72 - 128    |
| 1,4-Dichlorobenzene         | 20.0        | 18.20      |               | ug/L |   | 91   | 72 - 120    |
| 2-Butanone (MEK)            | 40.0        | 37.74      |               | ug/L |   | 94   | 60 - 134    |
| 2-Hexanone                  | 40.0        | 34.60      |               | ug/L |   | 87   | 62 - 139    |
| 4-Methyl-2-pentanone (MIBK) | 40.0        | 36.82      |               | ug/L |   | 92   | 62 - 136    |
| Acetone                     | 40.0        | 41.46      |               | ug/L |   | 104  | 59 - 136    |
| Acrylonitrile               | 200         | 175.2      |               | ug/L |   | 88   | 50 - 150    |
| Benzene                     | 20.0        | 18.15      |               | ug/L |   | 91   | 71 - 125    |
| Bromochloromethane          | 20.0        | 19.44      |               | ug/L |   | 97   | 69 - 131    |
| Bromodichloromethane        | 20.0        | 18.88      |               | ug/L |   | 94   | 70 - 122    |
| Bromoform                   | 20.0        | 17.45      |               | ug/L |   | 87   | 62 - 122    |
| Carbon disulfide            | 20.0        | 18.85      |               | ug/L |   | 94   | 58 - 137    |
| Carbon tetrachloride        | 20.0        | 21.77      |               | ug/L |   | 109  | 63 - 136    |
| Chlorobenzene               | 20.0        | 18.15      |               | ug/L |   | 91   | 74 - 120    |
| Chlorodibromomethane        | 20.0        | 17.43      |               | ug/L |   | 87   | 69 - 121    |
| Chloroform                  | 20.0        | 20.70      |               | ug/L |   | 104  | 72 - 122    |
| cis-1,2-Dichloroethene      | 20.0        | 19.47      |               | ug/L |   | 97   | 72 - 123    |
| cis-1,3-Dichloropropene     | 20.0        | 16.57      |               | ug/L |   | 83   | 72 - 123    |
| Dibromomethane              | 20.0        | 20.45      |               | ug/L |   | 102  | 72 - 122    |
| Ethylbenzene                | 20.0        | 18.90      |               | ug/L |   | 95   | 75 - 120    |
| Iodomethane                 | 20.0        | 14.66      |               | ug/L |   | 73   | 18 - 150    |
| Methylene Chloride          | 20.0        | 18.67      |               | ug/L |   | 93   | 72 - 128    |
| Styrene                     | 20.0        | 16.82      |               | ug/L |   | 84   | 74 - 122    |
| Tetrachloroethene           | 20.0        | 18.83      |               | ug/L |   | 94   | 70 - 128    |
| Toluene                     | 20.0        | 19.56      |               | ug/L |   | 98   | 74 - 120    |
| trans-1,2-Dichloroethene    | 20.0        | 19.64      |               | ug/L |   | 98   | 67 - 127    |
| trans-1,3-Dichloropropene   | 20.0        | 16.83      |               | ug/L |   | 84   | 67 - 123    |
| trans-1,4-Dichloro-2-butene | 20.0        | 17.89      |               | ug/L |   | 89   | 50 - 150    |
| Trichloroethene             | 20.0        | 17.65      |               | ug/L |   | 88   | 70 - 128    |
| Vinyl acetate               | 40.0        | 30.89      |               | ug/L |   | 77   | 50 - 150    |
| Xylenes, Total              | 40.0        | 37.38      |               | ug/L |   | 93   | 74 - 121    |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 99            |               | 76 - 130 |
| Toluene-d8 (Surr)           | 98            |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 96            |               | 80 - 120 |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: LCS 310-455442/8

Matrix: Water

Analysis Batch: 455442

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|------------------------|-------------|------------|---------------|------|---|------|-------------|
| Bromomethane           | 20.0        | 20.70      |               | ug/L |   | 104  | 33 - 138    |
| Chloroethane           | 20.0        | 20.27      |               | ug/L |   | 101  | 59 - 139    |
| Chloromethane          | 20.0        | 18.31      |               | ug/L |   | 92   | 52 - 146    |
| Trichlorofluoromethane | 20.0        | 25.45      |               | ug/L |   | 127  | 55 - 150    |
| Vinyl chloride         | 20.0        | 20.20      |               | ug/L |   | 101  | 60 - 142    |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 117           |               | 76 - 130 |
| Toluene-d8 (Surr)           | 95            |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 97            |               | 80 - 120 |

Lab Sample ID: 310-306752-3 MS

Matrix: Water

Analysis Batch: 455442

Client Sample ID: MW-27

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| 1,1,1,2-Tetrachloroethane   | <0.380        |                  | 25.0        | 20.36     |              | ug/L |   | 81   | 55 - 121    |
| 1,1,1-Trichloroethane       | <0.190        |                  | 25.0        | 20.60     |              | ug/L |   | 82   | 53 - 130    |
| 1,1,2,2-Tetrachloroethane   | <0.470        |                  | 25.0        | 18.81     |              | ug/L |   | 75   | 55 - 123    |
| 1,1,2-Trichloroethane       | <0.450        |                  | 25.0        | 19.23     |              | ug/L |   | 77   | 60 - 121    |
| 1,1-Dichloroethane          | <0.220        |                  | 25.0        | 19.90     |              | ug/L |   | 80   | 53 - 127    |
| 1,1-Dichloroethene          | <0.560        |                  | 25.0        | 20.27     |              | ug/L |   | 81   | 51 - 134    |
| 1,2,3-Trichloropropane      | <0.590        |                  | 25.0        | 18.27     |              | ug/L |   | 73   | 56 - 122    |
| 1,2-Dibromo-3-Chloropropane | <1.20         |                  | 25.0        | 21.84     |              | ug/L |   | 87   | 44 - 138    |
| 1,2-Dibromoethane (EDB)     | <0.340        |                  | 25.0        | 17.75     |              | ug/L |   | 71   | 60 - 122    |
| 1,2-Dichlorobenzene         | <0.370        |                  | 25.0        | 21.26     |              | ug/L |   | 85   | 60 - 120    |
| 1,2-Dichloroethane          | <0.390        |                  | 25.0        | 21.71     |              | ug/L |   | 87   | 48 - 128    |
| 1,2-Dichloropropane         | <0.270        |                  | 25.0        | 19.32     |              | ug/L |   | 77   | 59 - 128    |
| 1,4-Dichlorobenzene         | <0.230        |                  | 25.0        | 20.66     |              | ug/L |   | 83   | 58 - 120    |
| 2-Butanone (MEK)            | <2.10         |                  | 50.0        | 34.69     |              | ug/L |   | 69   | 46 - 134    |
| 2-Hexanone                  | <2.00         |                  | 50.0        | 37.07     |              | ug/L |   | 74   | 46 - 141    |
| 4-Methyl-2-pentanone (MIBK) | <2.10         |                  | 50.0        | 40.60     |              | ug/L |   | 81   | 49 - 138    |
| Acetone                     | <3.10         |                  | 50.0        | 57.67     |              | ug/L |   | 115  | 39 - 141    |
| Acrylonitrile               | <2.20         |                  | 250         | 182.9     |              | ug/L |   | 73   | 41 - 150    |
| Benzene                     | 0.262 J       |                  | 25.0        | 19.86     |              | ug/L |   | 78   | 48 - 125    |
| Bromochloromethane          | <0.540        |                  | 25.0        | 20.77     |              | ug/L |   | 83   | 55 - 131    |
| Bromodichloromethane        | <0.390        |                  | 25.0        | 19.57     |              | ug/L |   | 78   | 53 - 122    |
| Bromoform                   | <0.780        |                  | 25.0        | 18.68     |              | ug/L |   | 75   | 47 - 122    |
| Carbon disulfide            | <0.450        |                  | 25.0        | 21.98     |              | ug/L |   | 88   | 45 - 137    |
| Carbon tetrachloride        | <0.650        |                  | 25.0        | 21.60     |              | ug/L |   | 86   | 45 - 136    |
| Chlorobenzene               | <0.400        |                  | 25.0        | 19.97     |              | ug/L |   | 80   | 59 - 120    |
| Chlorodibromomethane        | <0.750        |                  | 25.0        | 18.27     |              | ug/L |   | 73   | 53 - 121    |
| Chloroform                  | <1.30         |                  | 25.0        | 21.93     |              | ug/L |   | 88   | 52 - 122    |
| cis-1,2-Dichloroethene      | 1.53          |                  | 25.0        | 22.09     |              | ug/L |   | 82   | 51 - 123    |
| cis-1,3-Dichloropropene     | <0.250        |                  | 25.0        | 17.24     |              | ug/L |   | 69   | 55 - 123    |
| Dibromomethane              | <0.330        |                  | 25.0        | 21.16     |              | ug/L |   | 85   | 57 - 122    |
| Ethylbenzene                | <0.310        |                  | 25.0        | 20.27     |              | ug/L |   | 81   | 53 - 120    |
| Iodomethane                 | <7.00         |                  | 25.0        | 20.28     |              | ug/L |   | 81   | 18 - 150    |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: 310-306752-3 MS

Matrix: Water

Analysis Batch: 455442

Client Sample ID: MW-27

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------------------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| Methylene Chloride          | <1.70         |                  | 25.0        | 20.55     |              | ug/L |   | 82   | 59 - 128    |
| Styrene                     | <0.370        |                  | 25.0        | 18.89     |              | ug/L |   | 76   | 50 - 125    |
| Tetrachloroethene           | <0.480        |                  | 25.0        | 20.44     |              | ug/L |   | 82   | 51 - 128    |
| Toluene                     | <0.430        |                  | 25.0        | 21.19     |              | ug/L |   | 85   | 52 - 120    |
| trans-1,2-Dichloroethene    | <0.270        |                  | 25.0        | 20.71     |              | ug/L |   | 83   | 53 - 127    |
| trans-1,3-Dichloropropene   | <0.560        |                  | 25.0        | 16.82     |              | ug/L |   | 67   | 50 - 123    |
| trans-1,4-Dichloro-2-butene | <1.10         |                  | 25.0        | 17.24     |              | ug/L |   | 69   | 28 - 150    |
| Trichloroethene             | <0.430        |                  | 25.0        | 19.09     |              | ug/L |   | 76   | 50 - 128    |
| Vinyl acetate               | <2.50         |                  | 50.0        | 25.85     |              | ug/L |   | 52   | 31 - 150    |
| Xylenes, Total              | <0.400        |                  | 50.0        | 40.80     |              | ug/L |   | 82   | 50 - 122    |

| Surrogate                   | MS %Recovery | MS Qualifier | Limits   |
|-----------------------------|--------------|--------------|----------|
| Dibromofluoromethane (Surr) | 94           |              | 76 - 130 |
| Toluene-d8 (Surr)           | 99           |              | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 99           |              | 80 - 120 |

Lab Sample ID: 310-306752-3 MSD

Matrix: Water

Analysis Batch: 455442

Client Sample ID: MW-27

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|-----------------------------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| 1,1,1,2-Tetrachloroethane   | <0.380        |                  | 25.0        | 20.09      |               | ug/L |   | 80   | 55 - 121    | 1   | 20        |
| 1,1,1-Trichloroethane       | <0.190        |                  | 25.0        | 20.37      |               | ug/L |   | 81   | 53 - 130    | 1   | 20        |
| 1,1,2,2-Tetrachloroethane   | <0.470        |                  | 25.0        | 18.99      |               | ug/L |   | 76   | 55 - 123    | 1   | 20        |
| 1,1,2-Trichloroethane       | <0.450        |                  | 25.0        | 18.83      |               | ug/L |   | 75   | 60 - 121    | 2   | 20        |
| 1,1-Dichloroethane          | <0.220        |                  | 25.0        | 20.25      |               | ug/L |   | 81   | 53 - 127    | 2   | 20        |
| 1,1-Dichloroethene          | <0.560        |                  | 25.0        | 20.44      |               | ug/L |   | 82   | 51 - 134    | 1   | 20        |
| 1,2,3-Trichloropropane      | <0.590        |                  | 25.0        | 18.91      |               | ug/L |   | 76   | 56 - 122    | 3   | 21        |
| 1,2-Dibromo-3-Chloropropane | <1.20         |                  | 25.0        | 19.78      |               | ug/L |   | 79   | 44 - 138    | 10  | 24        |
| 1,2-Dibromoethane (EDB)     | <0.340        |                  | 25.0        | 17.97      |               | ug/L |   | 72   | 60 - 122    | 1   | 20        |
| 1,2-Dichlorobenzene         | <0.370        |                  | 25.0        | 20.44      |               | ug/L |   | 82   | 60 - 120    | 4   | 20        |
| 1,2-Dichloroethane          | <0.390        |                  | 25.0        | 22.12      |               | ug/L |   | 88   | 48 - 128    | 2   | 20        |
| 1,2-Dichloropropane         | <0.270        |                  | 25.0        | 19.33      |               | ug/L |   | 77   | 59 - 128    | 0   | 20        |
| 1,4-Dichlorobenzene         | <0.230        |                  | 25.0        | 19.35      |               | ug/L |   | 77   | 58 - 120    | 7   | 20        |
| 2-Butanone (MEK)            | <2.10         |                  | 50.0        | 40.18      |               | ug/L |   | 80   | 46 - 134    | 15  | 23        |
| 2-Hexanone                  | <2.00         |                  | 50.0        | 38.42      |               | ug/L |   | 77   | 46 - 141    | 4   | 20        |
| 4-Methyl-2-pentanone (MIBK) | <2.10         |                  | 50.0        | 38.08      |               | ug/L |   | 76   | 49 - 138    | 6   | 20        |
| Acetone                     | <3.10         |                  | 50.0        | 59.69      |               | ug/L |   | 119  | 39 - 141    | 3   | 23        |
| Acrylonitrile               | <2.20         |                  | 250         | 184.4      |               | ug/L |   | 74   | 41 - 150    | 1   | 20        |
| Benzene                     | 0.262         | J                | 25.0        | 19.59      |               | ug/L |   | 77   | 48 - 125    | 1   | 20        |
| Bromochloromethane          | <0.540        |                  | 25.0        | 21.32      |               | ug/L |   | 85   | 55 - 131    | 3   | 21        |
| Bromodichloromethane        | <0.390        |                  | 25.0        | 19.83      |               | ug/L |   | 79   | 53 - 122    | 1   | 20        |
| Bromoform                   | <0.780        |                  | 25.0        | 18.40      |               | ug/L |   | 74   | 47 - 122    | 2   | 20        |
| Carbon disulfide            | <0.450        |                  | 25.0        | 19.35      |               | ug/L |   | 77   | 45 - 137    | 13  | 24        |
| Carbon tetrachloride        | <0.650        |                  | 25.0        | 21.49      |               | ug/L |   | 86   | 45 - 136    | 1   | 20        |
| Chlorobenzene               | <0.400        |                  | 25.0        | 19.85      |               | ug/L |   | 79   | 59 - 120    | 1   | 20        |
| Chlorodibromomethane        | <0.750        |                  | 25.0        | 18.80      |               | ug/L |   | 75   | 53 - 121    | 3   | 20        |
| Chloroform                  | <1.30         |                  | 25.0        | 21.49      |               | ug/L |   | 86   | 52 - 122    | 2   | 20        |

Eurofins Cedar Falls

## QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

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

Lab Sample ID: 310-306752-3 MSD

Matrix: Water

Analysis Batch: 455442

Client Sample ID: MW-27

Prep Type: Total/NA

| Analyte                     | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|-----------------------------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| cis-1,2-Dichloroethene      | 1.53          |                  | 25.0        | 21.21      |               | ug/L |   | 79   | 51 - 123    | 4   | 20        |
| cis-1,3-Dichloropropene     | <0.250        |                  | 25.0        | 17.43      |               | ug/L |   | 70   | 55 - 123    | 1   | 20        |
| Dibromomethane              | <0.330        |                  | 25.0        | 21.22      |               | ug/L |   | 85   | 57 - 122    | 0   | 20        |
| Ethylbenzene                | <0.310        |                  | 25.0        | 20.14      |               | ug/L |   | 81   | 53 - 120    | 1   | 20        |
| Iodomethane                 | <7.00         |                  | 25.0        | 23.01      |               | ug/L |   | 92   | 18 - 150    | 13  | 32        |
| Methylene Chloride          | <1.70         |                  | 25.0        | 20.02      |               | ug/L |   | 80   | 59 - 128    | 3   | 20        |
| Styrene                     | <0.370        |                  | 25.0        | 18.92      |               | ug/L |   | 76   | 50 - 125    | 0   | 20        |
| Tetrachloroethene           | <0.480        |                  | 25.0        | 20.79      |               | ug/L |   | 83   | 51 - 128    | 2   | 20        |
| Toluene                     | <0.430        |                  | 25.0        | 20.99      |               | ug/L |   | 84   | 52 - 120    | 1   | 20        |
| trans-1,2-Dichloroethene    | <0.270        |                  | 25.0        | 19.73      |               | ug/L |   | 79   | 53 - 127    | 5   | 20        |
| trans-1,3-Dichloropropene   | <0.560        |                  | 25.0        | 17.32      |               | ug/L |   | 69   | 50 - 123    | 3   | 20        |
| trans-1,4-Dichloro-2-butene | <1.10         |                  | 25.0        | 19.30      |               | ug/L |   | 77   | 28 - 150    | 11  | 24        |
| Trichloroethene             | <0.430        |                  | 25.0        | 17.87      |               | ug/L |   | 71   | 50 - 128    | 7   | 20        |
| Vinyl acetate               | <2.50         |                  | 50.0        | 25.52      |               | ug/L |   | 51   | 31 - 150    | 1   | 25        |
| Xylenes, Total              | <0.400        |                  | 50.0        | 40.13      |               | ug/L |   | 80   | 50 - 122    | 2   | 20        |

| Surrogate                   | MSD %Recovery | MSD Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| Dibromofluoromethane (Surr) | 100           |               | 76 - 130 |
| Toluene-d8 (Surr)           | 101           |               | 80 - 120 |
| 4-Bromofluorobenzene (Surr) | 98            |               | 80 - 120 |

### Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 310-455488/1-A

Matrix: Water

Analysis Batch: 455989

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455488

| Analyte            | MB Result | MB Qualifier | RL     | MDL    | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------|-----------|--------------|--------|--------|------|---|----------------|----------------|---------|
| beta-BHC           | <0.0415   |              | 0.0989 | 0.0415 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| delta-BHC          | <0.0316   |              | 0.0989 | 0.0316 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| Dieldrin           | <0.0208   |              | 0.0989 | 0.0208 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| Endosulfan sulfate | <0.0178   |              | 0.0989 | 0.0178 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| Endrin             | <0.0277   |              | 0.0989 | 0.0277 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| Endrin aldehyde    | <0.0267   |              | 0.0989 | 0.0267 | ug/L |   | 05/22/25 13:17 | 05/28/25 17:32 | 1       |

| Surrogate                     | MB %Recovery | MB Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-------------------------------|--------------|--------------|----------|----------------|----------------|---------|
| DCB Decachlorobiphenyl (Surr) | 57           |              | 10 - 150 | 05/22/25 13:17 | 05/28/25 17:32 | 1       |
| Tetrachloro-m-xylene (Surr)   | 54           |              | 17 - 150 | 05/22/25 13:17 | 05/28/25 17:32 | 1       |

Lab Sample ID: LCS 310-455488/2-A

Matrix: Water

Analysis Batch: 455989

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455488

| Analyte            | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|--------------------|-------------|------------|---------------|------|---|------|-------------|
| beta-BHC           | 2.79        | 2.012      |               | ug/L |   | 72   | 53 - 145    |
| delta-BHC          | 2.79        | 1.990      |               | ug/L |   | 71   | 49 - 148    |
| Dieldrin           | 2.79        | 2.070      |               | ug/L |   | 74   | 43 - 150    |
| Endosulfan sulfate | 2.79        | 2.113      |               | ug/L |   | 76   | 54 - 150    |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

## Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 310-455488/2-A

Matrix: Water

Analysis Batch: 455989

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455488

| Analyte         | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------------|-------------|------------|---------------|------|---|------|-------------|
| Endrin          | 2.79        | 2.006      |               | ug/L |   | 72   | 41 - 150    |
| Endrin aldehyde | 2.79        | 1.835      |               | ug/L |   | 66   | 42 - 147    |

| Surrogate                     | LCS %Recovery | LCS Qualifier | Limits   |
|-------------------------------|---------------|---------------|----------|
| DCB Decachlorobiphenyl (Surr) | 60            |               | 10 - 150 |
| Tetrachloro-m-xylene (Surr)   | 66            |               | 17 - 150 |

Lab Sample ID: 310-306752-3 MS

Matrix: Water

Analysis Batch: 455989

Client Sample ID: MW-27

Prep Type: Total/NA

Prep Batch: 455488

| Analyte            | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|--------------------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| beta-BHC           | <0.0407       |                  | 2.72        | 2.341     |              | ug/L |   | 86   | 32 - 150    |
| delta-BHC          | <0.0310       |                  | 2.72        | 2.330     |              | ug/L |   | 86   | 30 - 150    |
| Dieldrin           | <0.0204       |                  | 2.72        | 2.468     |              | ug/L |   | 91   | 24 - 150    |
| Endosulfan sulfate | <0.0175       |                  | 2.72        | 2.599     |              | ug/L |   | 95   | 39 - 150    |
| Endrin             | <0.0271       |                  | 2.72        | 2.513     |              | ug/L |   | 92   | 18 - 150    |
| Endrin aldehyde    | <0.0262       |                  | 2.72        | 2.530     |              | ug/L |   | 93   | 26 - 150    |

| Surrogate                     | MS %Recovery | MS Qualifier | Limits   |
|-------------------------------|--------------|--------------|----------|
| DCB Decachlorobiphenyl (Surr) | 82           |              | 10 - 150 |
| Tetrachloro-m-xylene (Surr)   | 85           |              | 17 - 150 |

Lab Sample ID: 310-306752-3 MSD

Matrix: Water

Analysis Batch: 455989

Client Sample ID: MW-27

Prep Type: Total/NA

Prep Batch: 455488

| Analyte            | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|--------------------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| beta-BHC           | <0.0407       |                  | 2.70        | 2.070      |               | ug/L |   | 77   | 32 - 150    | 12  | 35        |
| delta-BHC          | <0.0310       |                  | 2.70        | 2.016      |               | ug/L |   | 75   | 30 - 150    | 5   | 35        |
| Dieldrin           | <0.0204       |                  | 2.70        | 2.118      |               | ug/L |   | 78   | 24 - 150    | 15  | 35        |
| Endosulfan sulfate | <0.0175       |                  | 2.70        | 2.022      |               | ug/L |   | 75   | 39 - 150    | 25  | 35        |
| Endrin             | <0.0271       |                  | 2.70        | 2.063      |               | ug/L |   | 76   | 18 - 150    | 20  | 35        |
| Endrin aldehyde    | <0.0262       |                  | 2.70        | 2.004      |               | ug/L |   | 74   | 26 - 150    | 23  | 35        |

| Surrogate                     | MSD %Recovery | MSD Qualifier | Limits   |
|-------------------------------|---------------|---------------|----------|
| DCB Decachlorobiphenyl (Surr) | 78            |               | 10 - 150 |
| Tetrachloro-m-xylene (Surr)   | 77            |               | 17 - 150 |

## Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-455394/1-A

Matrix: Water

Analysis Batch: 455874

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455394

| Analyte | MB Result | MB Qualifier | RL      | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|-----------|--------------|---------|----------|------|---|----------------|----------------|---------|
| Arsenic | <0.000530 |              | 0.00200 | 0.000530 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Barium  | <0.000660 |              | 0.00200 | 0.000660 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-455394/1-A

Matrix: Water

Analysis Batch: 455874

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455394

| Analyte  | MB<br>Result | MB<br>Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------------|-----------------|----------|----------|------|---|----------------|----------------|---------|
| Cadmium  | <0.000100    |                 | 0.000200 | 0.000100 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Chromium | <0.00180     |                 | 0.00500  | 0.00180  | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Cobalt   | <0.000170    |                 | 0.000500 | 0.000170 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Copper   | <0.00320     |                 | 0.00500  | 0.00320  | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Lead     | <0.000330    |                 | 0.000500 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Nickel   | <0.00230     |                 | 0.00500  | 0.00230  | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Selenium | <0.00140     |                 | 0.00500  | 0.00140  | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Silver   | <0.000500    |                 | 0.00100  | 0.000500 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Thallium | <0.000570    |                 | 0.00100  | 0.000570 | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Vanadium | <0.00170     |                 | 0.00500  | 0.00170  | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |
| Zinc     | <0.0130      |                 | 0.0200   | 0.0130   | mg/L |   | 05/21/25 15:12 | 05/27/25 18:59 | 1       |

Lab Sample ID: MB 310-455394/1-A

Matrix: Water

Analysis Batch: 455968

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455394

| Analyte   | MB<br>Result | MB<br>Qualifier | RL      | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------|--------------|-----------------|---------|----------|------|---|----------------|----------------|---------|
| Antimony  | <0.00100     |                 | 0.00200 | 0.00100  | mg/L |   | 05/21/25 15:12 | 05/28/25 11:38 | 1       |
| Beryllium | <0.000330    |                 | 0.00100 | 0.000330 | mg/L |   | 05/21/25 15:12 | 05/28/25 11:38 | 1       |

Lab Sample ID: LCS 310-455394/2-A

Matrix: Water

Analysis Batch: 455874

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455394

| Analyte  | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|----------|----------------|---------------|------------------|------|---|------|----------------|
| Arsenic  | 0.600          | 0.5953        |                  | mg/L |   | 99   | 80 - 120       |
| Barium   | 0.300          | 0.2907        |                  | mg/L |   | 97   | 80 - 120       |
| Cadmium  | 0.300          | 0.2733        |                  | mg/L |   | 91   | 80 - 120       |
| Chromium | 0.300          | 0.2859        |                  | mg/L |   | 95   | 80 - 120       |
| Cobalt   | 0.300          | 0.2957        |                  | mg/L |   | 99   | 80 - 120       |
| Copper   | 0.600          | 0.5809        |                  | mg/L |   | 97   | 80 - 120       |
| Lead     | 0.600          | 0.5603        |                  | mg/L |   | 93   | 80 - 120       |
| Nickel   | 0.600          | 0.6111        |                  | mg/L |   | 102  | 80 - 120       |
| Selenium | 1.20           | 1.074         | E                | mg/L |   | 90   | 80 - 120       |
| Silver   | 0.300          | 0.2984        |                  | mg/L |   | 99   | 80 - 120       |
| Thallium | 0.250          | 0.2434        |                  | mg/L |   | 97   | 80 - 120       |
| Vanadium | 0.300          | 0.2911        |                  | mg/L |   | 97   | 80 - 120       |
| Zinc     | 0.600          | 0.5386        |                  | mg/L |   | 90   | 80 - 120       |

Lab Sample ID: LCS 310-455394/2-A

Matrix: Water

Analysis Batch: 455968

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 455394

| Analyte   | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|-----------|----------------|---------------|------------------|------|---|------|----------------|
| Antimony  | 0.600          | 0.6405        | E                | mg/L |   | 107  | 80 - 120       |
| Beryllium | 0.300          | 0.2891        |                  | mg/L |   | 96   | 80 - 120       |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-306752-1 MS

Matrix: Water

Analysis Batch: 455874

Client Sample ID: MW-51

Prep Type: Total/NA

Prep Batch: 455394

| Analyte  | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|----------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| Arsenic  | <0.000530     | F1               | 0.600       | 0.5630    |              | mg/L |   | 94   | 75 - 125    |
| Barium   | 0.00575       | F1               | 0.300       | 0.2654    |              | mg/L |   | 87   | 75 - 125    |
| Cadmium  | <0.000100     | F1               | 0.300       | 0.2548    |              | mg/L |   | 85   | 75 - 125    |
| Chromium | <0.00180      | F1               | 0.300       | 0.2634    |              | mg/L |   | 88   | 75 - 125    |
| Cobalt   | <0.000170     | F1               | 0.300       | 0.2659    |              | mg/L |   | 89   | 75 - 125    |
| Copper   | <0.00320      | F1               | 0.600       | 0.5257    |              | mg/L |   | 88   | 75 - 125    |
| Lead     | <0.000330     | F1               | 0.600       | 0.4954    |              | mg/L |   | 83   | 75 - 125    |
| Nickel   | 0.00744       | F1               | 0.600       | 0.5564    |              | mg/L |   | 91   | 75 - 125    |
| Selenium | <0.00140      | F1               | 1.20        | 1.052     | E            | mg/L |   | 88   | 75 - 125    |
| Silver   | <0.000500     | F1               | 0.300       | 0.2962    |              | mg/L |   | 99   | 75 - 125    |
| Thallium | 0.000686      | J F1 F2          | 0.250       | 0.4368    | F1           | mg/L |   | 174  | 75 - 125    |
| Vanadium | <0.00170      | F1               | 0.300       | 0.2777    |              | mg/L |   | 93   | 75 - 125    |
| Zinc     | 0.272         | F1               | 0.600       | 0.7774    |              | mg/L |   | 84   | 75 - 125    |

Lab Sample ID: 310-306752-1 MS

Matrix: Water

Analysis Batch: 455968

Client Sample ID: MW-51

Prep Type: Total/NA

Prep Batch: 455394

| Analyte   | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|-----------|---------------|------------------|-------------|-----------|--------------|------|---|------|-------------|
| Antimony  | 0.00625       | J                | 0.600       | 0.5673    |              | mg/L |   | 94   | 75 - 125    |
| Beryllium | <0.00132      |                  | 0.300       | 0.2627    |              | mg/L |   | 88   | 75 - 125    |

Lab Sample ID: 310-306752-1 MSD

Matrix: Water

Analysis Batch: 455874

Client Sample ID: MW-51

Prep Type: Total/NA

Prep Batch: 455394

| Analyte  | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|----------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| Arsenic  | <0.000530     | F1               | 0.600       | 0.6082     |               | mg/L |   | 101  | 75 - 125    | 8   | 20        |
| Barium   | 0.00575       | F1               | 0.300       | 0.2843     |               | mg/L |   | 93   | 75 - 125    | 7   | 20        |
| Cadmium  | <0.000100     | F1               | 0.300       | 0.2746     |               | mg/L |   | 92   | 75 - 125    | 7   | 20        |
| Chromium | <0.00180      | F1               | 0.300       | 0.2818     |               | mg/L |   | 94   | 75 - 125    | 7   | 20        |
| Cobalt   | <0.000170     | F1               | 0.300       | 0.2871     |               | mg/L |   | 96   | 75 - 125    | 8   | 20        |
| Copper   | <0.00320      | F1               | 0.600       | 0.5557     |               | mg/L |   | 93   | 75 - 125    | 6   | 20        |
| Lead     | <0.000330     | F1               | 0.600       | 0.5344     |               | mg/L |   | 89   | 75 - 125    | 8   | 20        |
| Nickel   | 0.00744       | F1               | 0.600       | 0.5873     |               | mg/L |   | 97   | 75 - 125    | 5   | 20        |
| Selenium | <0.00140      | F1               | 1.20        | 1.131      | E             | mg/L |   | 94   | 75 - 125    | 7   | 20        |
| Silver   | <0.000500     | F1               | 0.300       | 0.2934     |               | mg/L |   | 98   | 75 - 125    | 1   | 20        |
| Thallium | 0.000686      | J F1 F2          | 0.250       | 0.1673     | F1 F2         | mg/L |   | 67   | 75 - 125    | 89  | 20        |
| Vanadium | <0.00170      | F1               | 0.300       | 0.2983     |               | mg/L |   | 99   | 75 - 125    | 7   | 20        |
| Zinc     | 0.272         | F1               | 0.600       | 0.8084     |               | mg/L |   | 89   | 75 - 125    | 4   | 20        |

Lab Sample ID: 310-306752-1 MSD

Matrix: Water

Analysis Batch: 455968

Client Sample ID: MW-51

Prep Type: Total/NA

Prep Batch: 455394

| Analyte   | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|-----------|---------------|------------------|-------------|------------|---------------|------|---|------|-------------|-----|-----------|
| Antimony  | 0.00625       | J                | 0.600       | 0.6142     |               | mg/L |   | 101  | 75 - 125    | 8   | 20        |
| Beryllium | <0.00132      |                  | 0.300       | 0.2913     |               | mg/L |   | 97   | 75 - 125    | 10  | 20        |

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# QC Sample Results

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

## Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 240-657097/1-A  
Matrix: Water  
Analysis Batch: 657142

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 657097

| Analyte | MB<br>Result | MB<br>Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------------|-----------------|------|------|------|---|----------------|----------------|---------|
| Sulfide | <1.41        |                 | 3.00 | 1.41 | mg/L |   | 05/22/25 10:48 | 05/22/25 14:47 | 1       |

Lab Sample ID: LCS 240-657097/2-A  
Matrix: Water  
Analysis Batch: 657142

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 657097

| Analyte | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|---------|----------------|---------------|------------------|------|---|------|----------------|
| Sulfide | 8.67           | 7.600         |                  | mg/L |   | 88   | 70 - 120       |

## Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-455263/1  
Matrix: Water  
Analysis Batch: 455263

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

| Analyte                | MB<br>Result | MB<br>Qualifier | RL   | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|--------------|-----------------|------|------|------|---|----------|----------------|---------|
| Total Suspended Solids | <3.50        |                 | 5.00 | 3.50 | mg/L |   |          | 05/20/25 16:10 | 1       |

Lab Sample ID: LCS 310-455263/2  
Matrix: Water  
Analysis Batch: 455263

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

| Analyte                | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|------------------------|----------------|---------------|------------------|------|---|------|----------------|
| Total Suspended Solids | 100            | 106.0         |                  | mg/L |   | 106  | 81 - 116       |

## QC Association Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### GC/MS VOA

#### Analysis Batch: 455314

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-1     | MW-51              | Total/NA  | Water  | 8260D  |            |
| 310-306752-2     | MW-60              | Total/NA  | Water  | 8260D  |            |
| MB 310-455314/6  | Method Blank       | Total/NA  | Water  | 8260D  |            |
| LCS 310-455314/7 | Lab Control Sample | Total/NA  | Water  | 8260D  |            |
| LCS 310-455314/8 | Lab Control Sample | Total/NA  | Water  | 8260D  |            |
| 310-306752-1 MS  | MW-51              | Total/NA  | Water  | 8260D  |            |
| 310-306752-1 MSD | MW-51              | Total/NA  | Water  | 8260D  |            |

#### Analysis Batch: 455442

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-3     | MW-27              | Total/NA  | Water  | 8260D  |            |
| 310-306752-4     | MW-50R             | Total/NA  | Water  | 8260D  |            |
| 310-306752-5     | Trip Blank         | Total/NA  | Water  | 8260D  |            |
| 310-306752-6     | Field Blank        | Total/NA  | Water  | 8260D  |            |
| MB 310-455442/6  | Method Blank       | Total/NA  | Water  | 8260D  |            |
| LCS 310-455442/7 | Lab Control Sample | Total/NA  | Water  | 8260D  |            |
| LCS 310-455442/8 | Lab Control Sample | Total/NA  | Water  | 8260D  |            |
| 310-306752-3 MS  | MW-27              | Total/NA  | Water  | 8260D  |            |
| 310-306752-3 MSD | MW-27              | Total/NA  | Water  | 8260D  |            |

### GC Semi VOA

#### Prep Batch: 455488

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-3       | MW-27              | Total/NA  | Water  | 3511   |            |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 3511   |            |
| MB 310-455488/1-A  | Method Blank       | Total/NA  | Water  | 3511   |            |
| LCS 310-455488/2-A | Lab Control Sample | Total/NA  | Water  | 3511   |            |
| 310-306752-3 MS    | MW-27              | Total/NA  | Water  | 3511   |            |
| 310-306752-3 MSD   | MW-27              | Total/NA  | Water  | 3511   |            |

#### Analysis Batch: 455989

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-3       | MW-27              | Total/NA  | Water  | 8081B  | 455488     |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 8081B  | 455488     |
| MB 310-455488/1-A  | Method Blank       | Total/NA  | Water  | 8081B  | 455488     |
| LCS 310-455488/2-A | Lab Control Sample | Total/NA  | Water  | 8081B  | 455488     |
| 310-306752-3 MS    | MW-27              | Total/NA  | Water  | 8081B  | 455488     |
| 310-306752-3 MSD   | MW-27              | Total/NA  | Water  | 8081B  | 455488     |

### Metals

#### Prep Batch: 455394

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-1       | MW-51              | Total/NA  | Water  | 3005A  |            |
| 310-306752-2       | MW-60              | Total/NA  | Water  | 3005A  |            |
| 310-306752-3       | MW-27              | Total/NA  | Water  | 3005A  |            |
| 310-306752-4       | MW-50R             | Total/NA  | Water  | 3005A  |            |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 3005A  |            |
| MB 310-455394/1-A  | Method Blank       | Total/NA  | Water  | 3005A  |            |
| LCS 310-455394/2-A | Lab Control Sample | Total/NA  | Water  | 3005A  |            |
| 310-306752-1 MS    | MW-51              | Total/NA  | Water  | 3005A  |            |

Eurofins Cedar Falls

## QC Association Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### Metals (Continued)

#### Prep Batch: 455394 (Continued)

| Lab Sample ID    | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|------------------|-----------|--------|--------|------------|
| 310-306752-1 MSD | MW-51            | Total/NA  | Water  | 3005A  |            |

#### Analysis Batch: 455874

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-1       | MW-51              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-2       | MW-60              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-3       | MW-27              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-4       | MW-50R             | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 6020B  | 455394     |
| MB 310-455394/1-A  | Method Blank       | Total/NA  | Water  | 6020B  | 455394     |
| LCS 310-455394/2-A | Lab Control Sample | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-1 MS    | MW-51              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-1 MSD   | MW-51              | Total/NA  | Water  | 6020B  | 455394     |

#### Analysis Batch: 455968

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-1       | MW-51              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-2       | MW-60              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-3       | MW-27              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-4       | MW-50R             | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 6020B  | 455394     |
| MB 310-455394/1-A  | Method Blank       | Total/NA  | Water  | 6020B  | 455394     |
| LCS 310-455394/2-A | Lab Control Sample | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-1 MS    | MW-51              | Total/NA  | Water  | 6020B  | 455394     |
| 310-306752-1 MSD   | MW-51              | Total/NA  | Water  | 6020B  | 455394     |

### General Chemistry

#### Analysis Batch: 455263

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method    | Prep Batch |
|------------------|--------------------|-----------|--------|-----------|------------|
| 310-306752-1     | MW-51              | Total/NA  | Water  | I-3765-85 |            |
| 310-306752-2     | MW-60              | Total/NA  | Water  | I-3765-85 |            |
| 310-306752-3     | MW-27              | Total/NA  | Water  | I-3765-85 |            |
| 310-306752-4     | MW-50R             | Total/NA  | Water  | I-3765-85 |            |
| 310-306752-6     | Field Blank        | Total/NA  | Water  | I-3765-85 |            |
| MB 310-455263/1  | Method Blank       | Total/NA  | Water  | I-3765-85 |            |
| LCS 310-455263/2 | Lab Control Sample | Total/NA  | Water  | I-3765-85 |            |

#### Prep Batch: 657097

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-1       | MW-51              | Total/NA  | Water  | 9030B  |            |
| 310-306752-2       | MW-60              | Total/NA  | Water  | 9030B  |            |
| 310-306752-3       | MW-27              | Total/NA  | Water  | 9030B  |            |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 9030B  |            |
| MB 240-657097/1-A  | Method Blank       | Total/NA  | Water  | 9030B  |            |
| LCS 240-657097/2-A | Lab Control Sample | Total/NA  | Water  | 9030B  |            |

#### Analysis Batch: 657142

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 310-306752-1  | MW-51            | Total/NA  | Water  | 9034   | 657097     |
| 310-306752-2  | MW-60            | Total/NA  | Water  | 9034   | 657097     |

Eurofins Cedar Falls

## QC Association Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### General Chemistry (Continued)

#### Analysis Batch: 657142 (Continued)

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-306752-3       | MW-27              | Total/NA  | Water  | 9034   | 657097     |
| 310-306752-6       | Field Blank        | Total/NA  | Water  | 9034   | 657097     |
| MB 240-657097/1-A  | Method Blank       | Total/NA  | Water  | 9034   | 657097     |
| LCS 240-657097/2-A | Lab Control Sample | Total/NA  | Water  | 9034   | 657097     |

# Lab Chronicle

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

**Client Sample ID: MW-51**

**Date Collected: 05/18/25 09:34**

**Date Received: 05/20/25 09:05**

**Lab Sample ID: 310-306752-1**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab     | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455314       | WSE8    | EET CF  | 05/21/25 16:23       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455874       | NFT2    | EET CF  | 05/27/25 19:04       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 4               | 455968       | NFT2    | EET CF  | 05/28/25 11:43       |
| Total/NA  | Prep       | 9030B        |     |                 | 657097       | C5SV    | EET CLE | 05/22/25 10:48       |
| Total/NA  | Analysis   | 9034         |     | 1               | 657142       | C5SV    | EET CLE | 05/22/25 14:47       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 455263       | MDU9    | EET CF  | 05/20/25 16:10       |

**Client Sample ID: MW-60**

**Date Collected: 05/18/25 06:54**

**Date Received: 05/20/25 09:05**

**Lab Sample ID: 310-306752-2**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab     | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455314       | WSE8    | EET CF  | 05/21/25 16:45       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455874       | NFT2    | EET CF  | 05/27/25 19:13       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455968       | NFT2    | EET CF  | 05/28/25 11:53       |
| Total/NA  | Prep       | 9030B        |     |                 | 657097       | C5SV    | EET CLE | 05/22/25 10:48       |
| Total/NA  | Analysis   | 9034         |     | 1               | 657142       | C5SV    | EET CLE | 05/22/25 14:47       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 455263       | MDU9    | EET CF  | 05/20/25 16:10       |

**Client Sample ID: MW-27**

**Date Collected: 05/18/25 11:10**

**Date Received: 05/20/25 09:05**

**Lab Sample ID: 310-306752-3**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab     | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455442       | WSE8    | EET CF  | 05/22/25 23:58       |
| Total/NA  | Prep       | 3511         |     |                 | 455488       | BW2O    | EET CF  | 05/22/25 13:17       |
| Total/NA  | Analysis   | 8081B        |     | 1               | 455989       | BW2O    | EET CF  | 05/28/25 18:24       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455874       | NFT2    | EET CF  | 05/27/25 19:16       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455968       | NFT2    | EET CF  | 05/28/25 11:56       |
| Total/NA  | Prep       | 9030B        |     |                 | 657097       | C5SV    | EET CLE | 05/22/25 10:48       |
| Total/NA  | Analysis   | 9034         |     | 1               | 657142       | C5SV    | EET CLE | 05/22/25 14:47       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 455263       | MDU9    | EET CF  | 05/20/25 16:10       |

**Client Sample ID: MW-50R**

**Date Collected: 05/18/25 12:30**

**Date Received: 05/20/25 09:05**

**Lab Sample ID: 310-306752-4**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455442       | WSE8    | EET CF | 05/23/25 00:20       |

Eurofins Cedar Falls

# Lab Chronicle

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

## Client Sample ID: MW-50R

## Lab Sample ID: 310-306752-4

Date Collected: 05/18/25 12:30

Matrix: Water

Date Received: 05/20/25 09:05

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455874       | NFT2    | EET CF | 05/27/25 19:18       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455968       | NFT2    | EET CF | 05/28/25 11:59       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 455263       | MDU9    | EET CF | 05/20/25 16:10       |

## Client Sample ID: Trip Blank

## Lab Sample ID: 310-306752-5

Date Collected: 05/18/25 00:00

Matrix: Water

Date Received: 05/20/25 09:05

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455442       | WSE8    | EET CF | 05/22/25 22:50       |

## Client Sample ID: Field Blank

## Lab Sample ID: 310-306752-6

Date Collected: 05/18/25 09:42

Matrix: Water

Date Received: 05/20/25 09:05

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab     | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|---------|----------------------|
| Total/NA  | Analysis   | 8260D        |     | 1               | 455442       | WSE8    | EET CF  | 05/22/25 23:13       |
| Total/NA  | Prep       | 3511         |     |                 | 455488       | BW20    | EET CF  | 05/22/25 13:17       |
| Total/NA  | Analysis   | 8081B        |     | 1               | 455989       | BW20    | EET CF  | 05/28/25 18:37       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455874       | NFT2    | EET CF  | 05/27/25 19:21       |
| Total/NA  | Prep       | 3005A        |     |                 | 455394       | QTZ5    | EET CF  | 05/21/25 15:12       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 455968       | NFT2    | EET CF  | 05/28/25 12:02       |
| Total/NA  | Prep       | 9030B        |     |                 | 657097       | C5SV    | EET CLE | 05/22/25 10:48       |
| Total/NA  | Analysis   | 9034         |     | 1               | 657142       | C5SV    | EET CLE | 05/22/25 14:47       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 455263       | MDU9    | EET CF  | 05/20/25 16:10       |

### Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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

## Accreditation/Certification Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

### Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|-----------|---------|-----------------------|-----------------|
| Iowa      | State   | 007                   | 12-01-25        |

### 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 |
|--------------------|---------------------|-----------------------|-----------------|
| Connecticut        | State               | PH-0806               | 12-31-26        |
| Georgia            | State               | 4062                  | 02-27-26        |
| Illinois           | NELAP               | 200004                | 08-31-25        |
| Iowa               | State               | 421                   | 06-01-25        |
| Kansas             | NELAP               | E-10336               | 01-31-26        |
| Kentucky (UST)     | State               | 112225                | 02-28-26        |
| Kentucky (WW)      | State               | KY98016               | 12-31-25        |
| Minnesota          | NELAP               | 039-999-348           | 12-31-25        |
| New Hampshire      | NELAP               | 225024                | 09-30-25        |
| New Jersey         | NELAP               | OH001                 | 07-03-25        |
| New York           | NELAP               | 10975                 | 05-26-25        |
| North Dakota       | State               | R-244                 | 02-27-26        |
| Ohio               | State               | 8303                  | 11-04-25        |
| Ohio VAP           | State               | ORELAP 4062           | 02-28-26        |
| Oregon             | NELAP               | 4062                  | 02-27-26        |
| Pennsylvania       | NELAP               | 68-00340              | 08-31-25        |
| Texas              | NELAP               | T104704517-22-19      | 08-31-25        |
| US Fish & Wildlife | US Federal Programs | A26406                | 02-28-26        |
| USDA               | US Federal Programs | P330-18-00281         | 01-05-27        |
| Virginia           | NELAP               | 460175                | 09-14-25        |
| West Virginia DEP  | State               | 210                   | 12-31-25        |
| Wisconsin          | State               | 399167560             | 08-31-25        |

## Method Summary

Client: Hall Engineering Company  
Project/Site: Appanoose County Landfill - Spring 2025

Job ID: 310-306752-1

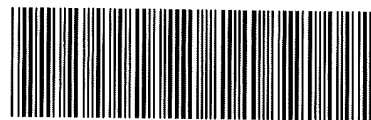
| Method    | Method Description                                 | Protocol | Laboratory |
|-----------|----------------------------------------------------|----------|------------|
| 8260D     | Volatile Organic Compounds by GC/MS                | SW846    | EET CF     |
| 8081B     | Organochlorine Pesticides (GC)                     | SW846    | EET CF     |
| 6020B     | Metals (ICP/MS)                                    | SW846    | EET CF     |
| 9034      | Sulfide, Acid soluble and Insoluble (Titrimetric)  | SW846    | EET CLE    |
| I-3765-85 | Residue, Non-filterable (TSS)                      | USGS     | EET CF     |
| 3005A     | Preparation, Total Metals                          | SW846    | EET CF     |
| 3511      | Microextraction of Organic Compounds               | SW846    | EET CF     |
| 5030B     | Purge and Trap                                     | SW846    | EET CF     |
| 9030B     | Sulfide, Distillation (Acid Soluble and Insoluble) | SW846    | EET CLE    |

### Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.  
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

### Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401  
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396



### Cooler/Sample Receipt and Temperature Log Form

|                                                                                                                                                                                                                                                                                                                                                                   |                                            |                                                                                                                                                                   |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Client Information</b>                                                                                                                                                                                                                                                                                                                                         |                                            |                                                                                                                                                                   |                    |
| Client: <u>Hall Eng Co</u>                                                                                                                                                                                                                                                                                                                                        |                                            |                                                                                                                                                                   |                    |
| City/State: <u>Centerville</u> <u>IA</u>                                                                                                                                                                                                                                                                                                                          | Project:                                   |                                                                                                                                                                   |                    |
| <b>Receipt Information</b>                                                                                                                                                                                                                                                                                                                                        |                                            |                                                                                                                                                                   |                    |
| Date/Time Received: <u>5/20/25</u> <u>0905</u>                                                                                                                                                                                                                                                                                                                    | Received By: <u>[Signature]</u>            |                                                                                                                                                                   |                    |
| Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee<br><input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____ |                                            |                                                                                                                                                                   |                    |
| <b>Condition of Cooler/Containers</b>                                                                                                                                                                                                                                                                                                                             |                                            |                                                                                                                                                                   |                    |
| Sample(s) received in Cooler?                                                                                                                                                                                                                                                                                                                                     |                                            | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler ID. _____                                                                      |                    |
| Multiple Coolers?                                                                                                                                                                                                                                                                                                                                                 |                                            | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler # _____ of _____                                                               |                    |
| Cooler Custody Seals Present?                                                                                                                                                                                                                                                                                                                                     |                                            | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |                    |
| Sample Custody Seals Present?                                                                                                                                                                                                                                                                                                                                     |                                            | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |                    |
| Trip Blank Present?                                                                                                                                                                                                                                                                                                                                               |                                            | <input type="checkbox"/> Yes <input type="checkbox"/> No If yes: Which VOA samples are in cooler? ↓                                                               |                    |
| <b>Temperature Record</b>                                                                                                                                                                                                                                                                                                                                         |                                            |                                                                                                                                                                   |                    |
| Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE                                                                                                                                                                       |                                            |                                                                                                                                                                   |                    |
| Thermometer ID: <u>R</u>                                                                                                                                                                                                                                                                                                                                          |                                            | Correction Factor (°C): <u>+0.0</u>                                                                                                                               |                    |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature                                                                                                                                                                                                                                    |                                            |                                                                                                                                                                   |                    |
| Uncorrected Temp (°C):                                                                                                                                                                                                                                                                                                                                            |                                            | Corrected Temp (°C):                                                                                                                                              |                    |
| • Sample Container Temperature                                                                                                                                                                                                                                                                                                                                    |                                            |                                                                                                                                                                   |                    |
| Container(s) used:                                                                                                                                                                                                                                                                                                                                                | <u>CONTAINER 1</u><br><u>PL 250 Nitric</u> |                                                                                                                                                                   | <u>CONTAINER 2</u> |
| Uncorrected Temp (°C):                                                                                                                                                                                                                                                                                                                                            | <u>3.6</u>                                 |                                                                                                                                                                   |                    |
| Corrected Temp (°C):                                                                                                                                                                                                                                                                                                                                              | <u>3.6</u>                                 |                                                                                                                                                                   |                    |
| <b>Exceptions Noted</b>                                                                                                                                                                                                                                                                                                                                           |                                            |                                                                                                                                                                   |                    |
| 1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                               |                                            |                                                                                                                                                                   |                    |
| 2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                  |                                            |                                                                                                                                                                   |                    |
| NOTE: If yes, contact PM before proceeding. If no, proceed with login                                                                                                                                                                                                                                                                                             |                                            |                                                                                                                                                                   |                    |
| <b>Additional Comments</b>                                                                                                                                                                                                                                                                                                                                        |                                            |                                                                                                                                                                   |                    |
|                                                                                                                                                                                                                                                                                                                                                                   |                                            |                                                                                                                                                                   |                    |
|                                                                                                                                                                                                                                                                                                                                                                   |                                            |                                                                                                                                                                   |                    |
|                                                                                                                                                                                                                                                                                                                                                                   |                                            |                                                                                                                                                                   |                    |



## SAMPLE LABEL DATA

All samples collected for the Rathbun Area Solid Waste Management Commission – Appanoose County Sanitary Landfill

All samples collected by Hall Engineering Company/Bill Buss.

### NORTH LANDFILL – Spring 2025

#### **MW-51:**

6020B – Appendix 1 Metals Sample Collected 5-18-2025 @ 9:34 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-18-2025 @ 9:34 AM

9034\_Calc – Sulfide Sample Collected 5-18-2025 @ 9:34 AM

I\_3765\_85 – Residue (TSS) Sample Collected 5-18-2025 @ 9:34 AM

#### **MW-27:**

6020B – Appendix 1 Metals Sample Collected 5-18-2025 @ 11:10 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-18-2025 @ 11:10 AM

8081B – (MOD) Standard Pesticides – Short List Sample Collected 5-18-2025 @ 11:10 AM

9034\_Calc – Sulfide Sample Collected 5-18-2025 @ 11:10 AM

I\_3765\_85 – Residue (TSS) Sample Collected 5-18-2025 @ 11:10 AM

#### **MW-50R:**

6020B – Appendix 1 Metals Sample Collected 5-18-2025 @ 12:30 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-18-2025 @ 12:30 AM

I\_3765\_85 – Residue (TSS) Sample Collected 5-18-2025 @ 12:30 AM

#### **MW-60:**

6020B – Appendix 1 Metals Sample Collected 5-18-2025 @ 6:54 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-18-2025 @ 6:54 AM

9034\_Calc - Sulfide Sample Collected 5-18-2025 @ 6:54 AM

I\_3765\_85 – Residue (TSS) Sample Collected 5-18-2025 @ 6:54 AM

3019 Venture Way  
Cedar Falls, IA 50613  
Phone: 319-277-2401 Fax: 319-277-2425

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## Environment Testing

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|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------|--------------------------------------|
| Eurofins - Cleveland Sample Receipt Form/Narrative                                                                                                 |                    | Login #                             |                                      |
| Barberton Facility                                                                                                                                 |                    | Cooler unpacked by: <u>JE</u>       |                                      |
| Client <u>Eurofins Cedar Falls</u>                                                                                                                 |                    | Site Name                           |                                      |
| Cooler Received on <u>5-21-25</u>                                                                                                                  | UPS FAS Waypoint   | Opened on <u>5-21-25</u>            |                                      |
| FedEx: 1 <sup>st</sup> Grd Exp                                                                                                                     |                    | Client Drop Off                     | Eurofins Courier Other               |
| Receipt After-Hours Drop-off Date/Time                                                                                                             |                    | Storage Location                    |                                      |
| Eurofins Cooler # <u>01</u>                                                                                                                        | Foam Box           | Client Cooler                       | Box Other                            |
| Packing material used: Bubble Wrap Foam Plastic Bag None Other                                                                                     |                    |                                     |                                      |
| COOLANT: <u>Wet Ice</u> Blue Ice Dry Ice Water None                                                                                                |                    |                                     |                                      |
| <input type="checkbox"/> See Multiple Cooler Form                                                                                                  |                    |                                     |                                      |
| 1. Cooler temperature upon receipt                                                                                                                 |                    |                                     |                                      |
| IR GUN # <u>13</u>                                                                                                                                 | (CF <u>0.5</u> °C) | Observed Cooler Temp. <u>1.3</u> °C | Corrected Cooler Temp. <u>1.8</u> °C |
| 2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity                                                                      |                    |                                     |                                      |
| -Were the seals on the outside of the cooler(s) signed & dated? Yes <u>NO</u> No <u>NA</u>                                                         |                    |                                     |                                      |
| -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes <u>NO</u> No <u>NA</u>                                                 |                    |                                     |                                      |
| -Were tamper/custody seals intact and uncompromised? Yes <u>NO</u> No <u>NA</u>                                                                    |                    |                                     |                                      |
| 3. Shippers' packing slip attached to the cooler(s)? Yes <u>NO</u> No <u>NA</u>                                                                    |                    |                                     |                                      |
| 4. Did custody papers accompany the sample(s)? Yes <u>NO</u> No <u>NA</u>                                                                          |                    |                                     |                                      |
| 5. Were the custody papers relinquished & signed in the appropriate place? Yes <u>NO</u> No <u>NA</u>                                              |                    |                                     |                                      |
| 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes <u>NO</u> No <u>NA</u>                                      |                    |                                     |                                      |
| 7. Did all bottles arrive in good condition (Unbroken)? Yes <u>NO</u> No <u>NA</u>                                                                 |                    |                                     |                                      |
| 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes <u>NO</u> No <u>NA</u>                                                   |                    |                                     |                                      |
| 9. For each sample, does the COC specify preservatives (Y/N) # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes <u>NO</u> No <u>NA</u> |                    |                                     |                                      |
| 10. Were correct bottle(s) used for the test(s) indicated? Yes <u>NO</u> No <u>NA</u>                                                              |                    |                                     |                                      |
| 11. Sufficient quantity received to perform indicated analyses? Yes <u>NO</u> No <u>NA</u>                                                         |                    |                                     |                                      |
| 12. Are these work share samples and all listed on the COC? Yes <u>NO</u> No <u>NA</u>                                                             |                    |                                     |                                      |
| 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 <u>NO</u> No <u>NA</u> pH Strip Lot# HC463162                                 |                    |                                     |                                      |
| 14. Were VOAs on the COC? Yes <u>NO</u> No <u>NA</u>                                                                                               |                    |                                     |                                      |
| 15. Were air bubbles >6 mm in any VOA vials? <u>NO</u> Larger than this. Yes <u>NO</u> No <u>NA</u>                                                |                    |                                     |                                      |
| 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # <u>NO</u> Yes <u>NO</u> No <u>NA</u>                                           |                    |                                     |                                      |
| 17. Was a LL Hg or Me Hg trip blank present? Yes <u>NO</u> No <u>NA</u>                                                                            |                    |                                     |                                      |
| Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____                                                                           |                    |                                     |                                      |
| Concerning _____                                                                                                                                   |                    |                                     |                                      |
| 18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES <input type="checkbox"/> additional next page                                                          |                    | Labeled by: _____                   |                                      |
|                                                                                                                                                    |                    | Labels Verified 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: _____                                                                                             |                    |                                     |                                      |

Tests that are not checked for pH by Receiving: VOAs Oil and Grease TOC

## Login Sample Receipt Checklist

Client: Hall Engineering Company

Job Number: 310-306752-1

SDG Number:

**Login Number: 306752**

**List Number: 1**

**Creator: Homolar, Dana J**

**List Source: Eurofins Cedar Falls**

| Question                                                                                 | Answer | Comment |
|------------------------------------------------------------------------------------------|--------|---------|
| Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.      | N/A    |         |
| The cooler's custody seal, if present, is intact.                                        | N/A    |         |
| Sample custody seals, if present, are intact.                                            | N/A    |         |
| The cooler or samples do not appear to have been compromised or tampered with.           | True   |         |
| Samples were received on ice.                                                            | True   |         |
| Cooler Temperature is acceptable.                                                        | True   |         |
| Cooler Temperature is recorded.                                                          | True   |         |
| COC is present.                                                                          | True   |         |
| COC is filled out in ink and legible.                                                    | True   |         |
| COC is filled out with all pertinent information.                                        | True   |         |
| Is the Field Sampler's name present on COC?                                              | True   |         |
| There are no discrepancies between the containers received and the COC.                  | True   |         |
| Samples are received within Holding Time (excluding tests with immediate HTs)            | True   |         |
| Sample containers have legible labels.                                                   | True   |         |
| Containers are not broken or leaking.                                                    | True   |         |
| Sample collection date/times are provided.                                               | True   |         |
| Appropriate sample containers are used.                                                  | True   |         |
| Sample bottles are completely filled.                                                    | True   |         |
| Sample Preservation Verified.                                                            | True   |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs         | True   |         |
| Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4"). | True   |         |
| Multiphasic samples are not present.                                                     | True   |         |
| Samples do not require splitting or compositing.                                         | True   |         |
| Residual Chlorine Checked.                                                               | N/A    |         |