

February 24, 2025



Mr. Geoffrey Spain
 Land Quality Bureau
 Iowa Department of Natural Resources
 502 East 9th Street
 Des Moines, Iowa 50319-0034

**RE: Verification Sampling Results
 Passive Engineered Conveyance System (PECS-3)
 Boone County Sanitary Landfill 08-SDP-01-75P**

Dear Mr. Spain:

As reported on page 8 and 9 of the 2024 Annual Water Quality Report submitted January 28, 2025 (Doc #112027) volatile organic compound (VOC) detections were reported at PECS-3 on December 29, 2024. The reported compounds at PECS-3 warranted verification sampling.

Verification sampling at PECS-3 was completed January 23, 2025, and verified that acetone, 2-butanone (MEK), and toluene were not detected in PECS-3.

Recent VOC analyses at both GU-3 and PECS-3 are summarized below:

PECS-3 Evaluation

| Compounds (Historically Detected) | Detected at GU-3 | | | PECS Performance at PECS-3 | | | |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | Results 3/12/2024 (ug/L) | Results 9/30/2024 (ug/L) | Results 12/9/2024 (ug/L) | Results 3/12/2024 (ug/L) | Results 9/30/2024 (ug/L) | Results 12/9/2024 (ug/L) | Results 1/23/2025 (ug/L) |
| 1,1-dichloroethane | Submerged | <1.0 | <1.0 | Submerged | <1.0 | <1.0 | --- |
| 1,4-dichlorobenzene | Submerged | <1.0 | 1.2 | Submerged | <1.0 | <1.0 | --- |
| benzene | Submerged | 6.0 | 7.8 | Submerged | <1.0 | <1.0 | --- |
| chlorobenzene | Submerged | 1.3 | 1.8 | Submerged | <1.0 | <1.0 | --- |
| chloroethane | Submerged | 1.1 | 1.1 | Submerged | <1.0 | <1.0 | --- |
| cis-1,2- dichloroethylene | Submerged | 4.3 | 6.0 | Submerged | <1.0 | <1.0 | --- |
| dichlorofluoromethane | Submerged | <1.0 | <1.0 | Submerged | <1.0 | <1.0 | --- |
| ethylbenzene | Submerged | <1.0 | <1.0 | Submerged | <1.0 | <1.0 | --- |
| trichlorofluoromethane | Submerged | <1.0 | <1.0 | Submerged | <1.0 | <1.0 | --- |
| vinyl chloride | Submerged | 1.2 | 1.8 | Submerged | <1.0 | <2.0 | --- |
| acetone | Submerged | <10.0 | <10.0 | Submerged | <10.0 | 508.* | <20.0 |
| 2-Butanone (MEK) | Submerged | <10.0 | <10.0 | Submerged | <10.0 | 606.* | <10.0 |
| toluene | Submerged | <1.0 | <1.0 | Submerged | <1.0 | 2.0* | <1.0 |

* The 1/23/25 resample was required to verify whether the reported acetone, MEK, or toluene detections were accurate.

It is determined that the Passive Engineered Conveyance System is functioning as designed and that VOC are undetected in the treated discharge from PECS-3.

Please feel free to contact our office at (515) 733-4144 with any questions you may have.

Sincerely,

HLW Engineering Group



Todd Whipple, CPG
Project Manager

cc: *John Roosa, Administrator*



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

11A1695

Project Description

6007

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Friday, February 14, 2025

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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CERTIFICATE OF ANALYSIS

11A1695

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6007

Project / PO Number: N/A
Received: 01/24/2025
Reported: 02/14/2025

Case Narrative

Due to contamination of the carrier gas at the laboratory, the reporting limit for Acetone has been raised to 20ug/L.

James Eggers
Quality Assurance Officer

Sample Summary Report

| <u>Sample Name</u> | <u>Laboratory ID</u> | <u>Client Matrix</u> | <u>Sample Type</u> | <u>Sample Begin</u> | <u>Sample Taken</u> | <u>Lab Received</u> |
|--------------------|----------------------|----------------------|--------------------|---------------------|---------------------|---------------------|
| PEC-3 | 11A1695-01 | Aqueous | GRAB | | 01/23/25 11:55 | 01/24/25 11:26 |



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Analytical Testing Parameters

| | | | |
|-------------------|------------|------------------|------------------|
| Client Sample ID: | PEC-3 | Collected By: | JGH |
| Sample Matrix: | Aqueous | Collection Date: | 01/23/2025 11:55 |
| Lab Sample ID: | 11A1695-01 | | |

| Determination of Volatile Organic Compounds | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|--------|---------------|-------|----|------|---------------|---------------|---------|
| EPA 5030B/EPA 8260D | | | | | | | | |
| Acetone | <20.0 | 20.0 | ug/L | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| 2-Butanone (MEK) | <10.0 | 10.0 | ug/L | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| Toluene | <1.0 | 1.0 | ug/L | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| Surrogate: Dibromofluoromethane | 97.3 | Limit: 57-134 | % Rec | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| Surrogate: 1,2-Dichloroethane-d4 | 102 | Limit: 53-140 | % Rec | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| Surrogate: Toluene-d8 | 98.2 | Limit: 86-114 | % Rec | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |
| Surrogate: 4-Bromofluorobenzene | 95.6 | Limit: 78-121 | % Rec | 1 | | 02/05/25 0000 | 02/06/25 1356 | CSM |



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Batch Log Summary

| Method | Batch | Laboratory ID | Client / Source ID |
|-----------|---------|---------------|--------------------|
| EPA 8260D | 11B0416 | 11B0416-BS1 | |
| | | 11B0416-BS1 | |
| | | 11B0416-BSD1 | |
| | | 11B0416-BSD1 | |
| | | 11B0416-BLK1 | |
| | | 11B0416-BLK1 | |
| | | 11B0416-MS1 | 11B0431-02 |
| | | 11B0416-MS1 | 11B0431-02 |
| | | 11B0416-MSD1 | 11B0431-02 |
| | | 11B0416-MSD1 | 11B0431-02 |
| | | 11A1695-01 | PEC-3 |
| | | 11A1695-01 | PEC-3 |

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|--------|------|-------|-------------|---------------|------|-------------|------|-----------|-------|
| Batch 11B0416 - EPA 5030B - EPA 8260D | | | | | | | | | | |
| Blank (11B0416-BLK1) | | | | | | | | | | |
| Prepared: 02/06/25 00:00 Analyzed: 02/06/25 12:25 | | | | | | | | | | |
| Acetone | 33.34 | 20.0 | ug/L | | | | | | | B1 |
| 2-Butanone (MEK) | <10.0 | 10.0 | ug/L | | | | | | | |
| Toluene | <1.0 | 1.0 | ug/L | | | | | | | |
| Surrogate: Dibromofluoromethane | 49.5 | | ug/L | 50.2 | | 98.6 | 57-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 52.2 | | ug/L | 50.1 | | 104 | 53-140 | | | |
| Surrogate: Toluene-d8 | 49.4 | | ug/L | 50.4 | | 97.9 | 86-114 | | | |
| Surrogate: 4-Bromofluorobenzene | 48.5 | | ug/L | 50.1 | | 96.7 | 78-121 | | | |
| LCS (11B0416-BS1) | | | | | | | | | | |
| Prepared: 02/06/25 00:00 Analyzed: 02/06/25 10:54 | | | | | | | | | | |
| Acetone | 160.8 | 20.0 | ug/L | 100 | | 161 | 45-153 | | | Q2 |
| 2-Butanone (MEK) | 113.8 | 10.0 | ug/L | 100 | | 114 | 57-147 | | | |
| Toluene | 52.41 | 1.0 | ug/L | 50.5 | | 104 | 78-123 | | | |
| Surrogate: Dibromofluoromethane | 49.7 | | ug/L | 50.2 | | 99.1 | 57-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 51.4 | | ug/L | 50.1 | | 103 | 53-140 | | | |
| Surrogate: Toluene-d8 | 50.2 | | ug/L | 50.4 | | 99.5 | 86-114 | | | |
| Surrogate: 4-Bromofluorobenzene | 49.7 | | ug/L | 50.1 | | 99.1 | 78-121 | | | |
| LCS Dup (11B0416-BSD1) | | | | | | | | | | |
| Prepared: 02/06/25 00:00 Analyzed: 02/06/25 11:16 | | | | | | | | | | |
| Acetone | 104.1 | 20.0 | ug/L | 100 | | 104 | 45-153 | 42.8 | 23 | R1 |
| 2-Butanone (MEK) | 87.83 | 10.0 | ug/L | 100 | | 87.8 | 57-147 | 25.7 | 18 | R1 |
| Toluene | 50.42 | 1.0 | ug/L | 50.5 | | 99.9 | 78-123 | 3.87 | 30 | |
| Surrogate: Dibromofluoromethane | 49.4 | | ug/L | 50.2 | | 98.5 | 57-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 50.7 | | ug/L | 50.1 | | 101 | 53-140 | | | |
| Surrogate: Toluene-d8 | 50.1 | | ug/L | 50.4 | | 99.4 | 86-114 | | | |

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| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|--------|----|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---|--------|----|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 11B0416 - EPA 5030B - EPA 8260D

LCS Dup (11B0416-BSD1)

Prepared: 02/06/25 00:00 Analyzed: 02/06/25 11:16

Surrogate: 4-Bromofluorobenzene 50.2 ug/L 50.1 100 78-121

Matrix Spike (11B0416-MS1)

Source: 11B0431-02

Prepared: 02/06/25 00:00 Analyzed: 02/06/25 13:11

Acetone 1041 200 ug/L 1000 ND 104 27-173
 2-Butanone (MEK) 872.5 100 ug/L 1000 ND 87.2 45-156
 Toluene 521.1 10.0 ug/L 505 ND 103 63-131

Surrogate: Dibromofluoromethane 495 ug/L 502 98.7 57-134
 Surrogate: 1,2-Dichloroethane-d4 510 ug/L 501 102 53-140
 Surrogate: Toluene-d8 506 ug/L 504 100 86-114
 Surrogate: 4-Bromofluorobenzene 493 ug/L 501 98.4 78-121

Matrix Spike Dup (11B0416-MSD1)

Source: 11B0431-02

Prepared: 02/06/25 00:00 Analyzed: 02/06/25 13:33

Acetone 1012 200 ug/L 1000 ND 101 27-173 2.84 30
 2-Butanone (MEK) 873.6 100 ug/L 1000 ND 87.4 45-156 0.126 20
 Toluene 498.6 10.0 ug/L 505 ND 98.8 63-131 4.41 15

Surrogate: Dibromofluoromethane 484 ug/L 502 96.5 57-134
 Surrogate: 1,2-Dichloroethane-d4 505 ug/L 501 101 53-140
 Surrogate: Toluene-d8 504 ug/L 504 100 86-114
 Surrogate: 4-Bromofluorobenzene 500 ug/L 501 99.7 78-121

Definitions

- B1:** The target analyte was detected in the method blank at or above the method acceptance criteria. The sample concentration is below the method acceptance criteria.
- Q2:** LCS recovery is above acceptance limits.
- R1:** Duplicate RPD is outside acceptance criteria.
- RL:** Reporting Limit
- RPD:** Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

Cooler Inspection Checklist

| | | | |
|------------------|-----|------------------------|-----|
| Custody Seals | No | Containers Intact | Yes |
| COC/Labels Agree | Yes | Preservation Confirmed | No |
| Received On Ice | Yes | | |



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CERTIFICATE OF ANALYSIS

11A1695

Report Comments

*The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. **The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

A rectangular box containing a handwritten signature in black ink that reads "Heather Murphy".

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
02/14/25 16:35

