

December 17, 2025

Mr. Brad Davison
Iowa Department of Natural Resources
502 E. 9th St.
Des Moines, IA 50319

RE: City of Keokuk Sanitary Landfill (Closed)
Permit No. 56-SDP-04-77C
Annual Landfill Monitoring Report

Dear Mr. Davison,

This letter is provided to the Iowa DNR to summarize the 2025 groundwater monitoring, landfill gas monitoring, leachate collection, and engineering inspection results for the Closed Keokuk Sanitary Landfill. In summary, the following was completed at the landfill during 2025:

- Landfill Gas Measurements were recorded on March 19, 2025 at GP1, GP2, and GP3
- Engineering Inspections were completed on March 19, 2025 and September 5, 2025.
- Groundwater sampling was completed by Klingner and Associates at MW7, MW9, MW12RR, and MW15 for Appendix I parameters in 567 IAC 11 and TSS. A Hydrasleeve™ was set in each well on March 20, 2025, and samples were collected on April 21, 2025.
- 624,500 gallons of leachate was hauled from the landfill between December 2024 and November 2025.

Permit Conditions:

The site permit was issued on September 10, 1992 and permit amendments have been issued including supplemental sampling requirements as stated in PA 4, 5, 6, & 8 (Replaced PA 7). Permit Amendment #8 was issued in a letter dated January 4, 2017 which required one round of groundwater sampling for Appendix I parameters and TSS at eight (8) wells in the spring and semi-annual gas monitoring at three (3) gas probes and two (2) monitoring wells. PA #9 incorporated the Gas Mitigation Trench Installation Report with As-Built into the permit and PA #10 incorporated the abandonment records for MW8 and MW12R. PA #11 was issued on March 6, 2018 and required annual sampling for Appendix 1 parameters and TSS using low flow techniques at all monitoring wells and monthly explosive gas monitoring at all gas probes and MW7, MW8R, MW12RR, MW15, and MW16. No permit amendments were issued in response to the 2018 AWQR. However, the DNR recommended that groundwater sampling be continued with the same frequency and parameters as the previous year, that explosive gas readings be reduced to quarterly for 2019, that progress continued on a permanent solution for leachate management, and that an additional gas probe be installed. PA #12 was issued on October 29, 2019 and incorporated GP4 into the gas monitoring program. Additionally, PA #12

inadvertently included requirements for monthly landfill gas readings, however Mr. Graesch was contacted and approved the continuance of quarterly gas readings.

This report format comes in response to PA #13 dated March 16, 2022, and subsequent Revised PA #13 dated August 26, 2022 which reduced landfill monitoring and reporting requirements.

The following requirements were set by Permit Amendment #13:

- The permit is extended by two (2) years, until September 10, 2024
- The hydraulic monitoring system plan was reduced to include only wells MW7, MW9, MW12RR, and MW15. Sampling is required for each well on a biennial basis, though at least one well must be sampled in any given year such that the site as a whole is monitored annually.
- Landfill gas will be monitored annually at GP1, GP2, and GP3.
- An annual engineering inspection will be conducted by a professional engineer. The reporting for the inspection is contemporaneous with this report.
- This annual report will detail groundwater results, landfill gas results, leachate collection data, and engineering inspection results. Tables summarizing groundwater, landfill gas, and leachate data are provided with this report.

PA #14 was issued on September 4, 2024. The amendment extends the permit by two (2) years, to September 10, 2026.

Groundwater:

Sampling was conducted at MW7, MW9, MW12RR, and MW15. On March 19, 2025, each well was agitated, purged, and allowed to recharge prior to setting the Hydrasleeve™. On April 21, 2025, the Hydrasleeves™ were retrieved. Field measurements including temperature, pH, and specific conductance were recorded, and samples were placed into lab supplied containers. A table summarizing 2025 groundwater monitoring results as well as a complete lab report are included.

In 2024, TSS was higher than in the previous two (2) years where Hydrasleeve™ samplers were also used. In 2025, TSS remained high at MW7 and MW12RR. It is presumed that the TSS fluctuation is due to a variation in purging times and time allowed for settling and recharging prior to setting the Hydrasleeves™ when compared to previous years. To reduce inadvertent variation in sampling results, sampling will be conducted in accordance with Hydrasleeve™ recommended procedures and the attached Standard Operating Procedure.

Groundwater levels were measured by Klingner during the engineering inspection completed in the spring. A summary of groundwater levels is included.

Inorganics / Metals

Background levels of inorganics are determined using samples collected from MW9 which is the only well considered to be upstream at the site. The following inorganics were found to have either no detects, or detects below the MCL / statewide standards for all wells sampled in 2025:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Nickel
- Selenium
- Silver
- Thallium
- Vanadium
- Zinc

Cobalt

Cobalt was observed to be above the MCL/ statewide standards at MW7, MW12RR, and MW15, and was not detected at MW9. Cobalt appears to increase with TSS at MW7, MW9, MW12RR, and MW15. Cobalt levels above MCL / statewide standards are likely due to naturally occurring cobalt in the surrounding soils. Historically, background levels of cobalt have been observed at MW9 above statewide standards.

Organics

Background levels of inorganics are determined using samples collected from MW9 which is the only well considered to be upstream at the site. The following organics were found to have either no detects, or detects below the MCL / statewide standards for all wells sampled in 2025:

- 1,1,1,2-Tetrachloroethane
- 1,1,1-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- 1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,2,3-Trichloropropane
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,4-Dichlorobenzene
- 2-Butanone
- 2-Hexanone
- 4-Methyl-2-pentanone
- Acetone
- Acrylonitrile
- Benzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- Dibromochloromethane
- Dibromomethane
- Ethylbenzene
- Iodomethane
- m,p-Xylene
- Methylene chloride
- o-Xylene
- Styrene
- Tetrachloroethene
- Toluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene
- trans-1,4-Dichloro-2-butene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride
- Xylenes, Total

Trichloroethene

Trichloroethene was observed to be above the MCL at MW7. No detects of trichloroethene were observed in MW9, MW12RR, or MW15. Historically, trichloroethene has fluctuated at MW7, and no detects at MW9, MW12RR, or MW15, have ever been observed. This is the second consecutive exceedance of Trichloroethene at MW7.

Vinyl Chloride

Vinyl chloride was observed to be above the MCL at MW7. No detects of trichloroethene were observed in MW9 or MW12RR. Historically, vinyl chloride has fluctuated at MW7 and MW15, and no detects at MW9 or MW12RR have ever been observed. The last exceedance of vinyl chloride at MW7 was in 2022.

Landfill Gas Monitoring:

Explosive gas levels were measured by Klingner & Associates on March 19, 2025 at GP1, GP2, GP3, and GP4. Explosive gas measurements are collected using a GEM 5000 with tubing attached to a barbed hose fitting on the gas probe caps. A summary of the gas measurements taken in 2025 as well as a historical summary graph is included with this report.

Leachate Collection:

Leachate is collected in a series of holding tanks (total capacity of 10,000 gallons), pumped by the City of Keokuk, and trucked to the City wastewater treatment plant. Leachate volumes hauled are provided in the following table:

Month	Discharged to Keokuk WWTP (gal)	Precipitation (in)
Dec-24	44,200	-
Jan-25	30,500	-
Feb-25	25,400	-
Mar-25	77,000	-
Apr-25	57,000	1.80
May-25	71,300	4.70
Jun-25	62,000	3.90
Jul-25	112,400	14.20
Aug-25	41,700	1.60
Sep-25	34,600	2.10
Oct-25	40,600	2.80
Nov-25	27,800	-
2025 Annual Total	624,500	31.10

Pumping of the leachate collection tank is generally completed 2-3 days per week and multiple loads of leachate are pumped in a single day to allow for sufficient storage space. Pumping operations vary based on City staff availabilities.

The City installed a second 1,500-gallon leachate storage tank at the site in June of 2020 to address the need for immediate leachate storage. Two (2) additional 3,500-gallon tanks (7,000 gallons of additional storage capacity) were installed in November of 2020. The current leachate storage capacity has been increased to 10,000 gallons of total storage from 1,500 gallons prior to June of 2020.

Engineering Inspection:

March 19, 2025 Inspection

An engineering inspection was conducted at the landfill on March 19, 2025. During the spring inspection, conditions were cloudy with temperatures around 60 degrees Fahrenheit. The landfill entrance gate was locked. Access roads were well maintained with rock with some erosion noted on the access road by MW12RR. Signage at the entrance gate provided the site contact information. The landfill had generally good grass cover. Conditions were dry but evidence of areas that regularly hold water were observed. A small area of leachate staining was observed along the bank of the creek approximately 20' downstream of the stormwater outfall. It is not apparent if the staining is from continued leachate seepage or if it is remaining from previously observed seepage. Repairs were made in the fall of 2024 to address leachate seepage in the area.

September 5, 2025 Inspection

An engineering inspection was conducted at the landfill on September 5, 2025. During the inspection, conditions were clear with temperatures around 62 degrees Fahrenheit. The landfill entrance gate was locked. Access roads were well maintained with rock with some erosion noted on near the leachate collection area. Signage at the entrance gate provided the site contact information. The landfill had generally good grass cover. A small area of leachate staining was observed along the bank of the creek approximately 20' downstream of the stormwater outfall. It is not apparent if the staining is from continued leachate seepage or if it is remaining from previously observed seepage. Repairs were made in the fall of 2024 to address leachate seepage in the area. An additional small area of leachate seepage was observed approximately 18" to 24" below the stormwater discharge pipe. There was no evidence of leachate in the discharge pipe.

Recommended 2026 Repairs & Maintenance:

Leachate seepage appears to be persisting near the creek. Some of this may be residual leachate remaining in the soils that is working its way out. Previously (prior to the Fall 2024

repairs), leachate was observed in the clean rock bedding for the stormwater discharge pipe, it appears that the concrete collar poured in 2024 has helped to prevent flows of leachate down the pipe bedding, however leachate appears to be moving deeper as it is now observed to be seeping below the pipe bedding near the outlet. To address further migration of leachate down the slope, we propose to install a cutoff structure from the previously placed concrete collar to the north, along the west side of the previously installed drain. We also propose to install a cutoff structure to the south of the stormwater collection pipe to address the seepage that is persisting further downstream in the creek from the stormwater discharge to redirect leachate to the west side of the stormwater pipe so that it can be captured in the existing leachate collection lines.

For each cutoff structure, we propose to excavate an approximately 12" - 18" wide trench to a depth of approximately 3' to 4' below the bottom of the stormwater pipe bedding. The trench is proposed to extend approximately 50' to the north of the stormwater pipe and approximately 50' to the south of the stormwater pipe. The trench will be backfilled to approximately 18" – 24" below grade with flowable fill or concrete.

Conclusion / Recommendations:

At this time, no alterations to the current monitoring plan are recommended. The timeline for future landfill activities is as follows:

- Annual Engineering Inspection in early March, 2026. At this time, gas monitoring, well purging, and setting Hydrasleeves™ will be performed (See attached Hydrasleeve™ Sampling SOP).
- In late March, 2026 or early April, 2026, each well will be sampled by pulling the Hydrasleeve™ device and transferring sample water into laboratory supplied sampling containers.
- Late spring or early summer 2026 (when dry conditions are present), the proposed repairs to address leachate seepage are proposed to be completed.

Please address any correspondence with the City of Keokuk to Mr. Brian Carroll, Public Works Director.

As always, if you have any questions, please do not hesitate to contact us.

Sincerely,

KLINGNER & ASSOCIATES, P.C.

A handwritten signature in blue ink, appearing to read 'Jessica Coca', with a stylized, flowing script.

Jessica Coca, P.E.

P:\Burlington\06141_Keokuk Public Works\005_212010 Landfill Monitoring\19.Enviro\Landfill\2025 Annual Water Quality\2025 Keokuk Landfill AWQR.docx

C: Becky Jolly, Iowa Department of Natural Resources
Brian Carroll, City of Keokuk

Enclosure: Groundwater Data Summary
Historic Groundwater Data Summary
Water Level Data
Laboratory Report
Groundwater Sampling Forms
Hydrasleeve™ Sampling SOP
Landfill Gas Data Summary
Historic Landfill Gas Data Summary
Spring & Fall Engineering Inspection Documentation

GROUNDWATER DATA SUMMARY

2025 Groundwater Monitoring Summary
City of Keokuk Sanitary Landfill (Closed)
Permit No. 56-SDP-04-77C

April 21, 2025 Groundwater Sampling Results

Constituent	MCL	SS	MW-7	MW-9 (Upgradient)	MW-12RR	MW-15
Total Suspended Solids (mg/L)	-	-	424	13.2	748	23.5
Metals (ug/L)						
Antimony	6	-	<2.00	<2.00	<2.00	<2.00
Arsenic	10	-	3.88	<2.00	5.21	5.98
Barium	2000	-	431	411	46.6	448
Beryllium	4	-	<1.00	<1.00	<1.00	<1.00
Cadmium	5	-	0.481	<0.200	0.307	0.255
Chromium	100	-	8.68	<5.00	13.8	<5.00
Cobalt	-	2.8	6.39	<0.500	4.89	6.99
Copper	1300	-	13.1	<5.00	10.1	<5.00
Lead	15	-	4.19	<0.500	5.47	0.619
Nickel	-	100	10.5	<5.00	14.6	6.11
Selenium	50	-	<5.00	14.5	<5.00	<5.00
Silver	-	100	<1.00	<1.00	<1.00	<1.00
Thallium	2	-	<1.00	<1.00	<1.00	<1.00
Vanadium	-	35	13.5	<5.00	17.1	<5.00
Zinc	-	2000	<20.0	<20.0	42.8	<20.0
Volatile Organics (ug/L)						
1,1,1,2-Tetrachloroethane	-	70	<1.00	<1.00	<1.00	<1.00
1,1,1-Trichloroethane	280	-	<1.00	<1.00	<1.00	<1.00
1,1,2,2-Tetrachloroethane	-	0.3	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichloroethane	5	-	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	-	140	6.86	<1.00	<1.00	3.13
1,1-Dichloroethene	7	-	<2.00	<2.00	<2.00	<2.00
1,2,3-Trichloropropane	-	0.0058	<1.00	<1.00	<1.00	<1.00
1,2-Dibromo-3-chloropropane	0.2	-	<5.00	<5.00	<5.00	<5.00
1,2-Dibromoethane	-	0.05	<1.00	<1.00	<1.00	<1.00
1,2-Dichlorobenzene	600	-	<1.00	<1.00	<1.00	<1.00
1,2-Dichloroethane	5	-	<1.00	<1.00	<1.00	<1.00
1,2-Dichloropropane	5	-	1.59	<1.00	<1.00	<1.00
1,4-Dichlorobenzene	75	-	<1.00	<1.00	<1.00	<1.00
2-Butanone	-	4000	<10.0	<10.0	<10.0	<10.0
2-Hexanone	-	-	<10.0	<10.0	<10.0	<10.0
4-Methyl-2-pentanone	-	560	<10.0	<10.0	<10.0	<10.0
Acetone	-	6300	<10.0	<10.0	<10.0	<10.0
Acrylonitrile	-	0.32	<5.00	<5.00	<5.00	<5.00
Benzene	5	-	0.603	<0.500	<0.500	<0.500
Bromochloromethane	-	90	<5.00	<5.00	<5.00	<5.00
Bromodichloromethane	-	80	<1.00	<1.00	<1.00	<1.00
Bromoform	-	80	<5.00	<5.00	<5.00	<5.00
Bromomethane	-	10	<4.00	<4.00	<4.00	<4.00

HISTORIC GROUNDWATER DATA SUMMARY

Analytical Data Summary
2024 Annual Water Quality Report
Keokuk (Closed) Sanitary Landfill
Permit No. 56-SDP-04-77

Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bggrnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad	
Antimony (Total) (7440-36-0) MCL = 6	9/22/2008	µg/l	NM	NM	<6	NM	NM	<6	NM	NM	NM	NM	
	3/22/2013	µg/l	NM	NM	<3	NM	NM	NM	NM	NM	NM	NM	
	9/9/2015	µg/l	3.6	<3	<3	NM	<3	NM	NM	3.3	<3	<3	
	10/4/2016	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
	3/23/2017	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	9/15/2017	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	3/13/2018	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	8/28/2018	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	3/13/2019	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	9/17/2019	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	3/5/2020	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	9/28/2020	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	3/16/2021	µg/l	<3	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	9/28/2021	µg/l	NM	<3	NM	<3	<3	NM	<3	<3	<3	<3	
	3/22/2022	µg/l	NM	<3	NM	NM	<3	NM	<5.4	NM	<3	NM	
	3/28/2023	µg/l	NM	<3	NM	NM	<3	NM	<3	NM	<3	NM	
	3/4/2024	µg/l	NM	<2	NM	NM	<2	NM	<2	NM	<2	NM	
	4/21/2025	µg/l	NM	<2.00	NM	NM	<2.00	NM	<2.00	NM	<2.00	NM	
	Arsenic (Total) (7440-38-2) MCL = 10	9/22/2008	µg/l	NM	NM	10.7	NM	NM	14.4	NM	NM	NM	NM
		9/16/2009	µg/l	NM	NM	4.4	NM	NM	55.0	NM	NM	NM	NM
3/17/2010		µg/l	NM	NM	3.0	NM	NM	32.0	NM	NM	NM	NM	
9/22/2010		µg/l	NM	NM	4.2	NM	NM	24.0	NM	NM	NM	NM	
3/16/2011		µg/l	NM	NM	3.4	NM	NM	18.0	NM	NM	NM	NM	
9/16/2011		µg/l	NM	NM	3.8	NM	NM	20.0	NM	NM	NM	NM	
3/28/2012		µg/l	NM	NM	4.1	NM	NM	NM	NM	NM	NM	NM	
9/11/2012		µg/l	NM	NM	4.8	NM	NM	11.0	NM	NM	NM	NM	
3/22/2013		µg/l	NM	NM	<1	NM	NM	NM	NM	NM	NM	NM	
9/5/2013		µg/l	NM	NM	<1	NM	NM	17.0	NM	NM	NM	NM	
3/25/2014		µg/l	NM	NM	NM	NM	NM	5.4	NM	NM	NM	NM	
9/25/2014		µg/l	NM	NM	4.1	NM	NM	11.0	NM	NM	NM	NM	
9/9/2015		µg/l	97.0	1.2	2.0	NM	17.0	NM	NM	12.0	6.0	2.3	
10/4/2016		µg/l	1.0	2.6	10.0	2.5	2.6	5.9	31.0	6.1	3.4	4	
3/23/2017		µg/l	<1	13.0	NM	2.4	1.6	NM	2.3	<1	4.8	2.5	
9/15/2017		µg/l	2.7	1.2	NM	4.7	14.0	NM	70.0	6.0	6.7	3	
3/13/2018		µg/l	1.7	2.3	NM	1.3	2.8	NM	<1	1.4	5.3	2.7	
8/28/2018		µg/l	1.4	2.3	NM	2.1	<1	NM	5.8	<1	5.6	3.2	
3/13/2019		µg/l	<1	2.2	NM	1.2	2.7	NM	1.0	1.0	9.1	4.9	
9/17/2019		µg/l	19	1.1	NM	7.5	2.0	NM	29.0	2.3	<1	4.9	
3/5/2020	µg/l	1.8	1.9	NM	3.5	<1	NM	2.8	1.6	4.7	1.7		
9/28/2020	µg/l	1.9	3.9	NM	3.2	<1	NM	23.0	2.5	4.3	1.6		
3/16/2021	µg/l	2.4	2.5	NM	7.5	<1	NM	2.7	1.6	5.4	1.9		
9/28/2021	µg/l	NM	3.0	NM	7.5	10.0	NM	43.0	2.6	3.6	1.9		
3/22/2022	µg/l	NM	2.8	NM	NM	1.7	NM	36.0	NM	6.8	NM		
3/28/2023	µg/l	NM	1.2	NM	NM	<1	NM	9.0	NM	5.8	NM		
3/4/2024	µg/l	NM	2.71	NM	NM	<1	NM	<2	NM	5.46	NM		
4/21/2025	µg/l	NM	3.88	NM	NM	<2.00	NM	5.21	NM	5.98	NM		
Barium (Total) (7440-39-3) MCL = 2000	9/22/2008	µg/l	NM	NM	121	NM	NM	21	NM	NM	NM	NM	
	3/22/2013	µg/l	NM	NM	38	NM	NM	NM	NM	NM	NM	NM	
	9/9/2015	µg/l	790	380	75	NM	980	NM	NM	95	790	130	
	10/4/2016	µg/l	130	460	230	38	500	29	210	190	610	150	
	3/23/2017	µg/l	140	540	NM	64	640	NM	27	100	360	160	
	9/15/2017	µg/l	180	330	NM	160	730	NM	520	130	500	130	
	3/13/2018	µg/l	150	380	NM	76	540	NM	18	120	220	140	
	8/28/2018	µg/l	150	350	NM	89	450	NM	50	71	200	160	
	3/13/2019	µg/l	140	330	NM	110	490	NM	19	46	210	140	
	9/17/2019	µg/l	360	380	NM	110	540	NM	290	99	86	800	
	3/5/2020	µg/l	180	380	NM	91	450	NM	49	71	180	150	
	9/28/2020	µg/l	180	400	NM	89	420	NM	160.0	92.0	570.0	130.0	
	3/16/2021	µg/l	190	420	NM	92	460	NM	67.0	77.0	310.0	140.0	
	9/28/2021	µg/l	NM	410	NM	95	680	NM	2.8	97.0	630.0	170.0	
	3/22/2022	µg/l	NM	420	NM	NM	510	NM	490.0	NM	490.0	NM	
	3/28/2023	µg/l	NM	360.0	NM	NM	420.0	NM	73.0	NM	120.0	NM	
	3/4/2024	µg/l	NM	479	NM	NM	443	NM	16.5	NM	223	NM	
	4/21/2025	µg/l	NM	431	NM	NM	411	NM	46.6	NM	448	NM	
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Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bkgnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad
Cobalt (Total) (7440-48-4) SS = 2.8	9/22/2008	µg/l	NM	NM	<2	NM	NM	21.5	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	2.2	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	200	<5	4.3	NM	44	NM	NM	6	14	9.6
	10/4/2016	µg/l	<2	8.1	16	5	2.9	2.4	30	9	4.3	13
	3/23/2017	µg/l	<2	28	NM	24	4.3	NM	<2	<2	<2	5.8
	9/15/2017	µg/l	3.2	3.3	NM	31	34	NM	61	2.5	6.2	8.2
	3/13/2018	µg/l	<2	3.8	NM	18	4.2	NM	<2	<2	<2	6.5
	8/28/2018	µg/l	<2	2.6	NM	23	<2	NM	4.3	<2	<2	6.1
	3/13/2019	µg/l	<2	<2	NM	19.0	3.5	NM	<2	<2	3	<2
	9/17/2019	µg/l	11	2.9	NM	21	9	NM	38	3	9	3.4
	3/5/2020	µg/l	11	2.1	NM	19	<2	NM	<2	<2	4.2	5.2
	9/28/2020	µg/l	6.4	2.8	NM	26	<2	NM	22.0	<2	7.4	5.1
	3/16/2021	µg/l	6.3	<2	NM	25	<2	NM	2.5	<2	5.4	5.5
	9/28/2021	µg/l	NM	3.1	NM	30	38	NM	40.0	<2	7.6	6.1
	3/22/2022	µg/l	NM	5.1	NM	NM	6.8	NM	47.0	NM	9.5	NM
	3/28/2023	µg/l	NM	<2	NM	NM	<2	NM	7.0	NM	3.3	NM
	3/4/2024	µg/l	NM	5.28	NM	NM	6.49	NM	0.649	NM	3.56	NM
	4/21/2025	µg/l	NM	6.39	NM	NM	<0.500	NM	4.89	NM	6.99	NM
Copper (Total) (7440-50-8) MCL = 1300	9/22/2008	µg/l	NM	NM	37.4	NM	NM	<20	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	9.5	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	330	<3	54	NM	53	NM	NM	5.7	6.4	<3
	10/4/2016	µg/l	<3	17	410	4.9	4.7	<3	55	26	8.8	9.3
	3/23/2017	µg/l	<3	46	NM	3.6	<3	NM	<3	<3	4.6	<3
	9/15/2017	µg/l	5.7	<3	NM	6.8	36	NM	140	11	4.8	7.7
	3/13/2018	µg/l	<3	<3	NM	5	<3	NM	<3	<3	<3	<3
	8/28/2018	µg/l	<3	<3	NM	4.6	<3	NM	11	<3	<3	<3
	3/13/2019	µg/l	<3	<3	NM	4.5	7.8	NM	<3	<3	<3	<3
	9/17/2019	µg/l	53	<3	NM	4.7	4.6	NM	78	4.9	<3	<3
	3/5/2020	µg/l	<3	<3	NM	6.3	<3	NM	4.5	3.5	<3	<3
	9/28/2020	µg/l	<3	<3	NM	<3	<3	NM	48.0	<3	<3	<3
	3/16/2021	µg/l	3.1	<3	NM	4.2	3.8	NM	7.8	4.9	<3	3.9
	9/28/2021	µg/l	NM	<3	NM	<3	40	NM	78.0	23.0	<3	<3
	3/22/2022	µg/l	NM	<3	NM	NM	4.8	NM	99.0	NM	<3	NM
	3/28/2023	µg/l	NM	<3	NM	NM	<3	NM	16.0	NM	<3	NM
	3/4/2024	µg/l	NM	<5	NM	NM	<5	NM	<5	NM	<5	NM
	4/21/2025	µg/l	NM	13.1	NM	NM	<5.00	NM	10.1	NM	<5.00	NM
Lead (Total) (7439-92-1) MCL = 15	9/22/2008	µg/l	NM	NM	11.5	NM	NM	<40	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	55	<1	2.5	NM	24	NM	NM	2.7	2.3	<1
	10/4/2016	µg/l	<1	3.8	2.1	<1	1.9	<1	28	15	4.1	5.4
	3/23/2017	µg/l	<1	15	NM	<1	<1	NM	<1	<1	<1	<1
	9/15/2017	µg/l	1.1	<1	NM	2.5	23	NM	75	4.7	3.7	4
	3/13/2018	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	8/28/2018	µg/l	<1	<1	NM	<1	<1	NM	4.8	<1	<1	<1
	3/13/2019	µg/l	<1	<1	NM	1.9	3.2	NM	<1	<1	1	<1
	9/17/2019	µg/l	11	<1	NM	2.1	3.1	NM	42	2	<1	<1
	3/5/2020	µg/l	<1	<1	NM	1.4	<1	NM	2.2	1.3	1.3	<1
	9/28/2020	µg/l	<1	<1	NM	<1	<1	NM	25.0	<1	<1	<1
	3/16/2021	µg/l	<1	<1	NM	<1	<1	NM	2.3	1.0	<1	<1
	9/28/2021	µg/l	NM	<1	NM	<1	18	NM	45.0	4.1	<1	<1
	3/22/2022	µg/l	NM	<1	NM	NM	2.4	NM	56.0	NM	<1	NM
	3/28/2023	µg/l	NM	<1	NM	NM	3.1	NM	9.8	NM	1.7	NM
	3/4/2024	µg/l	NM	2.28	NM	NM	1.53	NM	1.56	NM	0.546	NM
	4/21/2025	µg/l	NM	4.19	NM	NM	<0.500	NM	5.47	NM	0.619	NM
Nickel (Total) (7440-02-0) SS = 100	9/22/2008	µg/l	NM	NM	57.9	NM	NM	<50	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	18	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	800	8.1	23.0	NM	96	NM	NM	34	18	17
	10/4/2016	µg/l	<5	28	68	17	14	<5	84	27	12	33
	3/23/2017	µg/l	<5	64.0	NM	54	14	NM	<5	<5	9.6	14
	9/15/2017	µg/l	7.0	5.4	NM	46	68	NM	170	5.8	11.0	16
	3/13/2018	µg/l	<5	<5	NM	48	8.2	NM	<5	<5	7.1	8.8
	8/28/2018	µg/l	<5	<5	NM	51	<5	NM	12	<5	<5	9
	3/13/2019	µg/l	<5	<5	NM	36.0	8.6	NM	<5	<5	12	21
	9/17/2019	µg/l	30	5.7	NM	50	21	NM	110	6	13	7.4
	3/5/2020	µg/l	31	<5	NM	51	6.3	NM	8.1	<5	8.5	8.9
	9/28/2020	µg/l	14	<5	NM	53.0	<5	NM	59.0	<5	<5	7.5
	3/16/2021	µg/l	11	<5	NM	50.0	<5	NM	13.0	<5	7.6	8.7
	9/28/2021	µg/l	NM	5.5	NM	49.0	57.0	NM	100.0	6.8	17.0	11.0
	3/22/2022	µg/l	NM	10.0	NM	NM	13	NM	140.0	NM	14.0	NM
	3/28/2023	µg/l	NM	<5	NM	NM	<5	NM	22.0	NM	7.6	NM
	3/4/2024	µg/l	NM	7.57	NM	NM	10.9	NM	<5	NM	7.18	NM
	4/21/2025	µg/l	NM	10.5	NM	NM	<5.00	NM	14.6	NM	6.11	NM

Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bkgnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad
Selenium (Total) (7782-49-2) MCL = 50	9/22/2008	µg/l	NM	NM	<50	NM	NM	<25	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	1.4	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	9.1	<1	1.5	NM	9.2	NM	NM	<1	<1	35
	10/4/2016	µg/l	<1	2.1	4.6	<1	13	<1	5.1	2.2	<1	16
	3/23/2017	µg/l	<1	14	NM	1.2	7.1	NM	<1	<1	<1	5.6
	9/15/2017	µg/l	<1	<1	NM	<1	4.9	NM	11	<1	<1	27
	3/13/2018	µg/l	<1	<1	NM	<1	6.8	NM	<1	<1	<1	1.7
	8/28/2018	µg/l	<1	<1	NM	<1	16	NM	1.3	<1	<1	2.6
	3/13/2019	µg/l	<1	<1	NM	<1	17.0	NM	<1	<1	<1	16
	9/17/2019	µg/l	1.4	<1	NM	1	18	NM	11	<1	<1	31
	3/5/2020	µg/l	<1	<1	NM	<1	23	NM	<1	<1	<1	1.2
	9/28/2020	µg/l	<1	<1	NM	<1	19.0	NM	3.7	<1	<1	4.0
	3/16/2021	µg/l	<1	<1	NM	<1	24.0	NM	<1	<1	<1	1.6
	9/28/2021	µg/l	NM	<1	NM	<1	18.0	NM	6.9	<1	<1	<1
	3/22/2022	µg/l	NM	<1	NM	NM	22	NM	5.4	NM	<1	NM
	3/28/2023	µg/l	NM	<1	NM	NM	16.0	NM	1.4	NM	<1	NM
	3/4/2024	µg/l	NM	<5	NM	NM	23.6	NM	<5	NM	<5	NM
	4/21/2025	µg/l	NM	<5.00	NM	NM	14.5	NM	<5.00	NM	<5.00	NM
Silver (Total) (7440-22-4) SS = 100	9/22/2008	µg/l	NM	NM	<20	NM	NM	<20	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	26	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<5	<5	<5	NM	<5	NM	NM	<5	<5	<5
	10/4/2016	µg/l	<5	<5	<5	<5	7.2	13	<5	<5	<5	<5
	3/23/2017	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	9/15/2017	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	3/13/2018	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	8/28/2018	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	3/13/2019	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	9/17/2019	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	3/5/2020	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	9/28/2020	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	3/16/2021	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	9/28/2021	µg/l	NM	<5	NM	<5	<5	NM	<5	<5	<5	<5
	3/22/2022	µg/l	NM	<5	NM	NM	<5	NM	<5	NM	<5	NM
	3/28/2023	µg/l	NM	<5	NM	NM	<5	NM	<5	NM	<5	NM
	3/4/2024	µg/l	NM	<1	NM	NM	<1	NM	<1	NM	<1	NM
	4/21/2025	µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM
Thallium (Total) (7440-28-0) MCL = 2	9/22/2008	µg/l	NM	NM	<2	NM	NM	<2	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	1.9	<1	<1	NM	<1	NM	NM	<1	<1	<1
	10/4/2016	µg/l	<1	<1	2.2	<1	<1	<1	2.3	<1	<1	<1
	3/23/2017	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	9/15/2017	µg/l	<1	<1	NM	<1	<1	NM	2.5	<1	<1	<1
	3/13/2018	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	8/28/2018	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	3/13/2019	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	9/17/2019	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	3/5/2020	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	9/28/2020	µg/l	<1	<1	NM	<1	<1	NM	<1	<1	<1	<1
	3/16/2021	µg/l	<1	<1	NM	<1	<1	NM	1.3	1.2	1.6	<1
	9/28/2021	µg/l	NM	<1	NM	<1	<1	NM	1.6	<1	<1	<1
	3/22/2022	µg/l	NM	<1	NM	NM	<1	NM	<1	NM	<1	NM
	3/28/2023	µg/l	NM	<1	NM	NM	<1	NM	<1	NM	<1	NM
	3/4/2024	µg/l	NM	<1	NM	NM	<1	NM	<1	NM	<1	NM
	4/21/2025	µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM
Vanadium (Total) (7440-62-2) SS = 35	9/22/2008	µg/l	NM	NM	<50	NM	NM	<50	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<5	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	71	<5	11	NM	86	NM	NM	<5	<5	<5
	10/4/2016	µg/l	<5	10	68	<5	10	<5	83	30	8.5	8.9
	3/23/2017	µg/l	<5	38	NM	<5	<5	NM	<5	<5	<5	<5
	9/15/2017	µg/l	<5	<5	NM	<5	68	NM	230	5.4	6.2	6.8
	3/13/2018	µg/l	<5	<5	NM	<5	<5	NM	<5	<5	<5	<5
	8/28/2018	µg/l	<5	<5	NM	<5	<5	NM	19	<5	<5	<5
	3/13/2019	µg/l	<5	<5	NM	<5	12.0	NM	5.7	5.7	<5	<5
	9/17/2019	µg/l	12	<5	NM	12	8.4	NM	120	6.1	<5	<5
	3/5/2020	µg/l	<5	<5	NM	<5	<5	NM	6.7	<5	<5	<5
	9/28/2020	µg/l	<5	<5	NM	<5	<5	NM	58	<5	<5	<5
	3/16/2021	µg/l	<5	<5	NM	<5	<5	NM	12	<5	<5	<5
	9/28/2021	µg/l	NM	<5	NM	<5	44.0	NM	120	13.0	<5	<5
	3/22/2022	µg/l	NM	<5	NM	NM	12	NM	240.0	NM	<5	NM
	3/28/2023	µg/l	NM	<5	NM	NM	<5	NM	35.0	NM	5.8	NM
	3/4/2024	µg/l	NM	<5	NM	NM	<5	NM	5.97	NM	<5	NM
	4/21/2025	µg/l	NM	13.5	NM	NM	<5.00	NM	17.1	NM	<5.00	NM

Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bgkrrnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad	
Benzene (71-43-2) MCL = 5	9/22/2008	µg/l	NM	NM	1.3	NM	NM	2	NM	NM	NM	NM	
	9/16/2009	µg/l	NM	NM	<5.0	NM	NM	<5.0	NM	NM	NM	NM	
	3/17/2010	µg/l	NM	NM	<5	NM	NM	<5	NM	NM	NM	NM	
	9/22/2010	µg/l	NM	NM	<5	NM	NM	<5	NM	NM	NM	NM	
	3/16/2011	µg/l	NM	NM	<5	NM	NM	<5.0	NM	NM	NM	NM	
	3/22/2013	µg/l	NM	NM	1.4	NM	NM	NM	NM	NM	NM	NM	
	9/9/2015	µg/l	<1.0	<1.0	1.1	NM	<1.0	NM	NM	<1.0	<1.0	<1.0	
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	3/23/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/15/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/17/2019	µg/l	<1.0	<1.0	NM	1	<1.0	NM	<1.0	<1.0	1.5	<1.0	
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/28/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/16/2021	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/28/2021	µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/22/2022	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
	3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024	µg/l	NM	0.649	NM	NM	<0.5	NM	<0.5	NM	<0.5	NM		
4/21/2025	µg/l	NM	0.603	NM	NM	<0.500	NM	<0.500	NM	<0.500	NM		
Bromochloromethane (74-97-5) SS = 90	9/22/2008	µg/l	NM	NM	<5.0	NM	NM	<5.0	NM	NM	NM	NM	
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM	
	9/9/2015	µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0	
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	3/23/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/15/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/17/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/28/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/16/2021	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	9/28/2021	µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
	3/22/2022	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
	3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
	3/4/2024	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
	4/21/2025	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
	Bromodichloromethane (75-27-4) SS = 80	9/22/2008	µg/l	NM	NM	<1.0	NM	NM	<1.0	NM	NM	NM	NM
		3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
9/9/2015		µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0	
10/4/2016		µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
3/23/2017		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
9/15/2017		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
3/13/2018		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
8/28/2018		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
3/13/2019		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
9/17/2019		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
3/5/2020		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
9/28/2020		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
3/16/2021		µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
9/28/2021		µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0	
3/22/2022		µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/28/2023		µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024		µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM	
4/21/2025		µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM	

Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bgkrrnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad
1,2-Dichloropropane (78-87-5) MCL = 5	9/22/2008	µg/l	NM	NM	<1.0	NM	NM	<1.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<1.0	1.7	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/23/2017	µg/l	<1.0	1.2	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/15/2017	µg/l	<1.0	1.6	NM	<1.0	<1.0	NM	<1.0	<1.0	1.4	<1.0
	3/13/2018	µg/l	<1.0	1.1	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	8/28/2018	µg/l	<1.0	1.1	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/17/2019	µg/l	<1.0	1.4	NM	<1.0	<1.0	NM	<1.0	<1.0	2.6	<1.0
	3/5/2020	µg/l	<1.0	1.5	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2020	µg/l	<1.0	1.4	NM	<1.0	<1.0	NM	<1.0	<1.0	1.8	<1.0
	3/16/2021	µg/l	<1.0	1.3	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2021	µg/l	NM	1.4	NM	<1.0	<1.0	NM	<1.0	<1.0	1.6	<1.0
	3/22/2022	µg/l	NM	1.2	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM
3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024	µg/l	NM	1.77	NM	NM	<1	NM	<1	NM	<1	NM	
4/21/2025	µg/l	NM	1.59	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM	
cis-1,3-Dichloropropene (10061-01-5)	9/22/2008	µg/l	NM	NM	<5.0	NM	NM	<5.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
	3/25/2014	µg/l	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/23/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/15/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/17/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/16/2021	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2021	µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
3/22/2022	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
4/21/2025	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
trans-1,3-Dichloropropene (10061-02-6)	9/22/2008	µg/l	NM	NM	<5.0	NM	NM	<5.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/23/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/15/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/17/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/16/2021	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2021	µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/22/2022	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM
3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
4/21/2025	µg/l	NM	<5.00	NM	NM	<5.00	NM	<5.00	NM	<5.00	NM	
Ethylbenzene (100-41-4) MCL = 700	9/22/2008	µg/l	NM	NM	<1.0	NM	NM	<1.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/23/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/15/2017	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/17/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/16/2021	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2021	µg/l	NM	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/22/2022	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM
3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM	
3/4/2024	µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM	
4/21/2025	µg/l	NM	<1.00	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM	

Constituent (CAS #)	Sample Date	Units	MW6 DwnGrad	MW7 DwnGrad	MW8 DwnGrad	MW8R DwnGrad	MW9 Bkgnd	MW12/R DwnGrad	MW12RR DwnGrad	MW14 DwnGrad	MW15 DwnGrad	MW16 DwnGrad
Vinyl chloride (75-01-4) MCL = 2	9/22/2008	µg/l	NM	NM	<1.0	NM	NM	<1.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<1.0	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<1.0	<1.0	<1.0	NM	<1.0	NM	NM	<1.0	<1.0	<1.0
	10/4/2016	µg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/23/2017	µg/l	<1.0	2.4	NM	<1.0	<1.0	NM	<1.0	<1.0	1.8	<1.0
	9/15/2017	µg/l	<1.0	1	NM	<1.0	<1.0	NM	<1.0	<1.0	4.3	<1.0
	3/13/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	8/28/2018	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/13/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/17/2019	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	3/5/2020	µg/l	<1.0	<1.0	NM	<1.0	<1.0	NM	<1.0	<1.0	<1.0	<1.0
	9/28/2020	µg/l	<1.0	3.6	NM	<1.0	<1.0	NM	<1.0	<1.0	9.1	<1.0
	3/16/2021	µg/l	<1.0	3.8	NM	<1.0	<1.0	NM	<1.0	<1.0	2.1	<1.0
	9/28/2021	µg/l	NM	2.9	NM	<1.0	<1.0	NM	<1.0	<1.0	9.8	<1.0
	3/22/2022	µg/l	NM	2.5	NM	NM	<1.0	NM	<1.0	NM	3.8	NM
	3/28/2023	µg/l	NM	<1.0	NM	NM	<1.0	NM	<1.0	NM	<1.0	NM
	3/4/2024	µg/l	NM	1.66	NM	NM	<1.00	NM	<1.00	NM	<1.00	NM
	4/21/2025	µg/l	NM	2.27	NM	NM	<1.00	NM	<1.00	NM	1.08	NM
Xylene (total) (1330-20-7) MCL = 10	9/22/2008	µg/l	NM	NM	<3.0	NM	NM	<3.0	NM	NM	NM	NM
	3/22/2013	µg/l	NM	NM	<2.9	NM	NM	NM	NM	NM	NM	NM
	9/9/2015	µg/l	<3.0	<3.0	<3.0	NM	<3.0	NM	NM	<3.0	<3.0	<3.0
	10/4/2016	µg/l	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	3/23/2017	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	9/15/2017	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	3/13/2018	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	8/28/2018	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	3/13/2019	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	9/17/2019	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	3/5/2020	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	9/28/2020	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	3/16/2021	µg/l	<3.0	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	9/28/2021	µg/l	NM	<3.0	NM	<3.0	<3.0	NM	<3.0	<3.0	<3.0	<3.0
	3/22/2022	µg/l	NM	<3.0	NM	NM	<3.0	NM	<3.0	NM	<3.0	NM
	3/28/2023	µg/l	NM	<3.0	NM	NM	<3.0	NM	<3.0	NM	<3.0	NM
	3/4/2024	µg/l	NM	<3.00	NM	NM	<3.00	NM	<3.00	NM	<3.00	NM
	4/21/2025	µg/l	NM	<3.00	NM	NM	<3.00	NM	<3.00	NM	<3.00	NM

Key:

Detections are in bold

MCL = USEPA Maximum Contaminant Level

SS = Iowa Statewide Standards

Comments:

This is landfill data since December 2007.

This worksheet;

- 1) Determines if 5 samples for a new well and/or new contaminant have been collected within 1 year.
- 2) Determines if resamples are being collected within 90 days.
- 3) Looks for gaps in data record and if an explanation for those gaps was prepared.
- 4) Ensures that DQR is being correctly applied.
- 5) Examines if RLs are reasonable and if they have changed over the course of the project.

WATER LEVEL DATA

**Historic Water Level Measurements
City of Keokuk Sanitary Landfill (Closed)
Permit No. 56-SDP-04-77C**

Top of Casing Elevation (Feet AMSL)	MW6	MW7	MW8	MW8R	MW9	MW12	MW12R	MW12RR	MW14	MW15	MW16
	655.57	675.66	611.17	612.49	679.57	645.19	644.78	644.09	674.07	675.97	654.69

Date	Groundwater Elevation (Feet AMSL)										
	MW6	MW7	MW8	MW8R	MW9	MW12	MW12R	MW12RR	MW14	MW15	MW16
6/21/1989	579.56	648.78	606.07		648.84	NM			NM	NM	NM
1/30/1991	Dry	646.66	606.17		643.57	NM			NM	NM	NM
4/20/1991	Dry	646.98	607.69		646.72	567.67			623.06	647.12	625.89
12/19/1991	Dry	646.16	605.67		646.07	565.31			624.28	NM	NM
9/28/1992	Dry	646.87	603.22		648.76	567.12			Dry	649.13	625.62
12/29/1992	Dry	649.29	607.32		650.2	567.57			Dry	649.53	626.15
3/25/1993	Dry	650.55	608.32		651.62	567.48			Dry	650.9	627.98
6/30/1993	Dry	651.86	607.75		653.09	567.81			Dry	652.18	629.27
4/4/1994	Dry	654.48	NM		655.02	568.06			618.73	654.74	630.34
9/28/1994	Dry	654.18	604.3		654.34	568.05			616.83	654.43	628.19
5/30/1995	Dry	654.56	NM		655.9	568.04			621.69	654.57	630.81
6/28/1995	Dry	654.76	606.37		656.27	568.39			617.7	654.82	631.04
7/25/1995	Dry	654.86	605.57		656.11	568.39			618.3	655.17	630.34
8/24/1995	Dry	654.84	605.92		655.72	568.23			619	655.15	629.53
9/27/1995	Dry	654.92	605.71		655.52	568.25			619	655.18	628.97
10/25/1995	Dry	654.86	605.22		655.27	568.39			618.85	654.95	628.69
11/29/1995	Dry	654.66	606.12		655.47	568.29			621.2	654.77	628.49
4/8/1996	Dry	654.34	606.87		654.47	568.41			638.12	654.48	629.12
4/17/1996	Dry	654.54	607.66		654.87	568.52			639.43	654.83	629.41
5/16/1996	Dry	654.46	607.3		655.23	568.61			626.57	654.57	630.59
6/4/1996	Dry	654.86	606.77		655.47	568.79			628.52	655.14	630.94
7/24/1996	Dry	655.06	NM		656.07	568.59			635.27	655.37	629.99
8/30/1996	Dry	654.86	NM		656.17	568.34			635.77	655.07	NM
9/19/1996	580.62	654.78	604.36		655.57	568.45			636.08	655	629.01
10/25/1996	Dry	654.56	NM		NM	568.84			626.29	654.87	628.57
3/11/1997	583.8	652.98	607.37		653.91	568.4			639.07	653.22	628.15
3/26/1998	598.57	655.04	607.55		657.39	569.08			640.51	655.36	632.37
5/4/1998	NM	655.66	NM		658.35	569.09			627.27	655.97	630.09
6/23/1998	NM	NM	NM		NM	568.79			637.77	NM	NM
7/24/1998	NM	656.08	NM		658.76	568.77			640.29	656.39	NM
8/26/1998	NM	656.14	NM		658.09	568.89			640.86	656.45	NM
9/22/1998	NM	655.91	NM		657.45	568.84			642.67	656.22	NM
10/11/1998	616.26	656.03	606.83		657.18	568.89			644.59	655.25	631.8
3/2/2000	617.83	654.39	607.25		654.89	569.14			643.75	654.59	629.44
5/31/2000	655.57	653.46	NM		654.14	569.49			641.89	653.77	NM
6/28/2000	NM	653.21	NM		654.16	569.29			642.87	653.52	NM
7/26/2000	NM	653.51	NM		655.02	569.39			642.07	652.82	NM
8/31/2000	NM	653.66	NM		654.97	569.59			641.57	653.97	NM
9/19/2000	619.63	653.71	604.76		654.97	569.89			641.69	653.9	628.48
10/24/2000	NM	653.16	NM		654.17	569.19			641.17	653.47	626.89
3/28/2001	619.68	652.97	605.95		654.97	569.63			641.2	653.23	629.87
9/5/2001	621.09	654.8	607.25		656.47	569.49			643.76	655	630.05
3/29/2002	621.12	656.36	604.07		658.57	569.99			643.97	656.72	630.99
10/1/2002	624.21	656.8	604.72		658.26	569.97			645.96	656.86	629.75
3/26/2003	623.42	653.9	605.12		654.89	570.02			645.17	654.04	628.84
9/30/2003	624.66	653.56	605.12		654.85	568.54			644.05	653.69	630.34
3/18/2004	626.92	656.16	607.07		658.27	570.04			647.35	656.07	631.59
9/9/2004	627.67	657.26	605.47		658.57	569.97			647.15	656.97	630.79
3/30/2005	629.67	658.36	607.57		660.19	570.84			648.47	658.57	633.49
9/16/2005	628.67	657.16	604.55		654.42	570.06			647.57	657.34	631.27
3/29/2006	629.97	654.86	608.52		655.99	569.99			648.97	656.17	633.49
9/13/2006	629	654.31	604.51		655.48	570.37			645.57	654.54	634.33
3/8/2007	629.02	652.66	607.22		653.77	570.19			644.47	652.87	632.04
9/13/2007	624.87	653.21	605.22		654.84	570.49			644.54	652.12	633.08
3/11/2008	621.34	652.19	NM		646.05	569.98			638.86	651.49	630.31
9/22/2008	621.41	652.33	604.78		646.18	570.13			638.97	651.65	630.52
3/17/2009	631.62	656.76	607.82		655.62	573.04			646.97	656.97	635.79
9/16/2009	631.85	658.96	605.67		660.62	573.09			647.57	659.2	636.02
3/17/2010	633.12	660.81	607.82		662.97	571.98			659.87	661.05	638.25
9/22/2010	633.92	662.09	607.99		663.05	585.93			651.19	661.94	638.16
3/16/2011	633.42	659.44	607.52		660.62	594.62			656.6	659.69	637.84
9/14/2011	632.39	660.22	604.09		660.87	592.04			648.99	660.44	636.95
3/28/2012	633.91	658.52	607.25		659.5	(4)			650.55	658.52	637.35

Date	Groundwater Elevation (Feet AMSL)										
	MW6	MW7	MW8	MW8R	MW9	MW12	MW12R	MW12RR	MW14	MW15	MW16
9/12/2012	631.51	657.77	604.1		656.92	(5)	571.86		647.77	657.97	636.14
3/22/2013	632.91	655.11	607.27		655.32	(5)	571.78		652.64	655.12	637.34
9/5/2013	631.6	653.02	603.97		653.84	(5)	571.5		646.13	655.45	636.1
3/25/2014	633.41	625.85	(6)		653.32	(5)	584.58		650.57	652.37	634.49
9/24/2014	632.45	668.52	606.42		647.54	(5)	571.36		641.17	648.23	637.59
4/16/2015	633.79	634.21	651.67		629.95	(5)	582.41		629.19	634.15	638.41
9/9/2015	629.47	655.46	605.17		653.27	(5)	571.68		643.67	655.47	636.29
10/4/2016	632.67	655.96	603.87	602.94	655.84	(5)	576.66	571.54	645.82	656.17	638.57
3/23/2017	633.61	653.76	(7)	603.72	647.75	(5)	(7)	571.95	642.07	655.01	636.99
9/15/2017	631.71	654.68	(7)	602.56	654.79	(5)	(7)	571.65	645.07	654.57	636.61
3/13/2018	633.59	655.96	(7)	604.16	653.17	(5)	(7)	571.44	646.59	653.79	636.69
8/28/2018	632.42	655.01	(7)	602.58	652.42	(5)	(7)	569.91	646	653.97	635.08
3/13/2019	636.64	658.07	(7)	607.48	655.39	(5)	(7)	579.91	669.87	655.99	638.29
9/17/2019	634.06	656.7	(7)	603.44	656.55	(5)	(7)	571.62	646.8	656.82	638.47
3/5/2020	636.47	658.36	(7)	604.56	658.68	(5)	(7)	571.79	657.57	658.44	640.39
9/28/2020	634.4	657.97	(7)	603.57	658.26	(5)	(7)	571.9	648.25	658.08	638.7
3/16/2021	636.28	657.98	(7)	605.08	657.87	(5)	(7)	571.96	670.87	658.01	640.3
9/28/2021	(8)	658.72	(7)	603.54	659.12	(5)	(7)	571.97	648.41	658.83	638.8
3/22/2022	634.91	656.91	(7)	605.44	657.17	(5)	(7)	572.38	671.43	656.98	639.49
9/1/2022	633.24	657.56	(7)	602.83	658.04	(5)	(7)	571.82	648.22	657.68	637.78
3/2/2023	634.51	635.66	(7)	636.25	673.8	(5)	(7)	569.18	688.97	654.29	639.65
8/31/2023	635.78	613.76	(7)	669.67	689.56	(5)	(7)	566.54	729.72	650.9	641.52
4/1/2024	634.58	655.25	(7)	636.46	654.99	(5)	(7)	540.27	670.03	655.32	638.94
3/19/2025	633.57	653.88	(7)	604.12	653.73	(5)	(7)	572.79	653.72	654.04	638.38

- 1.) Data for 1994 through 2001 as reported in the 2001 AWQR prepared by MWH.
- 2.) Data for 2002 through March 18, 2009 as reported in 2008 AWQR and 2009 Semi-Annual Water Quality Report, Barker Lemar.
- 3.) Data for September 2009 through present collected by PDC Laboratories sampling crew.
- 4.) MW12 did not pass 2011 slug test and is scheduled for replacement in 2012
- 5.) MW12 abandoned and replace by MW12R
- 6.) MW8 lock frozen under water; could not open well to sample
- 7.) MW8 & MW12R replaced, not sampled
- 8.) Not sampled by PDC due to wasp nest

LABORATORY RESULTS

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Jessica A Coca, P.E.
Klingner & Associates PC
610 N 4th St
Suite #100
Burlington, Iowa 52601

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JOB DESCRIPTION

Keokuk Landfill 21-2010

JOB NUMBER

310-304806-1

Eurofins Cedar Falls

Job Notes

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Authorization



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Case Narrative

Client: Klingner & Associates PC
Project: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Job ID: 310-304806-1

Eurofins Cedar Falls

Job Narrative 310-304806-1

REVISION

The report being provided is a revision of the original report sent on 4/30/2025. The report (revision 1) is being revised due to Client contacted and asked for dichloromethane analysis as well for 8260D..

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 4/23/2025 8:55 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.9°C.

GC/MS VOA

Method 8260D: The initial calibration verification (ICV) result for batch 310-452562 was above the upper control limit. The affected analyte is: 1,1,1,2-Tetrachloroethane. Sample results were non-detects, and have been reported as qualified data.

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-452562 recovered outside of the control limits for Bromomethane (-28.3%D). A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-452562/4).

Method 8260D: The surrogate recovery for the blank associated with analytical batch 310-452727 was outside the upper control limits.

Method 8260D: Surrogate recovery for the following samples were outside the upper control limit: MW-7 (310-304806-1), MW-9 (310-304806-2), MW-12RR (310-304806-3) and MW-15 (310-304806-4). This sample did not contain any target analytes; therefore, re-analysis was not performed.

Method 8260D: The preservative used in the sample containers provided is not compatible with one of the Method 8260 analytes requested. The following sample was received preserved with hydrochloric acid. Vial preservation was pH <2 rather than pH 4-5. : MW-7 (310-304806-1), MW-9 (310-304806-2), MW-12RR (310-304806-3) and MW-15 (310-304806-4). The requested target analyte list includes Acrylonitrile.

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.

Eurofins Cedar Falls

Sample Summary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-304806-1	MW-7	Water	04/21/25 12:00	04/23/25 08:55
310-304806-2	MW-9	Water	04/21/25 11:30	04/23/25 08:55
310-304806-3	MW-12RR	Water	04/21/25 11:00	04/23/25 08:55
310-304806-4	MW-15	Water	04/21/25 12:30	04/23/25 08:55

Detection Summary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-7

Lab Sample ID: 310-304806-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	6.86		1.00		ug/L	1		8260D	Total/NA
1,2-Dichloropropane	1.59		1.00		ug/L	1		8260D	Total/NA
Benzene	0.603		0.500		ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	55.1		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	10.5		1.00		ug/L	1		8260D	Total/NA
Vinyl chloride	2.27		1.00		ug/L	1		8260D	Total/NA
Arsenic	0.00388		0.00200		mg/L	1		6020B	Total/NA
Barium	0.431		0.00200		mg/L	1		6020B	Total/NA
Cadmium	0.000481		0.000200		mg/L	1		6020B	Total/NA
Chromium	0.00868		0.00500		mg/L	1		6020B	Total/NA
Cobalt	0.00639		0.000500		mg/L	1		6020B	Total/NA
Copper	0.0131		0.00500		mg/L	1		6020B	Total/NA
Lead	0.00419		0.000500		mg/L	1		6020B	Total/NA
Nickel	0.0105		0.00500		mg/L	1		6020B	Total/NA
Vanadium	0.0135		0.00500		mg/L	1		6020B	Total/NA
Total Suspended Solids	424		30.0		mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-9

Lab Sample ID: 310-304806-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.411		0.00200		mg/L	1		6020B	Total/NA
Selenium	0.0145		0.00500		mg/L	1		6020B	Total/NA
Total Suspended Solids	13.2		2.5		mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-12RR

Lab Sample ID: 310-304806-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00521		0.00200		mg/L	1		6020B	Total/NA
Barium	0.0466		0.00200		mg/L	1		6020B	Total/NA
Cadmium	0.000307		0.000200		mg/L	1		6020B	Total/NA
Chromium	0.0138		0.00500		mg/L	1		6020B	Total/NA
Cobalt	0.00489		0.000500		mg/L	1		6020B	Total/NA
Copper	0.0101		0.00500		mg/L	1		6020B	Total/NA
Lead	0.00547		0.000500		mg/L	1		6020B	Total/NA
Nickel	0.0146		0.00500		mg/L	1		6020B	Total/NA
Vanadium	0.0171		0.00500		mg/L	1		6020B	Total/NA
Zinc	0.0428		0.0200		mg/L	1		6020B	Total/NA
Total Suspended Solids	748		30.0		mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-15

Lab Sample ID: 310-304806-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	3.13		1.00		ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	38.3		1.00		ug/L	1		8260D	Total/NA
Vinyl chloride	1.08		1.00		ug/L	1		8260D	Total/NA
Arsenic	0.00598		0.00200		mg/L	1		6020B	Total/NA
Barium	0.448		0.00200		mg/L	1		6020B	Total/NA
Cadmium	0.000255		0.000200		mg/L	1		6020B	Total/NA
Cobalt	0.00699		0.000500		mg/L	1		6020B	Total/NA
Lead	0.000619		0.000500		mg/L	1		6020B	Total/NA
Nickel	0.00611		0.00500		mg/L	1		6020B	Total/NA
Total Suspended Solids	23.5		7.5		mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-7

Lab Sample ID: 310-304806-1

Date Collected: 04/21/25 12:00

Matrix: Water

Date Received: 04/23/25 08:55

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	<1.00		1.00		ug/L			04/25/25 02:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/25/25 02:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/25/25 02:32	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/25/25 02:32	1
1,1-Dichloroethane	6.86		1.00		ug/L			04/25/25 02:32	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/25/25 02:32	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/25/25 02:32	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/25/25 02:32	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/25/25 02:32	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 02:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/25/25 02:32	1
1,2-Dichloropropane	1.59		1.00		ug/L			04/25/25 02:32	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 02:32	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/25/25 02:32	1
2-Hexanone	<10.0		10.0		ug/L			04/25/25 02:32	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/25/25 02:32	1
Acetone	<10.0		10.0		ug/L			04/25/25 02:32	1
Acrylonitrile	<5.00		5.00		ug/L			04/25/25 02:32	1
Benzene	0.603		0.500		ug/L			04/25/25 02:32	1
Bromochloromethane	<5.00		5.00		ug/L			04/25/25 02:32	1
Bromodichloromethane	<1.00		1.00		ug/L			04/25/25 02:32	1
Bromoform	<5.00		5.00		ug/L			04/26/25 11:47	1
Bromomethane	<4.00		4.00		ug/L			04/25/25 02:32	1
Carbon disulfide	<1.00		1.00		ug/L			04/25/25 02:32	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/25/25 02:32	1
Chlorobenzene	<1.00		1.00		ug/L			04/25/25 02:32	1
Chloroethane	<4.00		4.00		ug/L			04/25/25 02:32	1
Chloroform	<3.00		3.00		ug/L			04/25/25 02:32	1
Chloromethane	<3.00		3.00		ug/L			04/25/25 02:32	1
cis-1,2-Dichloroethene	55.1		1.00		ug/L			04/25/25 02:32	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 02:32	1
Dibromochloromethane	<5.00		5.00		ug/L			04/25/25 02:32	1
Dibromomethane	<1.00		1.00		ug/L			04/25/25 02:32	1
Ethylbenzene	<1.00		1.00		ug/L			04/25/25 02:32	1
Iodomethane	<10.0		10.0		ug/L			04/25/25 02:32	1
m,p-Xylene	<2.00		2.00		ug/L			04/25/25 02:32	1
o-Xylene	<1.00		1.00		ug/L			04/25/25 02:32	1
Styrene	<1.00		1.00		ug/L			04/25/25 02:32	1
Tetrachloroethene	<1.00		1.00		ug/L			04/25/25 02:32	1
Toluene	<1.00		1.00		ug/L			04/25/25 02:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 02:32	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 02:32	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/25/25 02:32	1
Trichloroethene	10.5		1.00		ug/L			04/25/25 02:32	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/25/25 02:32	1
Vinyl acetate	<10.0		10.0		ug/L			04/25/25 02:32	1
Vinyl chloride	2.27		1.00		ug/L			04/25/25 02:32	1
Xylenes, Total	<3.00		3.00		ug/L			04/25/25 02:32	1
Methylene chloride	<5.00		5.00		ug/L			04/25/25 02:32	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-7

Lab Sample ID: 310-304806-1

Date Collected: 04/21/25 12:00

Matrix: Water

Date Received: 04/23/25 08:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		04/25/25 02:32	1
4-Bromofluorobenzene (Surr)	99		80 - 120		04/26/25 11:47	1
Dibromofluoromethane (Surr)	116		73 - 130		04/25/25 02:32	1
Dibromofluoromethane (Surr)	140	S1+	73 - 130		04/26/25 11:47	1
Toluene-d8 (Surr)	95		80 - 120		04/25/25 02:32	1
Toluene-d8 (Surr)	92		80 - 120		04/26/25 11:47	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 13:49	1
Arsenic	0.00388		0.00200		mg/L		04/24/25 09:00	04/25/25 13:49	1
Barium	0.431		0.00200		mg/L		04/24/25 09:00	04/25/25 13:49	1
Beryllium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:49	1
Cadmium	0.000481		0.000200		mg/L		04/24/25 09:00	04/25/25 13:49	1
Chromium	0.00868		0.00500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Cobalt	0.00639		0.000500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Copper	0.0131		0.00500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Lead	0.00419		0.000500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Nickel	0.0105		0.00500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Selenium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Silver	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:49	1
Thallium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:49	1
Vanadium	0.0135		0.00500		mg/L		04/24/25 09:00	04/25/25 13:49	1
Zinc	<0.0200		0.0200		mg/L		04/24/25 09:00	04/25/25 13:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	424		30.0		mg/L			04/24/25 14:53	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-9

Lab Sample ID: 310-304806-2

Date Collected: 04/21/25 11:30

Matrix: Water

Date Received: 04/23/25 08:55

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	<1.00		1.00		ug/L			04/25/25 02:55	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/25/25 02:55	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/25/25 02:55	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/25/25 02:55	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 02:55	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/25/25 02:55	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 02:55	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/25/25 02:55	1
2-Hexanone	<10.0		10.0		ug/L			04/25/25 02:55	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/25/25 02:55	1
Acetone	<10.0		10.0		ug/L			04/25/25 02:55	1
Acrylonitrile	<5.00		5.00		ug/L			04/25/25 02:55	1
Benzene	<0.500		0.500		ug/L			04/25/25 02:55	1
Bromochloromethane	<5.00		5.00		ug/L			04/25/25 02:55	1
Bromodichloromethane	<1.00		1.00		ug/L			04/25/25 02:55	1
Bromoform	<5.00		5.00		ug/L			04/26/25 09:36	1
Bromomethane	<4.00		4.00		ug/L			04/25/25 02:55	1
Carbon disulfide	<1.00		1.00		ug/L			04/25/25 02:55	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/25/25 02:55	1
Chlorobenzene	<1.00		1.00		ug/L			04/25/25 02:55	1
Chloroethane	<4.00		4.00		ug/L			04/25/25 02:55	1
Chloroform	<3.00		3.00		ug/L			04/25/25 02:55	1
Chloromethane	<3.00		3.00		ug/L			04/25/25 02:55	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 02:55	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 02:55	1
Dibromochloromethane	<5.00		5.00		ug/L			04/25/25 02:55	1
Dibromomethane	<1.00		1.00		ug/L			04/25/25 02:55	1
Ethylbenzene	<1.00		1.00		ug/L			04/25/25 02:55	1
Iodomethane	<10.0		10.0		ug/L			04/25/25 02:55	1
m,p-Xylene	<2.00		2.00		ug/L			04/25/25 02:55	1
o-Xylene	<1.00		1.00		ug/L			04/25/25 02:55	1
Styrene	<1.00		1.00		ug/L			04/25/25 02:55	1
Tetrachloroethene	<1.00		1.00		ug/L			04/25/25 02:55	1
Toluene	<1.00		1.00		ug/L			04/25/25 02:55	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 02:55	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 02:55	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/25/25 02:55	1
Trichloroethene	<1.00		1.00		ug/L			04/25/25 02:55	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/25/25 02:55	1
Vinyl acetate	<10.0		10.0		ug/L			04/25/25 02:55	1
Vinyl chloride	<1.00		1.00		ug/L			04/25/25 02:55	1
Xylenes, Total	<3.00		3.00		ug/L			04/25/25 02:55	1
Methylene chloride	<5.00		5.00		ug/L			04/25/25 02:55	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-9

Lab Sample ID: 310-304806-2

Date Collected: 04/21/25 11:30

Matrix: Water

Date Received: 04/23/25 08:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		80 - 120		04/25/25 02:55	1
4-Bromofluorobenzene (Surr)	97		80 - 120		04/26/25 09:36	1
Dibromofluoromethane (Surr)	112		73 - 130		04/25/25 02:55	1
Dibromofluoromethane (Surr)	141	S1+	73 - 130		04/26/25 09:36	1
Toluene-d8 (Surr)	92		80 - 120		04/25/25 02:55	1
Toluene-d8 (Surr)	98		80 - 120		04/26/25 09:36	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 13:23	1
Arsenic	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 13:23	1
Barium	0.411		0.00200		mg/L		04/24/25 09:00	04/25/25 13:23	1
Beryllium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:23	1
Cadmium	<0.000200		0.000200		mg/L		04/24/25 09:00	04/25/25 13:23	1
Chromium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Cobalt	<0.000500		0.000500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Copper	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Lead	<0.000500		0.000500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Nickel	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Selenium	0.0145		0.00500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Silver	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:23	1
Thallium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:23	1
Vanadium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:23	1
Zinc	<0.0200		0.0200		mg/L		04/24/25 09:00	04/25/25 13:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	13.2		2.5		mg/L			04/24/25 14:53	1

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-12RR

Lab Sample ID: 310-304806-3

Date Collected: 04/21/25 11:00

Matrix: Water

Date Received: 04/23/25 08:55

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	<1.00		1.00		ug/L			04/25/25 03:17	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/25/25 03:17	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/25/25 03:17	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/25/25 03:17	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 03:17	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/25/25 03:17	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 03:17	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/25/25 03:17	1
2-Hexanone	<10.0		10.0		ug/L			04/25/25 03:17	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/25/25 03:17	1
Acetone	<10.0		10.0		ug/L			04/25/25 03:17	1
Acrylonitrile	<5.00		5.00		ug/L			04/25/25 03:17	1
Benzene	<0.500		0.500		ug/L			04/25/25 03:17	1
Bromochloromethane	<5.00		5.00		ug/L			04/25/25 03:17	1
Bromodichloromethane	<1.00		1.00		ug/L			04/25/25 03:17	1
Bromoform	<5.00		5.00		ug/L			04/26/25 09:58	1
Bromomethane	<4.00		4.00		ug/L			04/25/25 03:17	1
Carbon disulfide	<1.00		1.00		ug/L			04/25/25 03:17	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/25/25 03:17	1
Chlorobenzene	<1.00		1.00		ug/L			04/25/25 03:17	1
Chloroethane	<4.00		4.00		ug/L			04/25/25 03:17	1
Chloroform	<3.00		3.00		ug/L			04/25/25 03:17	1
Chloromethane	<3.00		3.00		ug/L			04/25/25 03:17	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 03:17	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 03:17	1
Dibromochloromethane	<5.00		5.00		ug/L			04/25/25 03:17	1
Dibromomethane	<1.00		1.00		ug/L			04/25/25 03:17	1
Ethylbenzene	<1.00		1.00		ug/L			04/25/25 03:17	1
Iodomethane	<10.0		10.0		ug/L			04/25/25 03:17	1
m,p-Xylene	<2.00		2.00		ug/L			04/25/25 03:17	1
o-Xylene	<1.00		1.00		ug/L			04/25/25 03:17	1
Styrene	<1.00		1.00		ug/L			04/25/25 03:17	1
Tetrachloroethene	<1.00		1.00		ug/L			04/25/25 03:17	1
Toluene	<1.00		1.00		ug/L			04/25/25 03:17	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 03:17	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 03:17	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/25/25 03:17	1
Trichloroethene	<1.00		1.00		ug/L			04/25/25 03:17	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/25/25 03:17	1
Vinyl acetate	<10.0		10.0		ug/L			04/25/25 03:17	1
Vinyl chloride	<1.00		1.00		ug/L			04/25/25 03:17	1
Xylenes, Total	<3.00		3.00		ug/L			04/25/25 03:17	1
Methylene chloride	<5.00		5.00		ug/L			04/25/25 03:17	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-12RR

Lab Sample ID: 310-304806-3

Date Collected: 04/21/25 11:00

Matrix: Water

Date Received: 04/23/25 08:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		04/25/25 03:17	1
4-Bromofluorobenzene (Surr)	103		80 - 120		04/26/25 09:58	1
Dibromofluoromethane (Surr)	113		73 - 130		04/25/25 03:17	1
Dibromofluoromethane (Surr)	145	S1+	73 - 130		04/26/25 09:58	1
Toluene-d8 (Surr)	95		80 - 120		04/25/25 03:17	1
Toluene-d8 (Surr)	96		80 - 120		04/26/25 09:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 13:11	1
Arsenic	0.00521		0.00200		mg/L		04/24/25 09:00	04/25/25 13:11	1
Barium	0.0466		0.00200		mg/L		04/24/25 09:00	04/25/25 13:11	1
Beryllium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:11	1
Cadmium	0.000307		0.000200		mg/L		04/24/25 09:00	04/25/25 13:11	1
Chromium	0.0138		0.00500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Cobalt	0.00489		0.000500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Copper	0.0101		0.00500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Lead	0.00547		0.000500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Nickel	0.0146		0.00500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Selenium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Silver	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:11	1
Thallium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:11	1
Vanadium	0.0171		0.00500		mg/L		04/24/25 09:00	04/25/25 13:11	1
Zinc	0.0428		0.0200		mg/L		04/24/25 09:00	04/25/25 13:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	748		30.0		mg/L			04/24/25 14:53	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-15

Lab Sample ID: 310-304806-4

Date Collected: 04/21/25 12:30

Matrix: Water

Date Received: 04/23/25 08:55

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	<1.00		1.00		ug/L			04/25/25 03:40	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,1-Dichloroethane	3.13		1.00		ug/L			04/25/25 03:40	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/25/25 03:40	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/25/25 03:40	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/25/25 03:40	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 03:40	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/25/25 03:40	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/25/25 03:40	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/25/25 03:40	1
2-Hexanone	<10.0		10.0		ug/L			04/25/25 03:40	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/25/25 03:40	1
Acetone	<10.0		10.0		ug/L			04/25/25 03:40	1
Acrylonitrile	<5.00		5.00		ug/L			04/25/25 03:40	1
Benzene	<0.500		0.500		ug/L			04/25/25 03:40	1
Bromochloromethane	<5.00		5.00		ug/L			04/25/25 03:40	1
Bromodichloromethane	<1.00		1.00		ug/L			04/25/25 03:40	1
Bromoform	<5.00		5.00		ug/L			04/26/25 12:09	1
Bromomethane	<4.00		4.00		ug/L			04/25/25 03:40	1
Carbon disulfide	<1.00		1.00		ug/L			04/25/25 03:40	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/25/25 03:40	1
Chlorobenzene	<1.00		1.00		ug/L			04/25/25 03:40	1
Chloroethane	<4.00		4.00		ug/L			04/25/25 03:40	1
Chloroform	<3.00		3.00		ug/L			04/25/25 03:40	1
Chloromethane	<3.00		3.00		ug/L			04/25/25 03:40	1
cis-1,2-Dichloroethene	38.3		1.00		ug/L			04/25/25 03:40	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 03:40	1
Dibromochloromethane	<5.00		5.00		ug/L			04/25/25 03:40	1
Dibromomethane	<1.00		1.00		ug/L			04/25/25 03:40	1
Ethylbenzene	<1.00		1.00		ug/L			04/25/25 03:40	1
Iodomethane	<10.0		10.0		ug/L			04/25/25 03:40	1
m,p-Xylene	<2.00		2.00		ug/L			04/25/25 03:40	1
o-Xylene	<1.00		1.00		ug/L			04/25/25 03:40	1
Styrene	<1.00		1.00		ug/L			04/25/25 03:40	1
Tetrachloroethene	<1.00		1.00		ug/L			04/25/25 03:40	1
Toluene	<1.00		1.00		ug/L			04/25/25 03:40	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/25/25 03:40	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/25/25 03:40	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/25/25 03:40	1
Trichloroethene	<1.00		1.00		ug/L			04/25/25 03:40	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/25/25 03:40	1
Vinyl acetate	<10.0		10.0		ug/L			04/25/25 03:40	1
Vinyl chloride	1.08		1.00		ug/L			04/25/25 03:40	1
Xylenes, Total	<3.00		3.00		ug/L			04/25/25 03:40	1
Methylene chloride	<5.00		5.00		ug/L			04/25/25 03:40	1

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Client Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-15

Lab Sample ID: 310-304806-4

Date Collected: 04/21/25 12:30

Matrix: Water

Date Received: 04/23/25 08:55

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		04/25/25 03:40	1
4-Bromofluorobenzene (Surr)	97		80 - 120		04/26/25 12:09	1
Dibromofluoromethane (Surr)	113		73 - 130		04/25/25 03:40	1
Dibromofluoromethane (Surr)	137	S1+	73 - 130		04/26/25 12:09	1
Toluene-d8 (Surr)	95		80 - 120		04/25/25 03:40	1
Toluene-d8 (Surr)	95		80 - 120		04/26/25 12:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 13:42	1
Arsenic	0.00598		0.00200		mg/L		04/24/25 09:00	04/25/25 13:42	1
Barium	0.448		0.00200		mg/L		04/24/25 09:00	04/25/25 13:42	1
Beryllium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:42	1
Cadmium	0.000255		0.000200		mg/L		04/24/25 09:00	04/25/25 13:42	1
Chromium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Cobalt	0.00699		0.000500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Copper	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Lead	0.000619		0.000500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Nickel	0.00611		0.00500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Selenium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Silver	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:42	1
Thallium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 13:42	1
Vanadium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 13:42	1
Zinc	<0.0200		0.0200		mg/L		04/24/25 09:00	04/25/25 13:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	23.5		7.5		mg/L			04/24/25 14:53	1

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Definitions/Glossary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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.
S1+	Surrogate recovery exceeds control limits, high biased.

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: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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	BFB (80-120)	DBFM (73-130)	TOL (80-120)
310-304806-1	MW-7	106	116	95
310-304806-1	MW-7	99	140 S1+	92
310-304806-2	MW-9	105	112	92
310-304806-2	MW-9	97	141 S1+	98
310-304806-3	MW-12RR	104	113	95
310-304806-3	MW-12RR	103	145 S1+	96
310-304806-4	MW-15	102	113	95
310-304806-4	MW-15	97	137 S1+	95
LCS 310-452562/7	Lab Control Sample	101	99	100
LCS 310-452562/8	Lab Control Sample	105	107	95
LCS 310-452727/7	Lab Control Sample	95	96	101
LCS 310-452727/8	Lab Control Sample	97	129	98
MB 310-452562/6	Method Blank	109	106	96
MB 310-452727/6	Method Blank	96	135 S1+	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: MB 310-452562/6

Matrix: Water

Analysis Batch: 452562

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	<1.00		1.00		ug/L			04/24/25 19:46	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/24/25 19:46	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/24/25 19:46	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/24/25 19:46	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/24/25 19:46	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/24/25 19:46	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/24/25 19:46	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/24/25 19:46	1
2-Hexanone	<10.0		10.0		ug/L			04/24/25 19:46	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/24/25 19:46	1
Acetone	<10.0		10.0		ug/L			04/24/25 19:46	1
Acrylonitrile	<5.00		5.00		ug/L			04/24/25 19:46	1
Benzene	<0.500		0.500		ug/L			04/24/25 19:46	1
Bromochloromethane	<5.00		5.00		ug/L			04/24/25 19:46	1
Bromodichloromethane	<1.00		1.00		ug/L			04/24/25 19:46	1
Bromomethane	<4.00		4.00		ug/L			04/24/25 19:46	1
Carbon disulfide	<1.00		1.00		ug/L			04/24/25 19:46	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/24/25 19:46	1
Chlorobenzene	<1.00		1.00		ug/L			04/24/25 19:46	1
Chloroethane	<4.00		4.00		ug/L			04/24/25 19:46	1
Chloroform	<3.00		3.00		ug/L			04/24/25 19:46	1
Chloromethane	<3.00		3.00		ug/L			04/24/25 19:46	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/24/25 19:46	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/24/25 19:46	1
Dibromochloromethane	<5.00		5.00		ug/L			04/24/25 19:46	1
Dibromomethane	<1.00		1.00		ug/L			04/24/25 19:46	1
Ethylbenzene	<1.00		1.00		ug/L			04/24/25 19:46	1
Iodomethane	<10.0		10.0		ug/L			04/24/25 19:46	1
m,p-Xylene	<2.00		2.00		ug/L			04/24/25 19:46	1
o-Xylene	<1.00		1.00		ug/L			04/24/25 19:46	1
Styrene	<1.00		1.00		ug/L			04/24/25 19:46	1
Tetrachloroethene	<1.00		1.00		ug/L			04/24/25 19:46	1
Toluene	<1.00		1.00		ug/L			04/24/25 19:46	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/24/25 19:46	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/24/25 19:46	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/24/25 19:46	1
Trichloroethene	<1.00		1.00		ug/L			04/24/25 19:46	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/24/25 19:46	1
Vinyl acetate	<10.0		10.0		ug/L			04/24/25 19:46	1
Vinyl chloride	<1.00		1.00		ug/L			04/24/25 19:46	1
Xylenes, Total	<3.00		3.00		ug/L			04/24/25 19:46	1
Methylene chloride	<5.00		5.00		ug/L			04/24/25 19:46	1

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: MB 310-452562/6

Matrix: Water

Analysis Batch: 452562

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	109		80 - 120		04/24/25 19:46	1
Dibromofluoromethane (Surr)	106		73 - 130		04/24/25 19:46	1
Toluene-d8 (Surr)	96		80 - 120		04/24/25 19:46	1

Lab Sample ID: LCS 310-452562/7

Matrix: Water

Analysis Batch: 452562

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	19.21		ug/L		96	71 - 120
1,1,1-Trichloroethane	20.0	19.29		ug/L		96	73 - 129
1,1,2,2-Tetrachloroethane	20.0	16.91		ug/L		85	68 - 124
1,1,2-Trichloroethane	20.0	17.81		ug/L		89	73 - 123
1,1-Dichloroethane	20.0	17.61		ug/L		88	70 - 127
1,1-Dichloroethene	20.0	16.88		ug/L		84	63 - 132
1,2,3-Trichloropropane	20.0	17.48		ug/L		87	65 - 127
1,2-Dibromo-3-chloropropane	20.0	16.64		ug/L		83	50 - 150
1,2-Dibromoethane (EDB)	20.0	18.59		ug/L		93	75 - 125
1,2-Dichlorobenzene	20.0	17.45		ug/L		87	74 - 120
1,2-Dichloroethane	20.0	19.54		ug/L		98	71 - 125
1,2-Dichloropropane	20.0	18.80		ug/L		94	73 - 124
1,4-Dichlorobenzene	20.0	16.66		ug/L		83	72 - 120
2-Butanone (MEK)	40.0	38.89		ug/L		97	50 - 150
2-Hexanone	40.0	39.82		ug/L		100	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	37.89		ug/L		95	60 - 139
Acetone	40.0	37.81		ug/L		95	50 - 150
Acrylonitrile	200	194.7		ug/L		97	50 - 150
Benzene	20.0	17.73		ug/L		89	72 - 124
Bromochloromethane	20.0	18.81		ug/L		94	73 - 130
Bromodichloromethane	20.0	17.84		ug/L		89	74 - 122
Carbon disulfide	20.0	18.45		ug/L		92	59 - 135
Carbon tetrachloride	20.0	19.67		ug/L		98	67 - 132
Chlorobenzene	20.0	17.64		ug/L		88	76 - 120
Chloroform	20.0	19.03		ug/L		95	72 - 125
cis-1,2-Dichloroethene	20.0	20.06		ug/L		100	74 - 123
cis-1,3-Dichloropropene	20.0	17.12		ug/L		86	71 - 125
Dibromochloromethane	20.0	15.55		ug/L		78	71 - 121
Dibromomethane	20.0	18.97		ug/L		95	74 - 125
Ethylbenzene	20.0	18.19		ug/L		91	74 - 122
Iodomethane	20.0	9.992	J	ug/L		50	10 - 150
m,p-Xylene	20.0	18.70		ug/L		93	73 - 124
o-Xylene	20.0	18.83		ug/L		94	73 - 122
Styrene	20.0	18.51		ug/L		93	74 - 121
Tetrachloroethene	20.0	18.18		ug/L		91	71 - 130
Toluene	20.0	18.11		ug/L		91	74 - 123
trans-1,2-Dichloroethene	20.0	18.24		ug/L		91	70 - 126
trans-1,3-Dichloropropene	20.0	17.94		ug/L		90	69 - 123
trans-1,4-Dichloro-2-butene	20.0	15.19		ug/L		76	50 - 150

Eurofins Cedar Falls

QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: LCS 310-452562/7

Matrix: Water

Analysis Batch: 452562

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	18.03		ug/L		90	72 - 126
Vinyl acetate	40.0	35.63		ug/L		89	50 - 150
Xylenes, Total	40.0	37.53		ug/L		94	73 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	99		73 - 130
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: LCS 310-452562/8

Matrix: Water

Analysis Batch: 452562

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	13.39		ug/L		67	23 - 150
Chloroethane	20.0	18.21		ug/L		91	54 - 136
Chloromethane	20.0	18.04		ug/L		90	38 - 150
Trichlorofluoromethane	20.0	19.86		ug/L		99	54 - 149
Vinyl chloride	20.0	18.92		ug/L		95	56 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	107		73 - 130
Toluene-d8 (Surr)	95		80 - 120

Lab Sample ID: MB 310-452727/6

Matrix: Water

Analysis Batch: 452727

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	<1.00		1.00		ug/L			04/26/25 06:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,1-Dichloroethene	<2.00		2.00		ug/L			04/26/25 06:42	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			04/26/25 06:42	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			04/26/25 06:42	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/26/25 06:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/26/25 06:42	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/26/25 06:42	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/26/25 06:42	1
2-Hexanone	<10.0		10.0		ug/L			04/26/25 06:42	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/26/25 06:42	1
Acetone	<10.0		10.0		ug/L			04/26/25 06:42	1
Acrylonitrile	<5.00		5.00		ug/L			04/26/25 06:42	1

Eurofins Cedar Falls

QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: MB 310-452727/6

Matrix: Water

Analysis Batch: 452727

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L			04/26/25 06:42	1
Bromochloromethane	<5.00		5.00		ug/L			04/26/25 06:42	1
Bromodichloromethane	<1.00		1.00		ug/L			04/26/25 06:42	1
Bromoform	<5.00		5.00		ug/L			04/26/25 06:42	1
Bromomethane	<4.00		4.00		ug/L			04/26/25 06:42	1
Carbon disulfide	<1.00		1.00		ug/L			04/26/25 06:42	1
Carbon tetrachloride	<2.00		2.00		ug/L			04/26/25 06:42	1
Chlorobenzene	<1.00		1.00		ug/L			04/26/25 06:42	1
Chloroethane	<4.00		4.00		ug/L			04/26/25 06:42	1
Chloroform	<3.00		3.00		ug/L			04/26/25 06:42	1
Chloromethane	<3.00		3.00		ug/L			04/26/25 06:42	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/26/25 06:42	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/26/25 06:42	1
Dibromochloromethane	<5.00		5.00		ug/L			04/26/25 06:42	1
Dibromomethane	<1.00		1.00		ug/L			04/26/25 06:42	1
Ethylbenzene	<1.00		1.00		ug/L			04/26/25 06:42	1
Iodomethane	<10.0		10.0		ug/L			04/26/25 06:42	1
m,p-Xylene	<2.00		2.00		ug/L			04/26/25 06:42	1
o-Xylene	<1.00		1.00		ug/L			04/26/25 06:42	1
Styrene	<1.00		1.00		ug/L			04/26/25 06:42	1
Tetrachloroethene	<1.00		1.00		ug/L			04/26/25 06:42	1
Toluene	<1.00		1.00		ug/L			04/26/25 06:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/26/25 06:42	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/26/25 06:42	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			04/26/25 06:42	1
Trichloroethene	<1.00		1.00		ug/L			04/26/25 06:42	1
Trichlorofluoromethane	<4.00		4.00		ug/L			04/26/25 06:42	1
Vinyl acetate	<10.0		10.0		ug/L			04/26/25 06:42	1
Vinyl chloride	<1.00		1.00		ug/L			04/26/25 06:42	1
Xylenes, Total	<3.00		3.00		ug/L			04/26/25 06:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120		04/26/25 06:42	1
Dibromofluoromethane (Surr)	135	S1+	73 - 130		04/26/25 06:42	1
Toluene-d8 (Surr)	99		80 - 120		04/26/25 06:42	1

Lab Sample ID: LCS 310-452727/7

Matrix: Water

Analysis Batch: 452727

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	18.52		ug/L		93	71 - 120
1,1,1-Trichloroethane	20.0	21.81		ug/L		109	73 - 129
1,1,2,2-Tetrachloroethane	20.0	19.21		ug/L		96	68 - 124
1,1,2-Trichloroethane	20.0	20.00		ug/L		100	73 - 123
1,1-Dichloroethane	20.0	22.52		ug/L		113	70 - 127
1,1-Dichloroethene	20.0	19.52		ug/L		98	63 - 132
1,2,3-Trichloropropane	20.0	20.57		ug/L		103	65 - 127

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: LCS 310-452727/7

Matrix: Water

Analysis Batch: 452727

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromo-3-chloropropane	20.0	20.30		ug/L		102	50 - 150
1,2-Dibromoethane (EDB)	20.0	18.31		ug/L		92	75 - 125
1,2-Dichlorobenzene	20.0	19.12		ug/L		96	74 - 120
1,2-Dichloroethane	20.0	21.32		ug/L		107	71 - 125
1,2-Dichloropropane	20.0	20.26		ug/L		101	73 - 124
1,4-Dichlorobenzene	20.0	19.58		ug/L		98	72 - 120
2-Butanone (MEK)	40.0	34.30		ug/L		86	50 - 150
2-Hexanone	40.0	36.68		ug/L		92	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	37.06		ug/L		93	60 - 139
Acetone	40.0	37.69		ug/L		94	50 - 150
Acrylonitrile	200	209.3		ug/L		105	50 - 150
Benzene	20.0	20.05		ug/L		100	72 - 124
Bromochloromethane	20.0	20.54		ug/L		103	73 - 130
Bromodichloromethane	20.0	20.13		ug/L		101	74 - 122
Bromoform	20.0	18.10		ug/L		91	61 - 122
Carbon disulfide	20.0	21.86		ug/L		109	59 - 135
Carbon tetrachloride	20.0	20.89		ug/L		104	67 - 132
Chlorobenzene	20.0	19.83		ug/L		99	76 - 120
Chloroform	20.0	22.04		ug/L		110	72 - 125
cis-1,2-Dichloroethene	20.0	22.02		ug/L		110	74 - 123
cis-1,3-Dichloropropene	20.0	17.45		ug/L		87	71 - 125
Dibromochloromethane	20.0	19.42		ug/L		97	71 - 121
Dibromomethane	20.0	20.15		ug/L		101	74 - 125
Ethylbenzene	20.0	19.49		ug/L		97	74 - 122
Iodomethane	20.0	18.09		ug/L		90	10 - 150
m,p-Xylene	20.0	19.62		ug/L		98	73 - 124
o-Xylene	20.0	19.38		ug/L		97	73 - 122
Styrene	20.0	19.56		ug/L		98	74 - 121
Tetrachloroethene	20.0	19.70		ug/L		98	71 - 130
Toluene	20.0	19.95		ug/L		100	74 - 123
trans-1,2-Dichloroethene	20.0	21.22		ug/L		106	70 - 126
trans-1,3-Dichloropropene	20.0	18.37		ug/L		92	69 - 123
trans-1,4-Dichloro-2-butene	20.0	19.96		ug/L		100	50 - 150
Trichloroethene	20.0	19.47		ug/L		97	72 - 126
Vinyl acetate	40.0	42.28		ug/L		106	50 - 150
Xylenes, Total	40.0	39.00		ug/L		98	73 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	96		73 - 130
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-452727/8

Matrix: Water

Analysis Batch: 452727

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	20.14		ug/L		101	23 - 150

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: LCS 310-452727/8

Matrix: Water

Analysis Batch: 452727

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloroethane	20.0	21.94		ug/L		110	54 - 136
Chloromethane	20.0	23.64		ug/L		118	38 - 150
Trichlorofluoromethane	20.0	20.95		ug/L		105	54 - 149
Vinyl chloride	20.0	21.53		ug/L		108	56 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	129		73 - 130
Toluene-d8 (Surr)	98		80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-452480/1-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452480

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 12:42	1
Arsenic	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 12:42	1
Barium	<0.00200		0.00200		mg/L		04/24/25 09:00	04/25/25 12:42	1
Beryllium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 12:42	1
Cadmium	<0.000200		0.000200		mg/L		04/24/25 09:00	04/25/25 12:42	1
Chromium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Cobalt	<0.000500		0.000500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Copper	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Lead	<0.000500		0.000500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Nickel	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Selenium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Silver	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 12:42	1
Thallium	<0.00100		0.00100		mg/L		04/24/25 09:00	04/25/25 12:42	1
Vanadium	<0.00500		0.00500		mg/L		04/24/25 09:00	04/25/25 12:42	1
Zinc	<0.0200		0.0200		mg/L		04/24/25 09:00	04/25/25 12:42	1

Lab Sample ID: LCS 310-452480/2-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452480

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2186		mg/L		109	80 - 120
Arsenic	0.200	0.2068		mg/L		103	80 - 120
Barium	0.100	0.1059		mg/L		106	80 - 120
Beryllium	0.100	0.09833		mg/L		98	80 - 120
Cadmium	0.100	0.1016		mg/L		102	80 - 120
Chromium	0.100	0.1025		mg/L		103	80 - 120
Cobalt	0.100	0.1061		mg/L		106	80 - 120
Copper	0.200	0.2061		mg/L		103	80 - 120
Lead	0.200	0.2087		mg/L		104	80 - 120
Nickel	0.200	0.2055		mg/L		103	80 - 120
Selenium	0.400	0.3892		mg/L		97	80 - 120

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

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

Lab Sample ID: LCS 310-452480/2-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452480

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	0.100	0.1090		mg/L		109	80 - 120
Thallium	0.100	0.09259		mg/L		93	80 - 120
Vanadium	0.100	0.1024		mg/L		102	80 - 120
Zinc	0.200	0.2025		mg/L		101	80 - 120

Lab Sample ID: 310-304806-2 DU

Matrix: Water

Analysis Batch: 452834

Client Sample ID: MW-9

Prep Type: Total/NA

Prep Batch: 452480

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Arsenic	<0.00200		<0.00200		mg/L		NC	20
Barium	0.411		0.3868		mg/L		6	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Nickel	<0.00500		<0.00500		mg/L		NC	20
Selenium	0.0145		0.01360		mg/L		6	20
Silver	<0.00100		<0.00100		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20
Zinc	<0.0200		<0.0200		mg/L		NC	20

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

Lab Sample ID: MB 310-452633/1

Matrix: Water

Analysis Batch: 452633

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.0		5.0		mg/L			04/24/25 14:53	1

Lab Sample ID: LCS 310-452633/2

Matrix: Water

Analysis Batch: 452633

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	105.0		mg/L		105	81 - 116

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QC Association Summary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

GC/MS VOA

Analysis Batch: 452562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304806-1	MW-7	Total/NA	Water	8260D	
310-304806-2	MW-9	Total/NA	Water	8260D	
310-304806-3	MW-12RR	Total/NA	Water	8260D	
310-304806-4	MW-15	Total/NA	Water	8260D	
MB 310-452562/6	Method Blank	Total/NA	Water	8260D	
LCS 310-452562/7	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-452562/8	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 452727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304806-1	MW-7	Total/NA	Water	8260D	
310-304806-2	MW-9	Total/NA	Water	8260D	
310-304806-3	MW-12RR	Total/NA	Water	8260D	
310-304806-4	MW-15	Total/NA	Water	8260D	
MB 310-452727/6	Method Blank	Total/NA	Water	8260D	
LCS 310-452727/7	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-452727/8	Lab Control Sample	Total/NA	Water	8260D	

Metals

Prep Batch: 452480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304806-1	MW-7	Total/NA	Water	3005A	
310-304806-2	MW-9	Total/NA	Water	3005A	
310-304806-3	MW-12RR	Total/NA	Water	3005A	
310-304806-4	MW-15	Total/NA	Water	3005A	
MB 310-452480/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-452480/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-304806-2 DU	MW-9	Total/NA	Water	3005A	

Analysis Batch: 452834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304806-1	MW-7	Total/NA	Water	6020B	452480
310-304806-2	MW-9	Total/NA	Water	6020B	452480
310-304806-3	MW-12RR	Total/NA	Water	6020B	452480
310-304806-4	MW-15	Total/NA	Water	6020B	452480
MB 310-452480/1-A	Method Blank	Total/NA	Water	6020B	452480
LCS 310-452480/2-A	Lab Control Sample	Total/NA	Water	6020B	452480
310-304806-2 DU	MW-9	Total/NA	Water	6020B	452480

General Chemistry

Analysis Batch: 452633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304806-1	MW-7	Total/NA	Water	I-3765-85	
310-304806-2	MW-9	Total/NA	Water	I-3765-85	
310-304806-3	MW-12RR	Total/NA	Water	I-3765-85	
310-304806-4	MW-15	Total/NA	Water	I-3765-85	
MB 310-452633/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-452633/2	Lab Control Sample	Total/NA	Water	I-3765-85	

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Lab Chronicle

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Client Sample ID: MW-7

Date Collected: 04/21/25 12:00

Date Received: 04/23/25 08:55

Lab Sample ID: 310-304806-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452727	WSE8	EET CF	04/26/25 11:47
Total/NA	Analysis	8260D		1	452562	WSE8	EET CF	04/25/25 02:32
Total/NA	Prep	3005A			452480	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 13:49
Total/NA	Analysis	I-3765-85		1	452633	XJ7V	EET CF	04/24/25 14:53

Client Sample ID: MW-9

Date Collected: 04/21/25 11:30

Date Received: 04/23/25 08:55

Lab Sample ID: 310-304806-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452727	WSE8	EET CF	04/26/25 09:36
Total/NA	Analysis	8260D		1	452562	WSE8	EET CF	04/25/25 02:55
Total/NA	Prep	3005A			452480	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 13:23
Total/NA	Analysis	I-3765-85		1	452633	XJ7V	EET CF	04/24/25 14:53

Client Sample ID: MW-12RR

Date Collected: 04/21/25 11:00

Date Received: 04/23/25 08:55

Lab Sample ID: 310-304806-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452727	WSE8	EET CF	04/26/25 09:58
Total/NA	Analysis	8260D		1	452562	WSE8	EET CF	04/25/25 03:17
Total/NA	Prep	3005A			452480	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 13:11
Total/NA	Analysis	I-3765-85		1	452633	XJ7V	EET CF	04/24/25 14:53

Client Sample ID: MW-15

Date Collected: 04/21/25 12:30

Date Received: 04/23/25 08:55

Lab Sample ID: 310-304806-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452727	WSE8	EET CF	04/26/25 12:09
Total/NA	Analysis	8260D		1	452562	WSE8	EET CF	04/25/25 03:40
Total/NA	Prep	3005A			452480	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 13:42
Total/NA	Analysis	I-3765-85		1	452633	XJ7V	EET CF	04/24/25 14:53

Laboratory References:

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

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
8260D		Water	m,p-Xylene
8260D		Water	o-Xylene

Method Summary

Client: Klingner & Associates PC
Project/Site: Keokuk Landfill 21-2010

Job ID: 310-304806-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF

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



Environment Testing
America



310-304806 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Hingner & Associates</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>4.23.25</u>	<u>0855</u>	<u>CGC</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☐ Yes ☒ No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>R</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.9</u>		Corrected Temp (°C): <u>0.9</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ 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?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			

Document CED-P-SAM-FRM45521

Revision 26

Date 27 Jan 2022

Eurofins Cedar Falls

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

Login Sample Receipt Checklist

Client: Klingner & Associates PC

Job Number: 310-304806-1

Login Number: 304806

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Bunker, Xavier M

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.	True	
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	

GROUNDWATER SAMPLING FORMS



Groundwater Sampling Field Sheet

Disposal Site Name: _____ Permit No.: _____

Well/Piezometer: _____ Weather: _____

Date: _____ Sampler Name: _____

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): _____

Casing Diameter (in): _____ Casing Material: _____

Top of Casing Elevation (ft. MSL): _____ Ground Surface Elevation (ft. MSL): _____

Field Observations

Locked: ☐ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):			
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary: _____

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☐ Other (specify): _____

Equipment Name & Description: _____

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify): _____

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method: _____

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ()							
Temp (°F)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: _____

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments: _____



Groundwater Sampling Field Sheet

Disposal Site Name: _____ Permit No.: _____

Well/Piezometer: _____ Weather: _____

Date: _____ Sampler Name: _____

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): _____

Casing Diameter (in): _____ Casing Material: _____

Top of Casing Elevation (ft. MSL): _____ Ground Surface Elevation (ft. MSL): _____

Field Observations

Locked: ☐ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):			
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary: _____

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☐ Other (specify): _____

Equipment Name & Description: _____

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify): _____

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method: _____

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ()							
Temp (°F)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: _____

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments: _____



Groundwater Sampling Field Sheet

Disposal Site Name: _____ Permit No.: _____

Well/Piezometer: _____ Weather: _____

Date: _____ Sampler Name: _____

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): _____

Casing Diameter (in): _____ Casing Material: _____

Top of Casing Elevation (ft. MSL): _____ Ground Surface Elevation (ft. MSL): _____

Field Observations

Locked: ☐ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):			
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary: _____

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☐ Other (specify): _____

Equipment Name & Description: _____

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify): _____

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method: _____

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ()							
Temp (°F)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: _____

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments: _____



Groundwater Sampling Field Sheet

Disposal Site Name: _____ Permit No.: _____

Well/Piezometer: _____ Weather: _____

Date: _____ Sampler Name: _____

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): _____

Casing Diameter (in): _____ Casing Material: _____

Top of Casing Elevation (ft. MSL): _____ Ground Surface Elevation (ft. MSL): _____

Field Observations

Locked: ☐ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):			
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary: _____

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☐ Other (specify): _____

Equipment Name & Description: _____

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify): _____

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method: _____

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ()							
Temp (°F)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: _____

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments: _____

METHANE SUMMARY



Date 03/19/25
Eng Proj # 21-2010

Inspected by STT
Checked by JAC

METHANE GAS MEASUREMENTS

FACILITY INFORMATION

CITY OF KEOKUK SANITARY
LANDFILL

PERMIT NUMBER 56-SDP-04-77C PERMIT ISSUED 9/10/1992, EXPIRES 9/10/2026

INSPECTION INFORMATION

TAKEN BY: STT

DATE: March 19, 2025

EQUIPMENT: LANDTEC GEM 5000, TUBING ATTACHED TO PVC CAP WITH BARBED HOSE FITTING / TUBING ATTACHED TO SAMPLE PORTS ON GAS VENTS

WEATHER CONDITIONS CLEAR

WIND: 15 MPH SW

TEMPERATURE: 65 DEGREES FAHRENHEIT

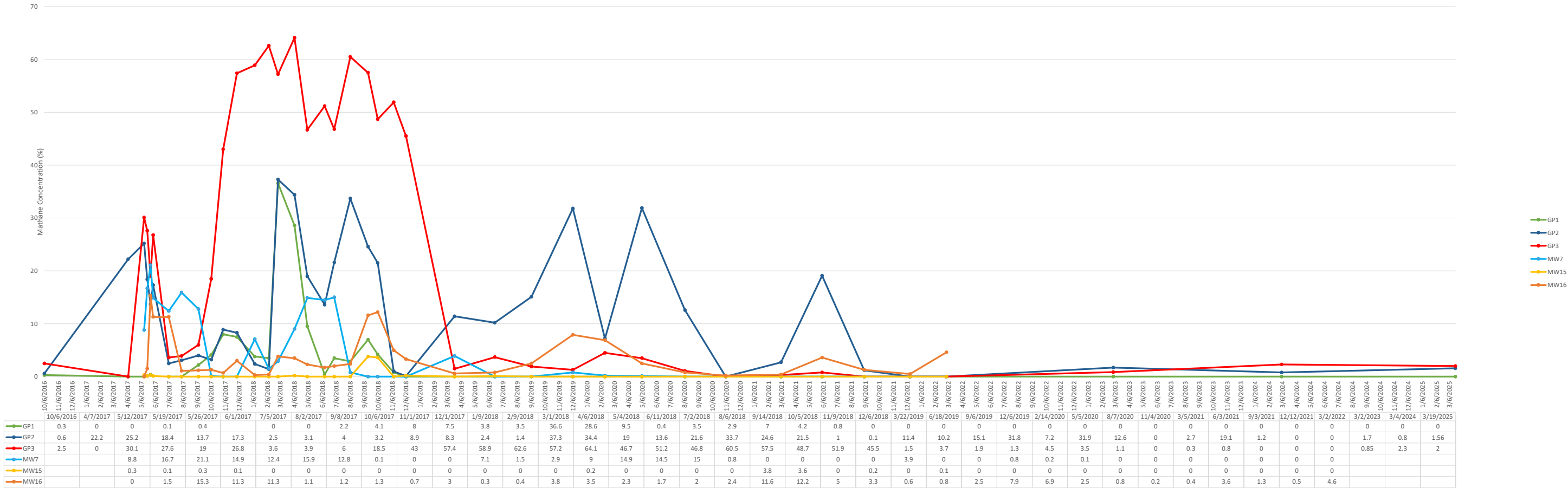
LOCATION	% LOWER EXPLOSIVE LIMIT	TIME OF MEASUREMENT	CO2 CONTENT	O2 CONTENT	COMMENTS
GP #1	0.0%	1:45 PM	3.1%	19.4%	0.0% CH4
GP #2	31.2%	1:55 PM	14.8%	10.1%	1.56% CH4
GP #3	41.3%	1:50 PM	24.4%	6.9%	2% CH4
GP #4	0.0%	2:00 PM	3.8%	16.1%	0.0% CH4

** METHANE LOWER EXPLOSIVE LIMIT = 5%

** METHANE UPPER EXPLOSIVE LIMIT = 15%

HISTORIC METHANE SUMMARY

Methane (CH4) Concentration



ANNUAL INSPECTION DOCUMENTS

CLOSED LANDFILL INSPECTION CHECKLIST

CITY OF KEOKUK LANDFILL (NORTH) **LANDFILL CONTACTS:** **Brian Carroll, Public Works Director**
PERMIT NUMBER 56-SDP-04-77C **PERMIT ISSUED 9/10/1992, EXPIRES 9/10/2026**

Weather Conditions: 60F, Cloudy

GENERAL

1.) Landfill ID and contact info posted?	Yes
2.) Is entrance gate locked?	Yes
3.) Entrance Road Conditions	Good, some erosion present near MW12RR

COVER

4.) Condition of Final Cover: Vegetation	Generally good, a few areas requiring seeding from recent repairs were observed
5.) Has topsoil been placed on the landfill?	Yes
6.) Has the landfill been properly graded and seeded?	Generally yes. Some areas of ponded water were noted, see attached photo log.

EROSION

7.) Is drainage and erosion being controlled on the landfill?	Yes
---	-----

LEACHATE

8.) Is there evidence of leachate on the surface of the landfill?	No.
9.) Is there any leachate flows leaving the site?	Leachate staining was observed along the bank of the creek in a small area (less than 1 SF) approximately 20' downstream of the stormwater outlet.
10.) Has the landfill submitted plans for a leachate collection/treatment system?	Yes
11.) Has the approved leachate collection and treatment system been constructed?	Yes
12.) Does the landfill have a permit to discharge leachate?	No

LANDFILL GAS

13.) Is there evidence of landfill gas problems?	No odors present. Took landfill gas measurements, see attached.
--	---

MONITORING WELLS

14.) Are monitoring wells in good condition?	Yes
15.) Are monitoring wells marked and identified?	Yes

MISCELLANEOUS

16.) Is there evidence of open burning?	No
17.) Is there evidence of open dumping, litter?	No
18.) Is there evidence of rodents or insects as a result of improper landfilling operations?	No

Additional Comments:

Leachate staining was observed along the bank of the creek in a small area (less than 1 SF) approximately 20' downstream of the stormwater outlet. This area have been addressed already by the repairs made in the fall, some residual leachate may be making its way out of the soil. The area will continue to be monitored.



Description	Entrance gate signage	1
Date	3/19/2025	



Description	Leachate collection area	2
Date	3/19/2025	

		
Description	Slope above leachate collection area	3
Date	3/19/2025	

		
Description	Looking up slope north of leachate collection area	4
Date	3/19/2025	

		
Description	Leachate collection area, area of repair made in fall 2024	5
Date	3/19/2025	

		
Description	MW8R	6
Date	3/19/2025	

		
Description	Looking east from MW8R, area of repair made in fall 2024	7
Date	3/19/2025	

		
Description	Stormwater outlet	8
Date	3/19/2025	

		9
Description	Stormwater outlet	
Date	3/19/2025	
		10
Description	Area of leachate staining approximately 20' downstream of stormwater outlet	
Date	3/19/2025	

		
Description	Looking east from leachate collection area	11
Date	3/19/2025	
		
Description	Looking southeast toward leachate collection area from top of slope	12
Date	3/19/2025	

		
Description	Looking southeast along berm above leachate collection area	13
Date	3/19/2025	
		
Description	Looking east above leachate collection area	14
Date	3/19/2025	

		
Description	Looking northeast above leachate collection area	15
Date	3/19/2025	

		
Description	Looking north above leachate collection area	16
Date	3/19/2025	

		
Description	Fill place behind berm above leachate collection area in fall of 2024	17
Date	3/19/2025	

		
Description	Fill place behind berm above leachate collection area in fall of 2024	18
Date	3/19/2025	

		
Description	Fill place behind berm above leachate collection area in fall of 2024	19
Date	3/19/2025	

		
Description	Looking southwest from top of berm toward leachate collection area	20
Date	3/19/2025	

		
Description	First surface intake	21
Date	3/19/2025	
		
Description	Inside of first intake	22
Date	3/19/2025	



Description	Second surface water intake	23
Date	3/19/2025	



Description	Interior of second surface water intake	24
Date	3/19/2025	

		
Description	Looking east toward MW16 from second surface intake	25
Date	3/19/2025	
		
Description	Looking east toward MW16 from near second surface intake	26
Date	3/19/2025	

		
Description	Looking northwest from second surface intake	27
Date	3/19/2025	

		
Description	Looking north from second surface intake, ponding along berm	28
Date	3/19/2025	

		29
Description	Looking west from second surface intake	
Date	3/19/2025	
		30
Description	South gas mitigation trench, GP2, and MW16	
Date	3/19/2025	

		31
Description	GP4	
Date	3/19/2025	
		32
Description	Trees cut along fence row on south property boundary	
Date	3/19/2025	

			
Description		Looking east from near third intake	33
Date		3/19/2025	
			
Description		Third intake	34
Date		3/19/2025	

		
Description	Riser from south mitigation trench damaged	35
Date	3/19/2025	
		
Description	GP2	36
Date	3/19/2025	

		
Description	Ponding along berm north of GP2	37
Date	3/19/2025	

		
Description	Looking northwest across landfill	38
Date	3/19/2025	

		
Description	Looking west across landfill	39
Date	3/19/2025	
		
Description	Looking northwest across landfill	40
Date	3/19/2025	

		
Description	Ponding near west central side of landfill	41
Date	3/19/2025	
		
Description	Southeast portion of landfill	42
Date	3/19/2025	

		
Description	Looking north from southeast portion of lanfill	43
Date	3/19/2025	

		
Description	Looking northwest from southeast portion of lanfill	44
Date	3/19/2025	

		
Description	East gas mitigation trench	45
Date	3/19/2025	
		
Description	Looking west from near east mitigation trench	46
Date	3/19/2025	

		
Description	North end of east gas mitigation trench	47
Date	3/19/2025	
		
Description	Looking southwest from northeast part of landfill	48
Date	3/19/2025	

		
Description	Looking south from northeast corner of landfill	49
Date	3/19/2025	
		
Description	Looking south-southwest from northeast corner of landfill	50
Date	3/19/2025	

		
Description	Looking south from north central part of landfill	51
Date	3/19/2025	

		
Description	Looking south from north central part of landfill	52
Date	3/19/2025	

CLOSED LANDFILL INSPECTION CHECKLIST

CITY OF KEOKUK LANDFILL (NORTH)		LANDFILL CONTACTS: Brian Carroll, Public Works Director
PERMIT NUMBER 56-SDP-04-77C		PERMIT ISSUED 9/10/1992, EXPIRES 9/10/2026
Weather Conditions: 62F, Clear		
GENERAL		
1.) Landfill ID and contact info posted?	Yes	
2.) Is entrance gate locked?	Yes	
3.) Entrance Road Conditions	Good, some erosion present near leachate collection area	
COVER		
4.) Condition of Final Cover: Vegetation	Generally good	
5.) Has topsoil been placed on the landfill?	Yes	
6.) Has the landfill been properly graded and seeded?	Generally yes.	
EROSION		
7.) Is drainage and erosion being controlled on the landfill?	Yes	
LEACHATE		
8.) Is there evidence of leachate on the surface of the landfill?	No.	
9.) Is there any leachate flows leaving the site?	Leachate staining was observed along the bank of the creek in a small area (less than 1 SF) approximately 20' downstream of the stormwater outlet and below stormwater outfall pipe	
10.) Has the landfill submitted plans for a leachate collection/treatment system?	Yes	
11.) Has the approved leachate collection and treatment system been constructed?	Yes	
12.) Does the landfill have a permit to discharge leachate?	No	
LANDFILL GAS		
13.) Is there evidence of landfill gas problems?	No odors present.	
MONITORING WELLS		
14.) Are monitoring wells in good condition?	Yes	
15.) Are monitoring wells marked and identified?	Yes	
MISCELLANEOUS		
16.) Is there evidence of open burning?	No	
17.) Is there evidence of open dumping, litter?	No	
18.) Is there evidence of rodents or insects as a result of improper landfilling operations?	No	

Additional Comments:

Leachate staining was observed along the bank of the creek in a small area (less than 1 SF) approximately 20' downstream of the stormwater outlet. This area has been monitored since repairs were made to address the seep in the fall of 2024. The seep may be marginally smaller than previously observed. An area below the stormwater discharge pipe was also observed to have a small leachate seep. Recommendations will be provided to the City for additional repairs address the observed leachate seeps



Description	Landfill gate	1
Date	9/5/2025	



Description	GP1	2
Date	9/5/2025	

		
Description	MW9	3
Date	9/5/2025	
		
Description	GP3	4
Date	9/5/2025	

		
Description	East gas mitigation trench	5
Date	9/5/2025	
		
Description	Looking north across landfill from SE corner of landfill	6
Date	9/5/2025	

		
Description	Looking west across landfill from SE corner of landfill	7
Date	9/5/2025	
		
Description	South gas mitigation trench, looking southwest	8
Date	9/5/2025	

		
Description	Broken riser on south gas mitigation trench	9
Date	9/5/2025	

		
Description	GP2	10
Date	9/5/2025	

		
Description	GP4	11
Date	9/5/2025	
		
Description	3 rd stormwater intake east of MW8RR (near GP2)	12
Date	9/5/2025	

		
Description	South gas mitigation trench	13
Date	9/5/2025	
		
Description	MW16	14
Date	9/5/2025	

		
Description	2 nd stormwater intake east of MW8RR (near MW16)	15
Date	9/5/2025	
		
Description	Area above leachate collection area, looking north	16
Date	9/5/2025	

		
Description	Area above leachate collection area, looking west	17
Date	9/5/2025	
		
Description	1 st Stormwater intake east of MW8RR	18
Date	9/5/2025	

		
Description	Looking down slope from hill above MW8RR	19
Date	9/5/2025	

		
Description	Manhole for leachate laterals	20
Date	9/5/2025	



Description	Leachate collection area	21
Date	9/5/2025	



Description	Leachate collection area, erosion present in rock area	22
Date	9/5/2025	

		
Description	Repair made for leachate collection near MW8R	23
Date	9/5/2025	
		
Description	MW12RR	24
Date	9/5/2025	

		
Description	Leachate seep at bank, approximately 20' downstream of stormwater outlet	25
Date	9/5/2025	
		
Description	Leachate seep approximately 18" to 24" below stormwater outlet	26
Date	9/5/2025	