



Jolly, Becky <becky.jolly@dnr.iowa.gov>

Fwd: FW: Keokuk Contractors IW Landfill - 56-SDP-02-75: 2025 AWQR Comments

1 message

Rath, Brian <brian.rath@dnr.iowa.gov>
To: Becky Jolly <becky.jolly@dnr.iowa.gov>

Tue, Aug 18, 2026 at 12:00 PM

Becky - Please file the attached and this email with the site. I will review these.

Thanks,
Brian

Brian Rath, P.E.
Environmental Engineer Senior
Solid Waste and Contaminated Sites Section
Iowa Department of Natural Resources
6200 Park Ave, Suite 200
Des Moines, IA 50321
515-537-4051
brian.rath@dnr.iowa.gov
www.iowadnr.gov



----- Forwarded message -----

From: **Todd Felderman** <TFelderman@senecaco.com>
Date: Thu, Aug 13, 2026 at 10:11 AM
Subject: FW: Keokuk Contractors IW Landfill - 56-SDP-02-75: 2025 AWQR Comments
To: NUNEZ Pedro <pedro.nunez@roquette.com>
Cc: Rath, Brian <brian.rath@dnr.iowa.gov>

Good Morning Pedro,

I'm following up to make sure you saw this DNR email regarding the annual monitoring reports for the old landfill.

Brian, I answered any comments I could in Red below.

I can meet with yourself and Mr. Rath anytime.

Thanks

Todd Felderman

Environmental Consulting Manager

O: 563-279-1341

M: 563-449-4347

Seneca Companies, Inc. - Davenport, IA

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From: Rath, Brian <brian.rath@dnr.iowa.gov>

Sent: Thursday, July 2, 2026 11:03 AM

To: Brian Johnson <BRIAN.JOHNSON@roquette.com>; Todd Felderman <TFelderman@senecaco.com>

Cc: Levetzow, Kurt <kurt.levetzow@dnr.iowa.gov>; Becky Jolly <becky.jolly@dnr.iowa.gov>

Subject: Keokuk Contractors IW Landfill - 56-SDP-02-75: 2025 AWQR Comments

The DNR has completed its initial review of the above-referenced document (Doc 116365) and has the following comments. As noted near the end of this email, we request a meeting between the responsible parties, the consultant, and DNR to discuss our comments and ensure we are all on the same page.

General

Thank you for utilizing the DNR's report template. Per our communications regarding the 2023 AWQR (Doc 117446), the maps were going to be updated for the next submittal. However, the existing contours on the provided maps are still illegible. Please provide updated maps. **Attached are the maps from Appendix 1 (Site map) and Figure 2 (Groundwater Flow). Does the DNR need actual contour elevations on the map, the contours themselves are visible.**

In reviewing our files, we do not have the 2024 AWQR and its associated inspection reports in our system. Please provide the status of these documents. **The 2024 AWQR is attached.**

Statistics

Upon an initial cursory review of the 2025 AWQR, it appears that the DNR's request for more robust statistics was not addressed, again. As you know, the DNR originally raised this issue in 2018 and again in every subsequent AWQR review. **Seneca discussed with the previous Roquette contact that I was unable to provide the more robust statistics required. I gave him engineering firms that were capable of doing these, but he wanted to use Seneca for a couple more years because the site was unlikely to be closed in that time frame. This is a matter to discuss with the new Roquette contact.**

Because the current statistical approach does not provide adequate evidence, the facility is unlikely to be able to reduce or terminate post-closure care before the current permit expiration date. In similar situations, we extend the permit expiration date by three to five years, which is our current plan for this facility. **When is the post closure date? I have not seen any evidence of plume migration or contamination increase in any of the monitoring wells. A engineering firm that could provide the more robust statistics could confirm this.**

In addition, without adequate evidence, you may have to delineate potential contaminant plumes (i.e. install monitoring wells to determine the horizontal and vertical extent) based on the current information and take corrective action as appropriate. **Acknowledged**

However, if adequate statistical evidence is provided, we can and will reduce or terminate post-closure care accordingly with the ultimate goal of rescinding the permit and closing out the administrative order. **Acknowledged**

Sampling Procedures

Thank you for adding TSS to the sampling parameters. Reviewing the most recent results shows the values are very elevated. Since sampling is being conducted with a bailer, the elevated TSS is likely from sediment stirred up during the sampling process, not the formation. This can result in elevated total metal results, which may not be representative and thus misleading. **For future monitoring would it be valid to sample TSS in the first bailer prior to purging the wells and stirring up the sediment?**

In general, turbidity levels should be less than 5 ntu or a TSS level less than 5 mg/l for satisfactory sample quality. The DNR recognizes that even with good well construction, well development, and better sampling, a TSS level of 5 mg/l may be unattainable. In those cases, we will consider higher TSS levels satisfactory.

Therefore, we request an evaluation to determine if there is a correlation between TSS and other parameters and provide recommendations for changes in sampling procedures to improve (reduce) TSS.

Leachate Control and Performance Evaluation

It does not appear that the leachate thickness calculations were corrected as previously commented upon (Doc 117446). Additionally, the text discusses leachate elevations, but elevations are not provided in the tables. Please update the calculations and include the elevations. **Leachate thickness has been updated from 2018 to current. Table and graphs are attached. Seneca used the 2018 Total depth of the wells**

Inspection Report

The photos included with the inspection report show snow cover. Therefore, it can be assumed that the condition of the cap, vegetation, drainage structures, etc. could not be adequately observed. Please keep this in mind when scheduling and performing future inspections. **Agreed, due to a new Roquette representative the proposal contract wasn't signed until late in 2025. Unfortunately snow covered the area.**

Closing

We request a meeting between the responsible parties, the consultant, and DNR to discuss our comments. Please schedule a meeting **on or before August 15, 2026**. During the meeting, we will set a deadline for responding to our comments. **I'm available to meet anytime the rest of week or next week.**

For scheduling purposes, you can see my availability at the following link. Although you can schedule an appointment with me at this link, feel free to schedule utilizing your own meeting platform. As an alternative, you can reserve a meeting time with me through this link, send a meeting invite using your own meeting platform, and I will delete the original request.

<https://calendar.app.google/rB1pPdpGxZXma59A>

In consideration of the above, the DNR reserves the right to provide further comments.

Thanks,

Brian

Brian Rath, P.E.

Environmental Engineer Senior

Solid Waste and Contaminated Sites Section

Iowa Department of Natural Resources

6200 Park Ave, Suite 200

Des Moines, IA 50321

515-537-4051

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www.iowadnr.gov



4 attachments



2024 AWQR.pdf

11921K



Site Map.pdf

141K



GW Flow Map.pdf

137K



Leachate depths.pdf

107K



The Complete Solution

BRANCH ADDRESS

7241 Gaines Street Court
Davenport, IA 52806
Phone: 563-332- 8000
Toll-Free: 800-728-6900
Fax: 563-332-9465

Feb 1, 2025

Mr. Brian Johnson
Environmental Manager
Roquette America
PO Box 6647
Keokuk, Iowa 52632

Subject: Annual Water Quality Monitoring Report - 2024
Keokuk Landfill, Keokuk, IA
IDNR Facility No.: 56-SDP-2-75C

Dear Mr. Johnson:

Seneca Environmental Services submits herewith the Annual Water Quality Monitoring Report for 2024 for the above referenced facility. Enclosed please find two copies of the report. If, after your review, there are no changes to be made, please forward one copy to the Iowa Department of Natural Resources in the enclosed addressed envelope. The envelope is addressed to the following:

Iowa Department of Natural Resources
Solid Waste and Contaminated Sites Section
Wallace State Office Building
502 East 9th Street
Des Moines, IA 50319-0034

If you have any questions or concerns about the report, please contact me at (563) 332-8000.

Sincerely,
Seneca Companies, Inc.

Todd Felderman
Sr. Project Manager

Cc: Brian L. Rath, P.E., Iowa Department of Natural Resources

Enclosure

Other Branch Locations

Des Moines, IA Corporate Office ♦ Denver, CO ♦ Oreana, IL ♦ Baldwin, MS ♦ Grandview, MO ♦ Sioux City, IA

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Keokuk Landfill

2024 Annual Water Quality Report

MSWLF Unit Name

Permit #56-SDP-02-75C

Roquette America

Keokuk Iowa

01/18/2024

Prepared by:

Seneca Companies Inc.

7241 Gaines Street Ct.

Davenport, Iowa 52806

Certification

Prepared by: Todd Felderman Date: 02/01/25

Typed: Iowa Certified Groundwater Professional

Certification page (PE or ground water scientist signature) **113.10(1)"d"**

For the purposes of this rule, a "qualified groundwater scientist" means a scientist or an engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

Period of Report Coverage

Monitoring has been ongoing since 1996, 28 years.

Report Priority

No DNR review priority. Advanced statistical analysis was not performed during this reporting period as there is not enough data due to changes in the monitoring plan.

Site Status and Applicable Rules (see Figure 1-Site Plan)

This site is a closed landfill with ongoing annual monitoring. Methane monitoring was performed conducted during the AWQR at MW4. The percent LEL was 1%.

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**Annual Water Quality Monitoring Report
2024
Keokuk Landfill
Keokuk, Iowa
IDNR Permit #56-SDP-02-75C**

1.0 Overview

The Iowa Department of Natural Resources (IDNR) issued an operations permit (#56 SDP-2-75C) for the Keokuk Landfill on May 29, 1975. There are two known generators of materials placed in the landfill, they are: Lear Corporation Automotive Systems, who is the successor of United Technologies Automotive Systems, who is the successor of Sheller-Globe Corporation; and Roquette America, Inc. (Roquette) who is the successor of the Hubinger Company. The landfill was operated by Keokuk Land Fill, Inc. and/or Keokuk Contractors, Inc. on land owned by Charles and Gale Peters.

Disposal of materials was completed in a trench and fill configuration over a large portion of the site. Based on available historic aerial photographs of the landfill, trenches were excavated sequentially across the site from south to north with an arc shaped trench wrapped across the east end of some of the straight trenches in the southern portion. A fill area is indicated in a gap between two distinct trench areas in the northern portion of the site. The types of materials disposed of at the site include sponge rubber and polyurethane foam, ABS and PVC plastics, weather-stripping sealant, mold release wax, spent zinc stearate, waste carbon black and minimal amounts of wood and paper by Sheller-Globe and spent activated carbon by Hubinger. Coal ash or cinders from Hubinger were given to Keokuk Landfill who used, stored, and disposed of these materials at the site.

The landfill received materials until 1987, at which time the fill areas were covered with compacted soil. Over time, the soil cover used to close the site settled, allowing ponding and infiltration of storm water. Additionally, erosion gullies formed on the side slopes of the landfill and two leachate seeps were observed. A Post Closure Hydrologic Monitoring System Plan was prepared by others dated November 5, 1996. The IDNR issued a Site Closure and Post-Closure Authorization dated June 10, 1999. The IDNR issued an Administrative Order, No. 2001-SW-06, which requires Roquette and Keokuk Landfill Inc. and Keokuk Contractors, Inc. to be responsible for post-closure care for a minimum period of five years and a maximum of thirty years. Specifically, Roquette is responsible for providing semi-annual site inspections and annual water quality monitoring.

The Semi-Annual Landfill Inspection Report is incorporated into this report as Appendix D.

2.0 Site Location

The Keokuk Landfill is located approximately ¼ to ½ mile north of the intersection where US Highway 61 and US Highway 136 meet: specifically, in the southeast quarter of the southwest quarter of Section 27, Township 65 N, Range 5 W of Lee County, IA. The entrance to the site is a field lane on the west side of U.S. Highway 61. For a map of the location of the site, please refer to Appendix 1.

3.0 Site Geology

The limestones and dolomites of the Mississippian Osage Series comprise bedrock beneath the site. Groundwater vulnerability is classified as moderate drift confinement, indicating that from 100 to 300 feet of glacial drift overlie bedrock aquifers. Soils at the site are mapped as the Clinton silt loam soil series. This soil is characterized by silt loams and silty clay loams that are moderately well drained. Surface water flow in the immediate landfill area is generally to the west toward an unnamed tributary of the Des Moines River which empties into the Mississippi River nearby. The general groundwater flow direction at the site is to the west/southwest.

4.0 Monitoring System

There are five monitoring wells, an upgradient well (MW-1R which was co-located with MW-1 as a replacement after bentonite intrusion and failure to recharge at a normal rate indicated MW-1 was failing) and four downgradient wells (MW-2 through MW-5), which comprise the groundwater sampling network. Additionally, three piezometers (P-1 through P-3) were installed within the waste disposal area to monitor potential leachate elevations. Typically, two surface water samples (SW-1 and SW-2) are retrieved from an intermittent unnamed tributary located immediately west of the landfill site. For locations of the monitoring wells, piezometers, and surface water sampling points, see the Site Plan Map in Appendix 1.

Seneca sampled MW2 and MW4 on October 30, 2024; and analyzed the groundwater samples for total metals arsenic analysis. The additional sampling was conducted to evaluate the presence of arsenic above the maximum contaminant level (MCL) of 0.01 milligrams per liter (mg/L).

Per the monitoring system protocol, Seneca Companies Inc. (SCI) measured water levels and sampled MW-1R through MW-5 and attempted to sample two monitoring points from the intermittent tributary on October 30, 2024. However, monitoring points SW-1 (up-gradient) and SW-2 (down-gradient) did not have flowing water at that time. Therefore, no sampling or flow rate determination was performed at either of the stream monitoring points. Piezometers P-1, P-2, and P-3 were measured for depth to leachate. See Appendix A for the completed field sampling forms. See Table 12 and 12A for a Summary Tabulation of Historical Site Water Levels and Elevations for all Monitoring Points and graphs of leachate trends in piezometer P1, P2 and P3 and figure 2 for a Groundwater Level Contour Map.

5.0 Parameters of Testing

The parameters which were tested are listed in 567 IAC 103.2(4) “d”, “e”, & “f”, plus chlorobenzene, chloromethane, ethylbenzene, methylene chloride, toluene, vinyl chloride, total xylenes, and biological oxygen demand – 5 day (BOD₅) and are listed below for reference:

List “d”

1. Arsenic
2. Barium
3. Cadmium
4. Chromium
5. Lead
6. Magnesium
7. Mercury
8. Zinc
9. Copper
10. Benzene
11. Carbon tetrachloride
12. 1,2-Dichloroethane
13. Trichloroethylene
14. 1,1,1-Trichloroethane
15. 1,1-Dichloroethylene
16. Paradichlorobenzene

List “e”

1. Chloride
2. Specific Conductance (field measurement)
3. pH (field measurement)
4. Ammonia nitrogen
5. Iron, dissolved*
6. Chemical Oxygen Demand
7. Temperature (field measurement)

List “f”

1. Total Organic Halides
2. Phenol

The parameters regarding the COC for test of total metals.

The laboratory test reports and chain of custody documentation for October 30, 2024, sampling events are included as Appendix B.

6.0 Statistical Analyses of Parameters

Sampling of the monitoring points was originally conducted in January of 1996 and in March, June, and October of 1997. These four sampling events comprised the original baseline sampling from which the mean and standard deviation for each parameter were derived. Based on IDNR's comment letter of March 30, 2015, this report applies revised control limits based on the available historical sample values from MW1/MW1R including the 2024 results presented in this report. The mean and the standard deviation from the mean were determined for each parameter using standard statistical methods using the one half the laboratory detection limit as a proxy value for results reported as a "non-detection". For each parameter in each monitoring well, a control limit was established that equals the "value of the mean plus two times the standard deviation" as determined by results from upgradient monitoring well MW1/MW-1R. The analytical results for each parameter detected in 2024 were then compared to its respective control limit. A table of statistical evaluation and control limits for 2024 parameters along with its maximum contaminant level as applicable is included in Appendix 6. A summary tabulation of historical data by sampling events for each monitoring point for all parameters to date is included in Table 9. Graphs for those parameters at concentrations greater than the control limit concentration, for each monitoring point, are included in Table 6.

The parameters that plotted above their respective control limits are listed below:

MW-2: Benzene, Chloride, COD, TOH, Chlorobenzene, Barium

MW-3: Chloride, COD, Ammonia as N, TOH

MW-4: BOD, Chloride, COD, Ammonia as N, TOH, Arsenic, Benzene

MW-5: Chloride, COD, TOH

7.0 Summary of Effects of Facility on Groundwater and Surface Water Quality

1. Elevated concentrations relative to the background concentrations computed from samples collected from MW1/MW-1R of several analytical parameters were detected in each of the downgradient wells, but these results were generally similar to historical results. Elevated parameters above controlling limits in downgradient wells that also increased in concentration from 2020 are:

MW2: Chloride, TOH

MW3: Chloride, COD, Ammonia as N, TOH

MW4: TOH

MW5: TOH

2. Arsenic detected in MW-4 was slightly above the Maximum Contaminant Level (MCL), but arsenic levels remained within the historic range for MW-4.
3. Groundwater or surface water seeps were not observed during the semi-annual landfill inspection conducted on October 30, 2024.

7.1 Assessment of Arsenic in Groundwater

Historically, arsenic has been detected in the groundwater of MW-2 since 2007 and MW-4 since 1996, see below. The values have intermittently been above the MCL but there has not been a clear historical trend. The highest value noted to date was during the 2012 sampling event in MW-4, with a concentration of 0.0619 mg/L. The MCL is 0.01 mg/L. Data from 2024 indicated a concentration in MW-2 below the MCL, control limit and well historical average. The arsenic concentration in MW-4 rebounded to a level above the MCL and control limit, but still within the historical range.

Year	MW-2 (mg/L)	MW-4 (mg/L)	MCL (mg/L)
1996	0.0021	0.011	0.01
1997 (March)	<0.005	0.012	0.01
1997 (June)	<0.005	0.013	0.01
1997 (October)	<0.01	0.014	0.01
1998	No Data	No Data	0.01
2003	<0.01	0.011	0.01
2004	<0.001	0.0188	0.01
2005	0.00102	0.0184	0.01
2006	<0.001	0.0174	0.01
2007	0.00139	0.00892	0.01
2008	0.00261	0.0106	0.01
2009	0.00286	0.00674	0.01
2010	No Data	0.0167	0.01
2011	0.0101	0.00934	0.01
2012	0.00305	0.0619	0.01
2013 (July)	0.00268	0.0105	0.01
2013 (Dec.)	0.00444	0.0191	0.01
2014 (June)	0.00254	0.0346	0.01

2014 (Nov.)	0.00377	0.0152	0.01
2015(May)	0.00398	0.0164	0.01
2015(Oct.)	0.00498	0.0208	0.01
2016(May)	0.00326	0.0377	0.01
2016(Oct.)	0.00553	0.0426	0.01
2017(April)	0.00288	0.0349	0.01
2017(Nov)	0.00791	0.0272	0.01
2018(April)	0.00384	0.00849	0.01
2018(October)	<0.002	0.00606	0.01
2019(May)	<0.00200	0.0273	0.01
2019(October)	<0.002	0.0227	0.01
2020(April)	<0.002	0.0108	0.01
2020(November)	0.00235	0.0181	0.01
Total Metals Arsenic sampling started 2021			
2021 (April)	<0.00200	0.00347	0.01
2021 (Oct.)	<0.00200	0.0135	0.01
2022 (April)	<0.00200	0.0143	0.01
2022 (Oct.)	<0.00200	0.0231	0.01
2023 (April)	0.00206	0.0145	0.01
2023 (Nov)	0.00252	0.0105	0.01
2024 (July)	0.00326	0.0150	0.01
2024 (Oct.)	<0.00200	0.0208	0.01

Bolded: Value at or above the MCL.

8.0 Leachate Head Evaluation

Leachate elevations measured during the 2024 sampling event indicated continued elevations that were similar to the levels in 2023. Elevations of the piezometers were re-surveyed in 2020 (see Table 4) For purposes of trend evaluation historic well elevations have been used, but the surface elevations indicated that some settling (0.43 to 0.86 feet) of the landfill surface had occurred. Some additional landfill cap was added to the area possibly identified of potential water infiltration location that may have developed as a result of settling in the vicinity of P1 and P2.

9.0 Conclusions and Recommendations

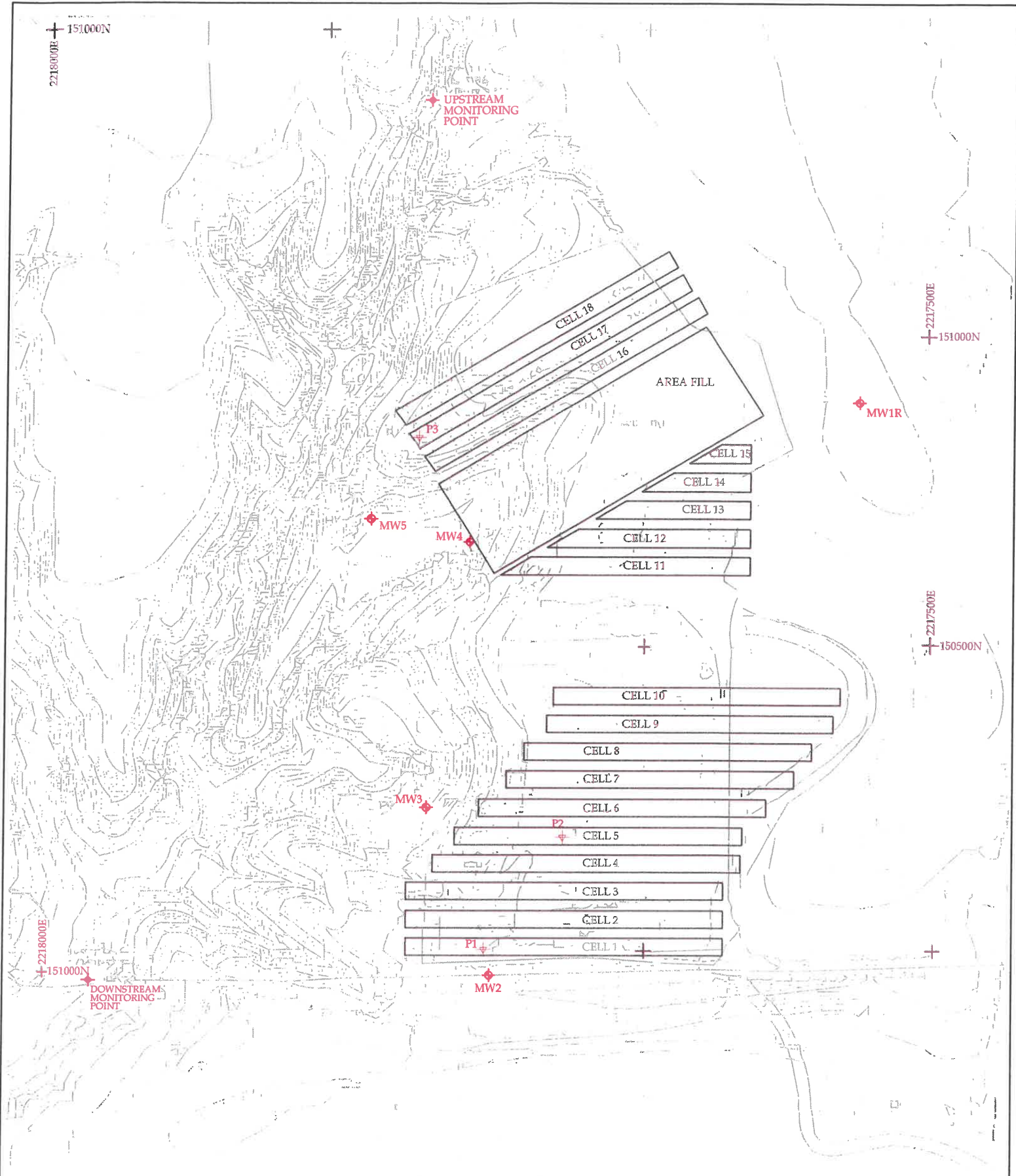
The measured concentrations of some analytes in the four downgradient wells, MW-2 through MW-5, were above the results from the upgradient well, MW1/MW1R. The parameters were generally consistent and not above historical values. GSI Mankendall statistical graphs were produced for arsenic at MW2 and MW4. Since 2003 monitoring, arsenic is stable to not exhibiting a trend. Seneca also produced GSI Mankendall graphs for two chemicals of concern above target levels which have been detected in monitoring wells MW1, MW2, MW3, MW4 and MW5; Chloride and COD. These trends are mostly stable to decreasing.

Seneca Companies recommend monitoring wells 2 and 4 to be sampled in six-month intervals to confirm the decline in arsenic concentrations below the MCL at these locations of historical exceedance. The spring sampling event would be analyzed for arsenic only, and the fall sampling event would continue as previously.

Down gradient monitoring wells do not indicate significant changes in subsurface conditions. Leachate mounding stayed within historical levels at piezometers P1 and P2. The 2019 resurvey of the well/piezometer locations indicated that surface elevations had fallen between 0.43 and 0.86 feet, raising the possibility that differential settling may have formed low spots in the landfill cap that impede efficient drainage. No obvious cracks or signs of pooling were observed. Further inspection of the landfill cap in the vicinity of P1 and P2 will once again be conducted in the spring following a significant precipitation event to identify potential water infiltration and pooling locations. Corrective action will be determined if infiltration pathways are identified.

Overall, the required sampling parameters continue to either remain stable or continue to decline. The site might be able to be closed prior to the 30-year post closure care protocol baring additional guidance from the DNR.

Appendix 1
Site Location Map
Site Map



- ◆ MONITORING WELL
- ◆ SURFACE WATER MONITORING POINT
- ▽ LEACHATE WELL



FILE NAME:
ROSE BROTHERS

PROJECT NO:
6247600

SITE: ROSE BROTHER'S LANDFILL
ROQUETTE AMERICA
KEOKUK, IOWA
SITE PLAN MAP



Seneca
Companies
Environmental Services

REVISED:
11/24/03

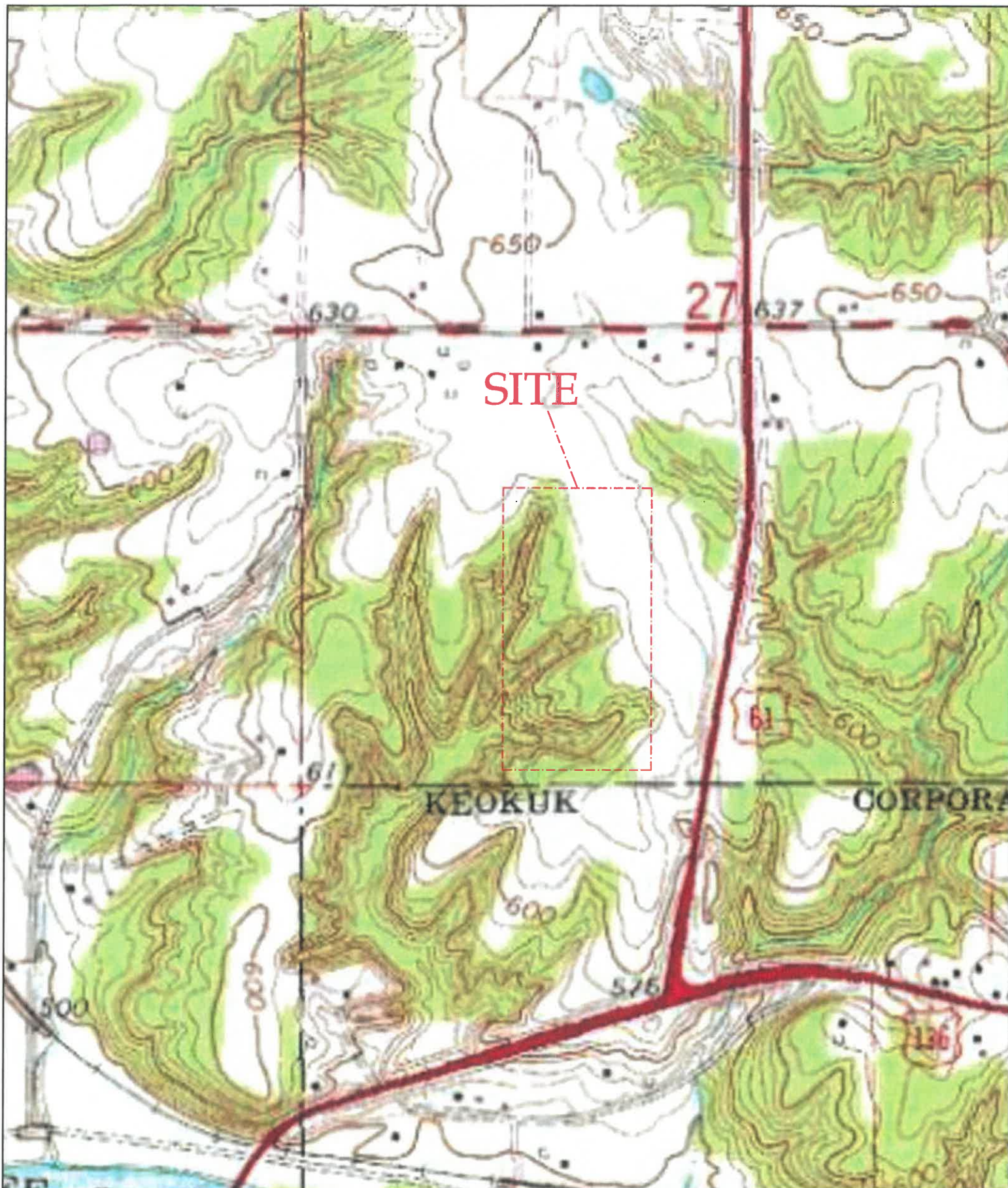
DATE:
11/04/03

REVIEWED BY:
SK

DRAWN BY:
RLH

LUST #:
N/A

SCALE:
1" = 200'



- ◆ MONITORING WELL
- ◆ SURFACE WATER MONITORING POINT
- ▽ LEACHATE WELL



FILE NAME:
ROSE BROTHERS
PROJECT NO:
6247600



Seneca
Companies
Environmental Services

REVISED:
11/24/03

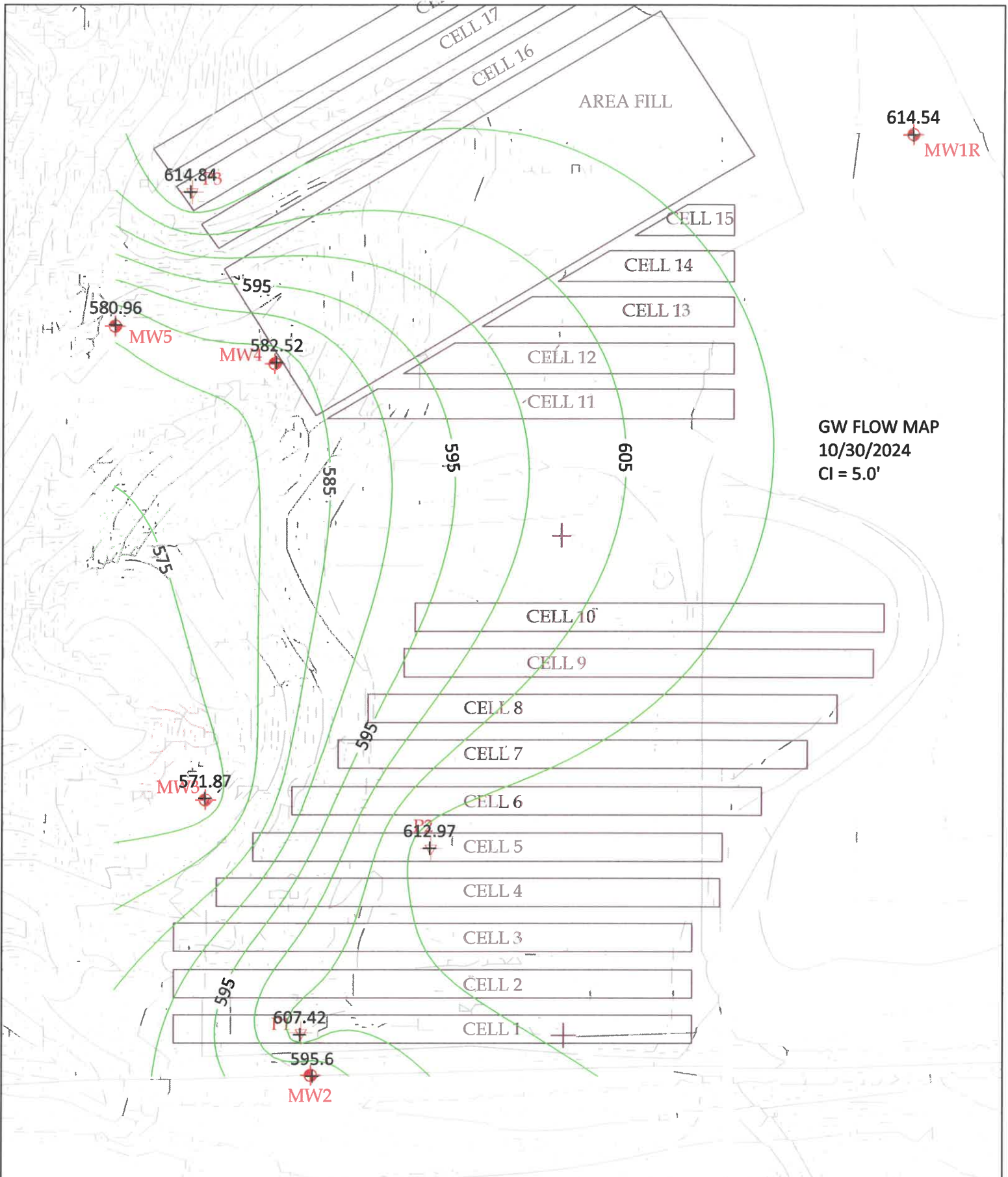
DATE:
11/04/03

SITE: ROSE BROTHER'S LANDFILL
ROQUETTE AMERICA
KEOKUK, IOWA
TOPOGRAPHIC SITE MAP

LUST #:
N/A
SCALE:
1" = 200'

REVIEWED BY:
SK
DRAWN BY:
RLH

Figure 2
Water Table contour Map



GW FLOW MAP
10/30/2024
CI = 5.0'

- ◆ MONITORING WELL
- ◆ SURFACE WATER MONITORING POINT
- ▽ LEACHATE WELL

	FILE NAME: ROSE BROTHERS	 Seneca Companies <i>Environmental Services</i>	REVISED: 11/24/03
	PROJECT NO: 6247600		DATE: 11/04/03
	SITE: ROSE BROTHER'S LANDFILL ROQUETTE AMERICA KEOKUK, IOWA GW FLOW MAP		
	LUST #: N/A		
	SCALE: 1" = 30'		
	DRAWN BY: RLH		
		REVIEWED BY: SK	

Table 1 – Monitoring Program Summary

Table 1
Monitoring Program Summary
2024 Annual Water Quality Report
Rose Brothers Landfill
Permit No. 56-SDP-02-75C

[illegible]

Table 2 – Monitoring Program Implementation Schedule

Table 2
Monitoring Program Implementation Schedule
2024 Annual Water Quality Report
Rose Brothers Landfill
Permit No. 56-SDP-02-75C

Monitoring Well	Recent Sampling Dates and Constituents	Upcoming Sampling Dates and Constituents		Full Appendix II Sample Dates	
		May, 2025	October, 2025	Previously Collected	Next Event
MW-1			Appendix I	10/30/2024	October, 2025
MW-2	See Table 2A	Appendix I	Appendix I	10/30/2024	May & October, 2025
MW-3			Appendix I	10/30/2024	October, 2025
MW-4		Appendix I	Appendix I	10/30/2024	May & October, 2025
MW-5			Appendix I	10/30/2024	October, 2025

Table 3 – Monitoring Well Maintenance Performance Reevaluation Schedule

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
2024 Annual Water Quality Report
Rose Brothers Landfill
Permit No. 56-SDP-02-75C

Compliance with:	Monitoring Calendar Years									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
567 IAC 113.10(2)"f"(1) high and low water levels (add required frequency)	X	X	X	X	X	X	X	P	P	P
567 IAC 113.10(2)"f"(2) changes in the hydrologic setting and flow paths	X	X	X	X	X	X	X	P	P	P
567 IAC 113.10(2)"f"(3) well depths	X	X	X	X	X	X	X	P	P	P
567 IAC 113.10(2)"f"(4) well recharge rates and chemistry	X	X	X	X	X	X	X	P	P	P
Waste separation from ground water 113.6(2)"l"	X	X	X	X	X	X	X	P	P	P

X = Completed
P = Planned
N/A = Not Applicable

Table 4 – Monitoring Well Maintenance Performance Reevaluation Summary

Groundwater Level Measurements Keokuk, Iowa Landfill

Well I.D.	TOC Elevations (Feet, NGVD)**	Groundwater Elevation (Ft, NGVD) 10/26/22	Groundwater Elevation (Ft, NGVD) 11/07/23	Groundwater Elevation (Ft, NGVD) 10/30/24			
MW-1/1R	636.46	617.27	615.22	614.54			
MW-2	620.98	596.95	596.22	595.60			
MW-3	590.62	572.98	572.41	571.87			
MW-4	591.47	584.38	583.92	582.52			
MW-5	593.15	581.87	579.11	580.96			
P1	623.39	608.10	607.75	607.42			
P2	624.68	613.17	613.45	612.97			
P3	622.94	615.26	614.99	614.84			

NGVD=National Geodetic Vertical Datum of 1929

** 2019 Resurvey Elevations

Groundwater Level Measurements Keokuk, Iowa Landfill

	TOC Elevations (Feet, NGVD)	Groundwater Elevation (Ft, NGVD) 10/6/11	Groundwater Elevation (Ft, NGVD) 10/30/12	Groundwater Elevation (Ft, NGVD) 11/21/13	Groundwater Elevation (Ft, NGVD) 11/5/14	Groundwater Elevation (Ft, NGVD) 10/19/15	Groundwater Elevation (Ft, NGVD) 10/25/16	Groundwater Elevation (Ft, NGVD) 11/1/17
Well I.D.								
MW-1/1R	641.17	Dry @ 30'	620.30	619.94	619.34	622.40	622.67	621.32
MW-2	620.29	597.19	596.54	596.35	595.99	596.71	596.94	595.79
MW-3	589.91	570.65	570.65	570.72	572.35	570.78	571.05	570.20
MW-4	590.90***	583.10	582.93	582.78	584.37	583.31	584.12	583.20
MW-5	593.50	582.21	581.95	581.93	584.42	582.07	583.15	581.55
P1	620.46	604.89	605.28	605.33	605.42	605.51	604.65	605.00
P2	621.06	609.44	609.40	609.54	609.33	609.56	609.53	612.53
P3	624.13	616.11	617.92	615.01	615.75	618.63	Dry at 617.20	

NGVD=National Geodetic Vertical Datum of 1929

** Elevation of new well, installed in Sept. 21, 2011

***New elevation after removing 0.15' off the casing

	TOC Elevations (Feet, NGVD)*	TOC Elevations (Feet, NGVD)**	Groundwater Elevation (Ft, NGVD) 10/30/18	Groundwater Elevation (Ft, NGVD) 10/29/19*	Groundwater Elevation (Ft, NGVD) 10/29/19**	Groundwater Elevation (Ft, NGVD) 10/29/19**	Groundwater Elevation (Ft, NGVD) 11/03/20**	Groundwater Elevation (Ft, NGVD) 10/26/21**
Well I.D.								
MW-1/1R	641.17	636.46	622.77	619.98	623.69	623.69	617.26	618.70
MW-2	620.29	620.98	596.24	598.16	599.97	599.97	597.38	596.17
MW-3	589.91	590.62	571.93	572.28	571.95	571.95	571.54	571.49
MW-4	590.9	591.47	584.88	585.22	584.65	584.65	584.70	584.87
MW-5	593.50	593.15	583.68	584.53	584.88	584.88	582.15	582.72
P1	620.46	623.39	605.78	608.53	605.65	605.65	608.04	608.09
P2	621.06	624.68	613.03	613.32	612.76	612.76	613.54	613.27
P3	624.13	622.94	615.57	614.91	616.10	616.10	615.76	616.10

NGVD=National Geodetic Vertical Datum of 1929

*Historic Survey Elevations

** 2019 Resurvey Elevations

Groundwater Level Measurements Keokuk, Iowa Landfill

Well I.D.	TOC Elevations (Ft, NGVD)	Groundwater Elevation (Ft, NGVD) 12/20/1995	Groundwater Elevation (Ft, NGVD) 1/10/1996	Groundwater Elevation (Ft, NGVD) 3/20/1997	Groundwater Elevation (Ft, NGVD) 6/23/1997	Groundwater Elevation (Ft, NGVD) 10/14/1997	Groundwater Elevation (Ft, NGVD) 11/11/2003	Elevation of Groundwater (Feet, NGVD) 10/26/04
MW-1	640.99	620.96	620.74	628.03	628.39	622.01	601.76	621.41
MW-2	620.29	596.6	596.62	596.39	597.27	597.01	595.65	595.59
MW-3	589.91	569.26	572.67	574.45	574.99	572.27	570.93	570.22
MW-4	591.05	582.97	584.00	584.70	585.52	583.25	584.75	584.16
MW-5	593.50	not measured	not measured	584.75	585.03	583.16	584.15	584.25
P1	620.46						605.6	605.86
P2	621.06						610.13	609.73
P3	624.13							614.88

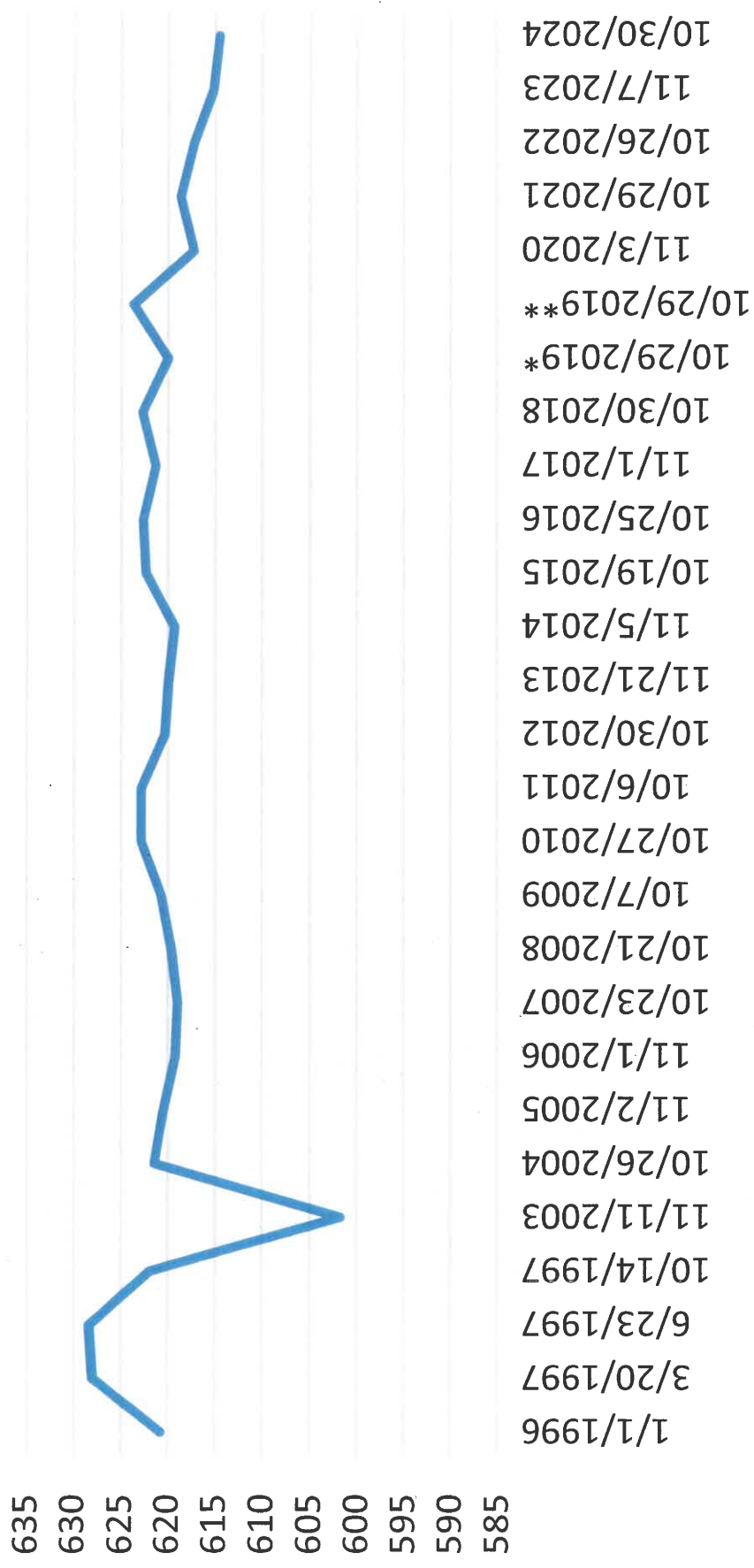
Well I.D.	TOC Elevations (Feet, NGVD)	Elevation of Groundwater (Feet, NGVD) 11/2/05	Elevation of Groundwater (Feet, NGVD) 10/31 & 11/1/06	Elevation of Groundwater (Feet, NGVD) 3/21/07	Elevation of Groundwater (Feet, NGVD) 10/23/07	Elevation of Groundwater (Feet, NGVD) 10/21/08	Groundwater Elevation (Ft, NGVD) 10/7/09	Groundwater Elevation (Ft, NGVD) 10/27/10
MW-1	640.99	620.47	619.18		618.96	619.62	620.68	622.85
MW-2	620.29	595.74	595.27		595.88	596.21	597.58	599.00
MW-3	589.91	568.13	567.55		568.99	571.76	572.85	572.10
MW-4	591.05	583.26	581.19		581.24	584.14	573.90	584.34
MW-5	593.50	582.59	581.65	583.8*	581.85	584.01	584.40	583.59
P1	620.46	606.08	605.49		605.53	605.73	605.71	605.96
P2	621.06	609.45	609.01		609.55	609.76	606.31	609.73
P3	624.13		613.83		614.26	605.90	618.12	606.64

NGVD=National Geodetic Vertical Datum of 1929

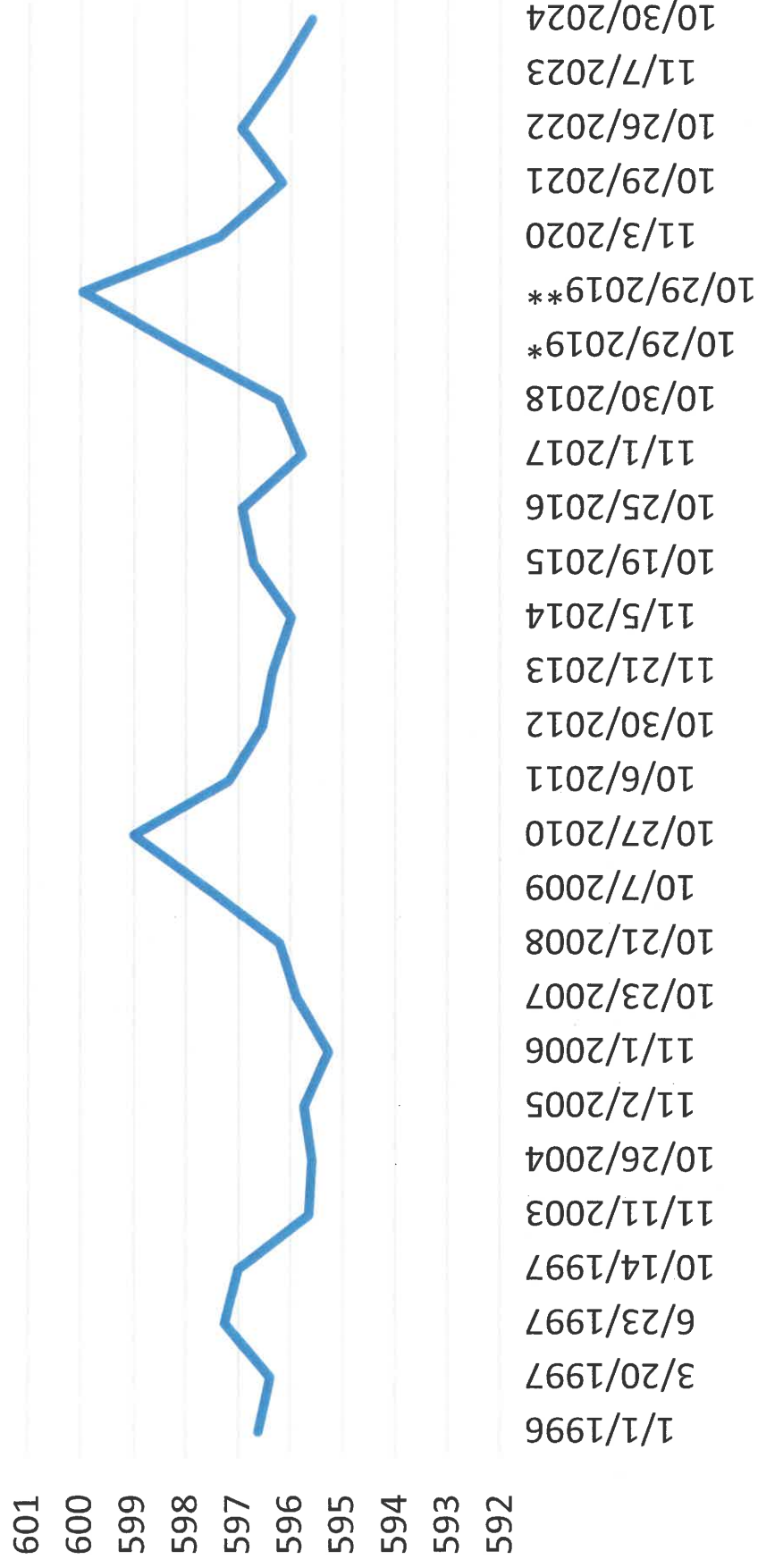
*Confirmation Sample

Table 4A – Historic Water Level Summary

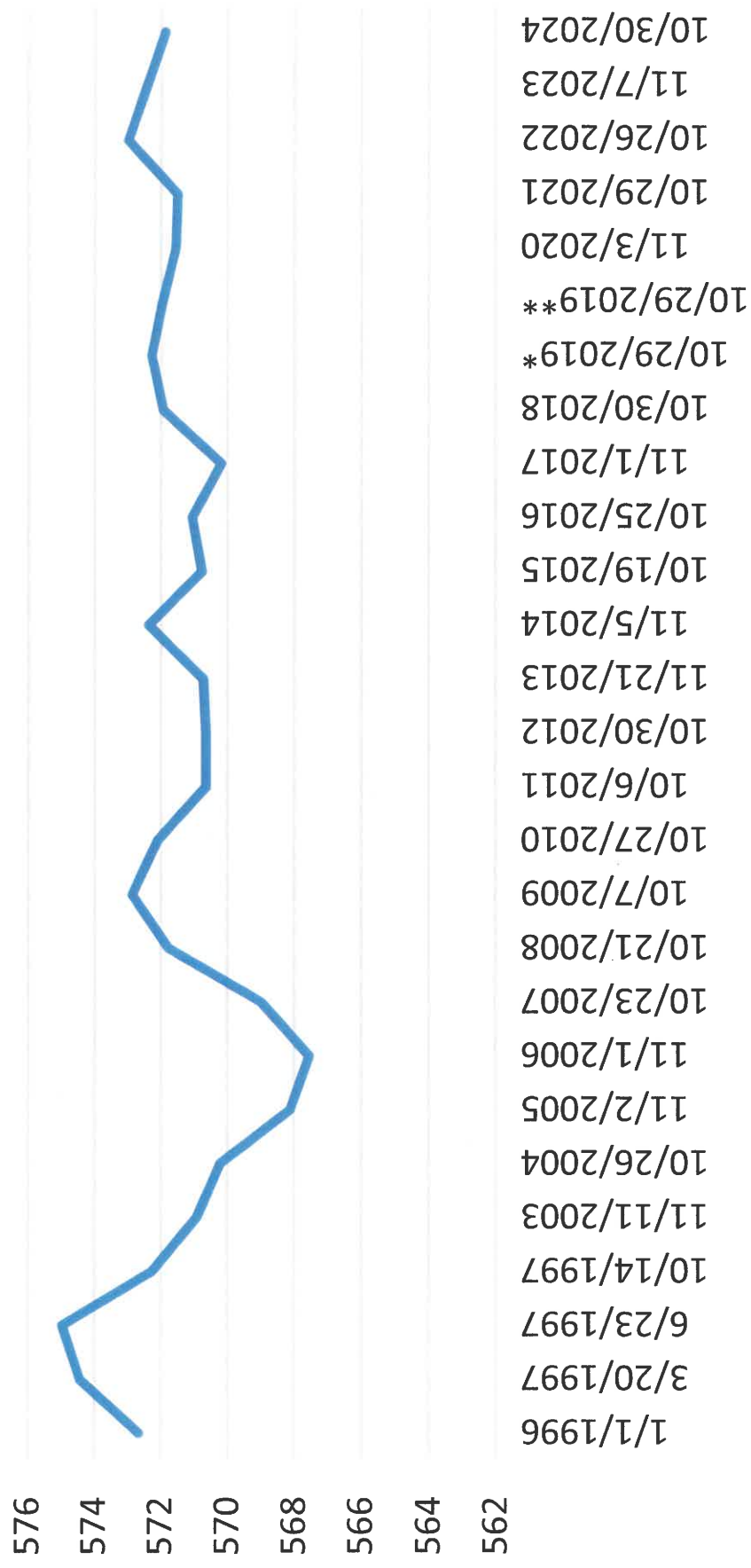
MW1 Water Levels



MW2 Water Levels



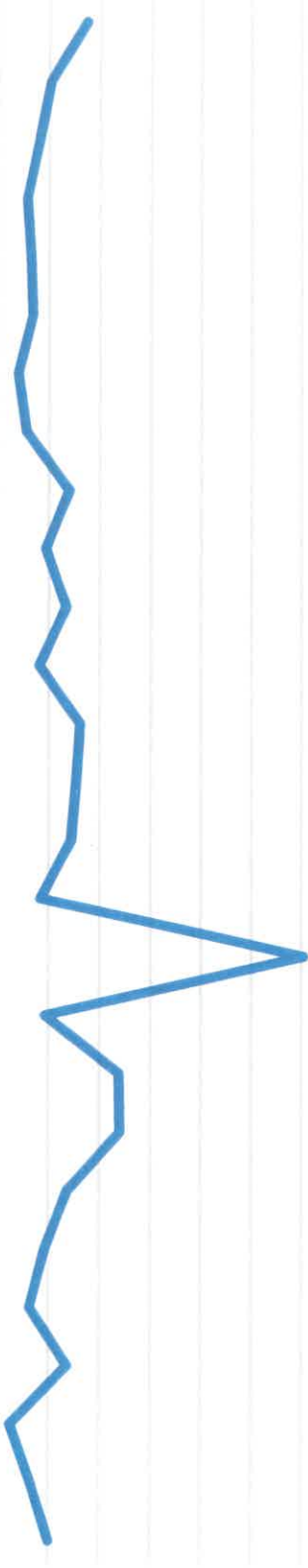
MW3 Water Levels



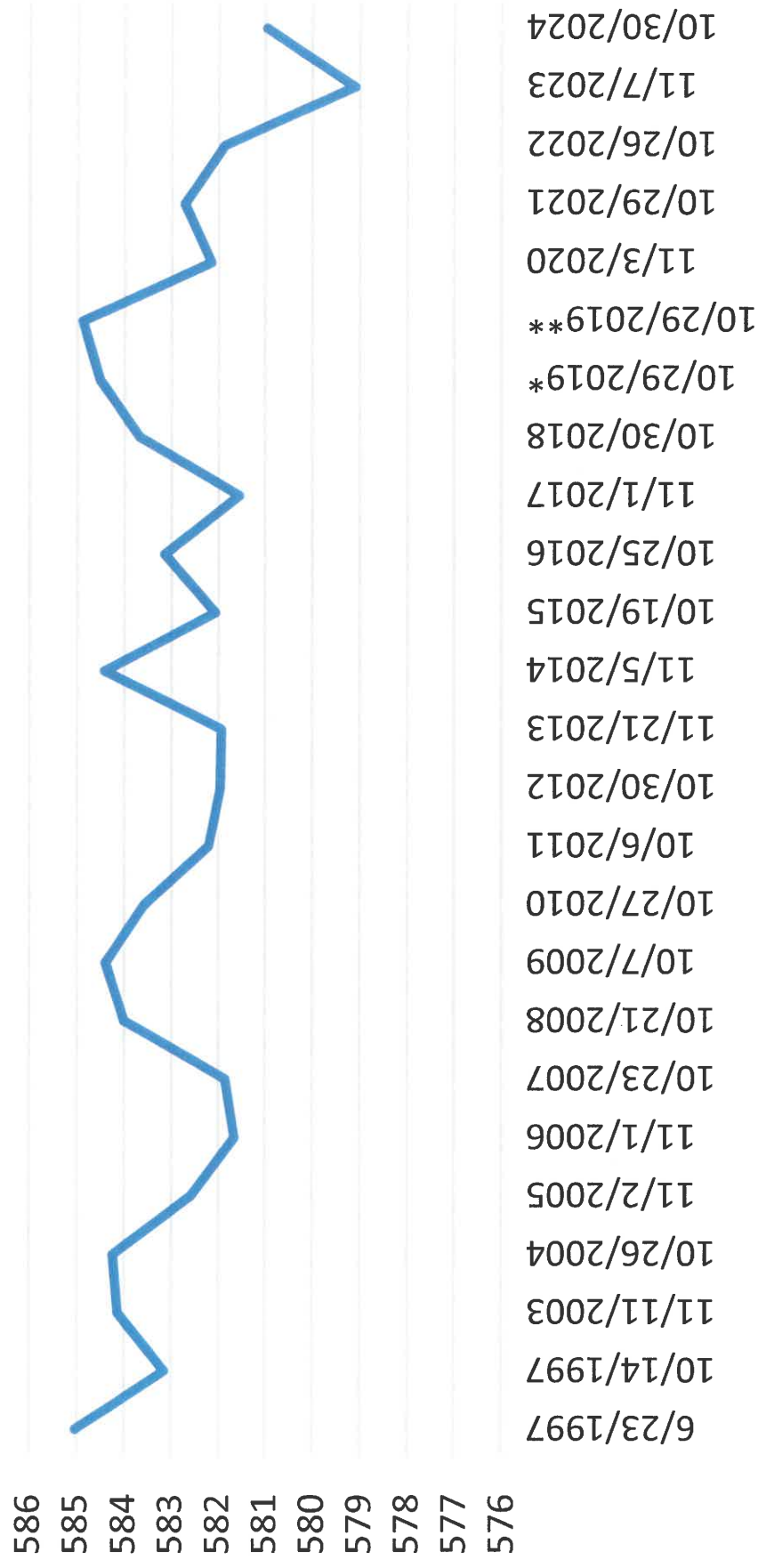
MW4 Water Levels

588.00
586.00
584.00
582.00
580.00
578.00
576.00
574.00
572.00
570.00
568.00

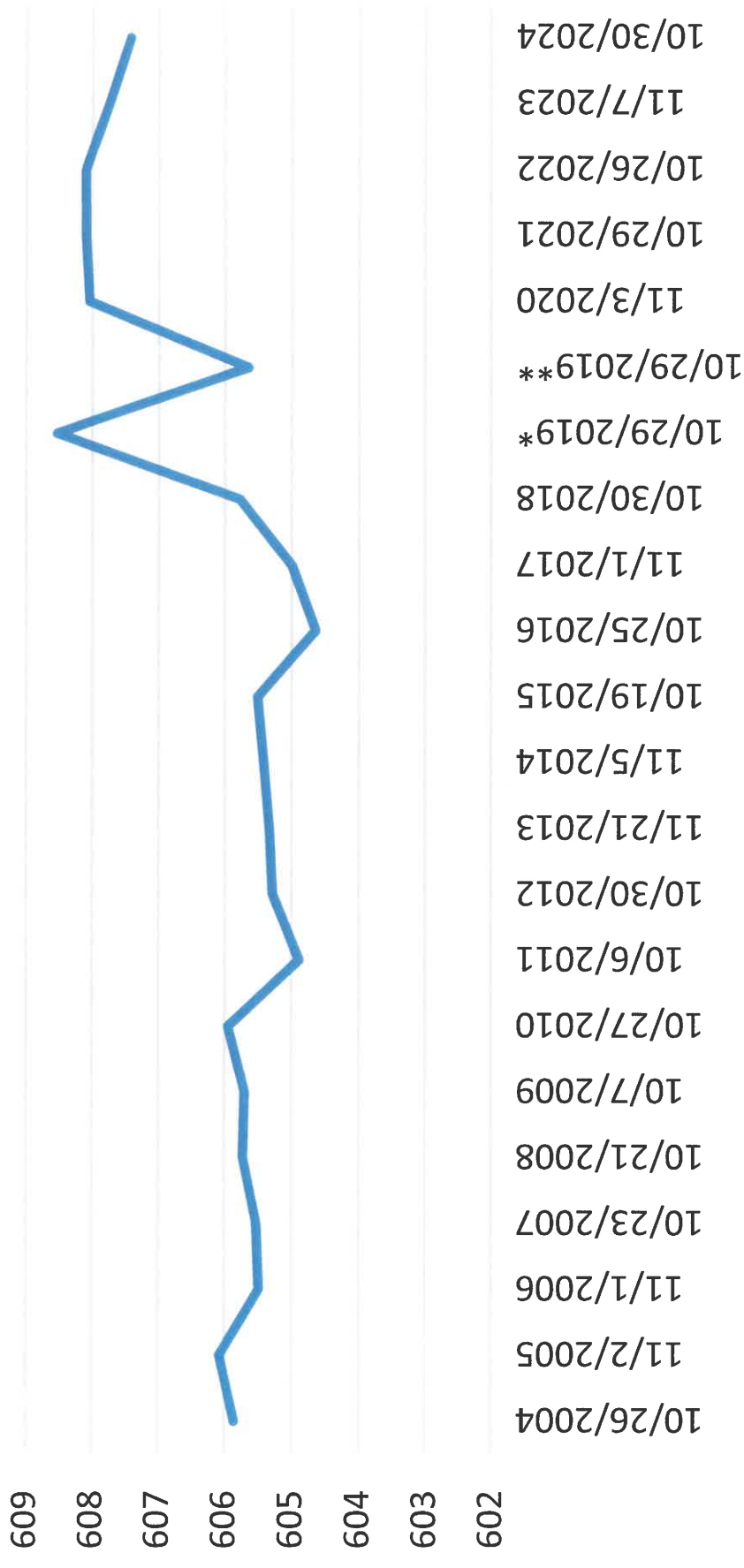
1/1/1996
3/20/1997
6/23/1997
10/14/1997
11/11/2003
10/26/2004
11/2/2005
11/1/2006
10/23/2007
10/21/2008
10/7/2009
10/27/2010
10/6/2011
10/30/2012
11/21/2013
11/5/2014
10/19/2015
10/25/2016
11/1/2017
10/30/2018
10/29/2019*
10/29/2019*
11/3/2020
10/29/2021
10/26/2022
11/7/2023
10/30/2024



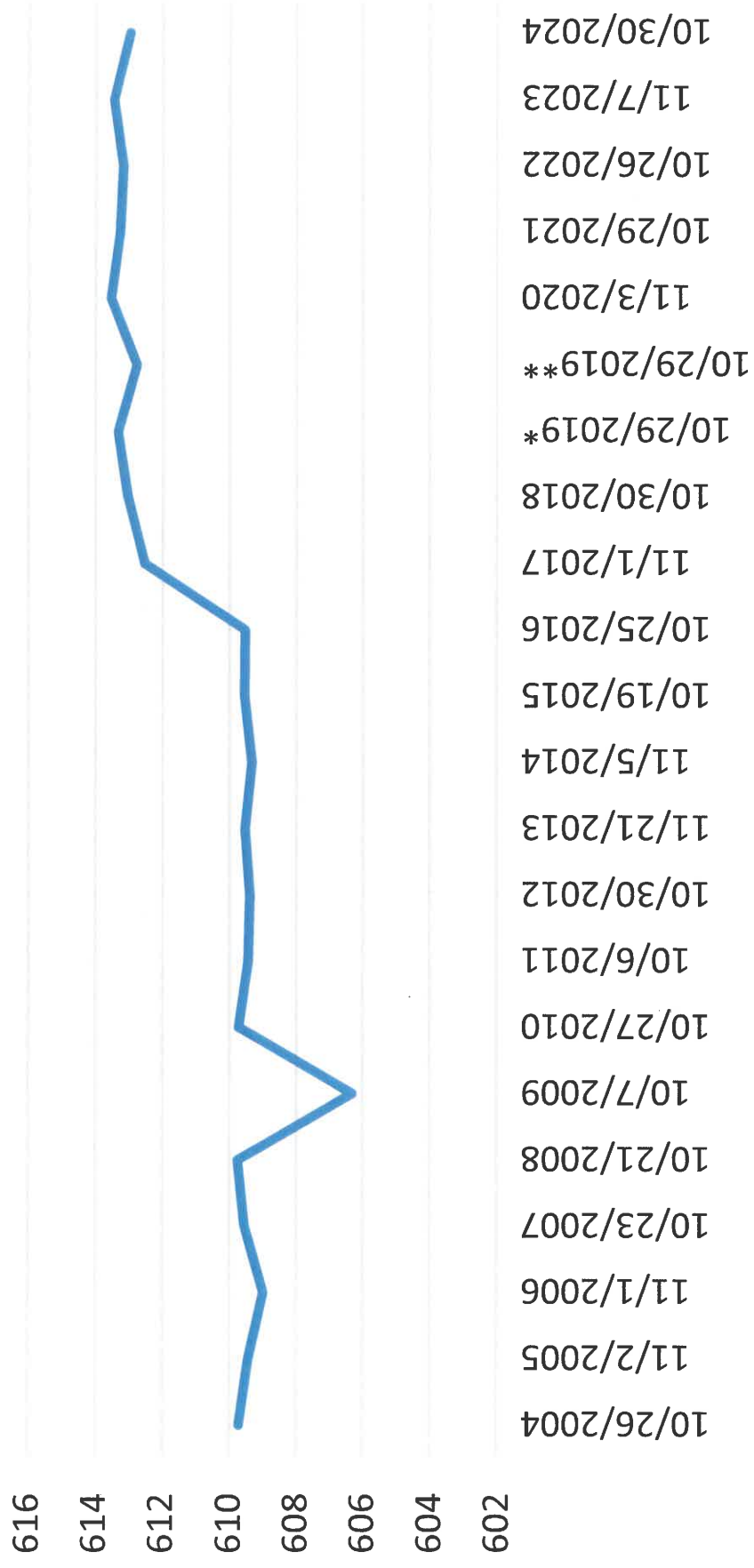
MW5 Water Levels



P1 Leachate Levels



P2 Leachate Levels



P3 Leachate Levels

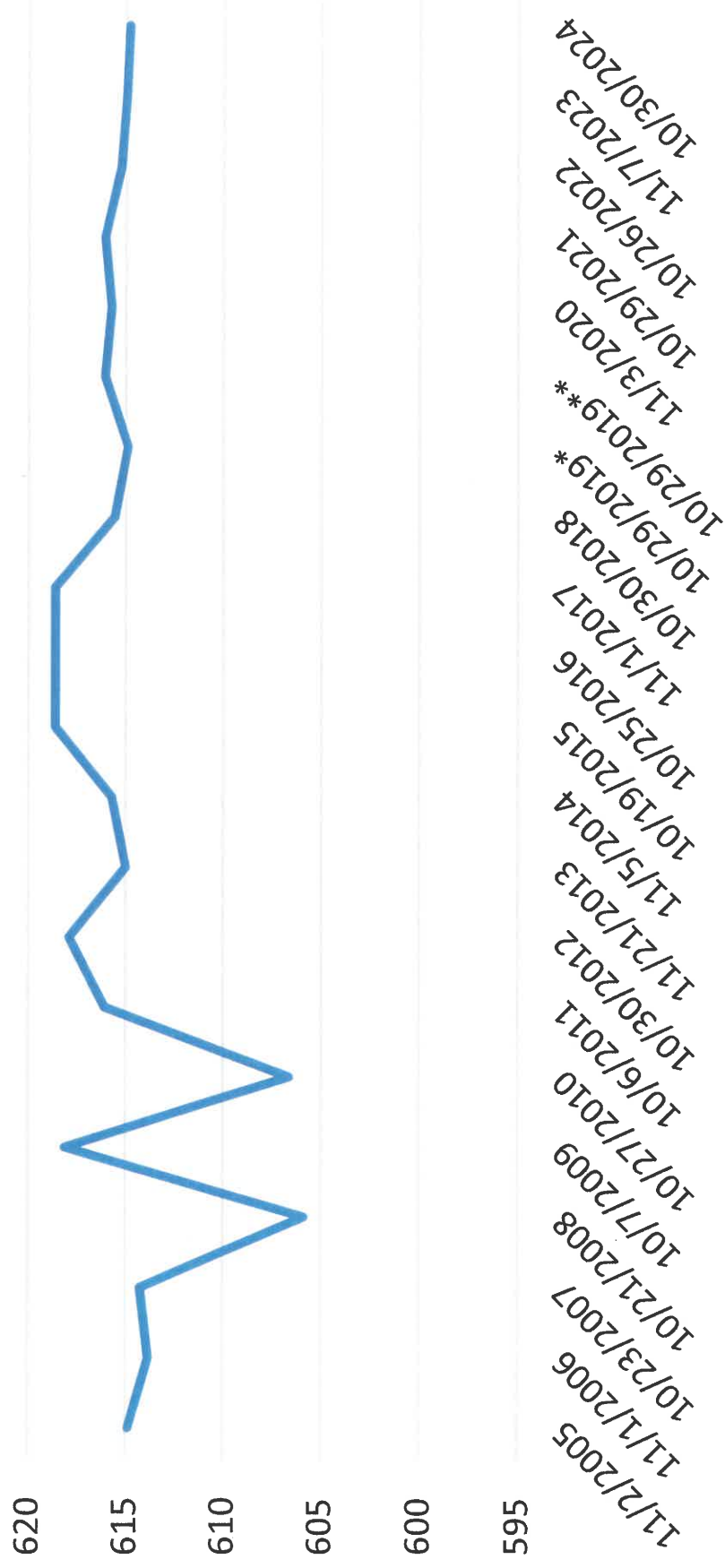


Table 5 – Background and GWPS Summary

MWIR										
Parameters	2021	2022	2023	2024						Cont. Lim.
mg/L										
Chloride	17.1000	12.8	14.70	11.40						23.125734
BOD	<6.00	4.6	<6.00	<6.00						6.4795136
COD	6.7800	6.5	5.69	<5.00						15.180402
Ammonia Nitrogen	<0.200	<0.200	<0.200	<0.200						0.1385732
Total Organic Halogens	<0.010	<0.010	62.90	<40.0						29.790629
Arsenic	<0.00200	<0.00200	<0.00200	<0.00200						0.0063388
Barium, dissolved		0.497	0.953	1.050						0.8142221
Cadmium		0.0	0.00	0.00						0.0021218
Iron, dissolved										1.6725921
Magnesium, dissolved										31.03821
Zinc										0.0396976
ug/L										
Benzene	<0.500	<0.500	<0.500	<0.500						0.5290064
Chloroethane			<4.00	<4.00						2.3168283
1,1-Dichloroethane	<2.00	<2.00	<1.00	<1.00						1.2091574
cis-1,2-Dichloroethene										
trans-1,2-Dichloroethene										
Tetrachloroethene										
Di-isopropyl ether										
Acetone										
Methylene Chloride	<5.00	<5.00	<5.00	<5.00						3.7842306
Toluene	<1.00	<1.00	<1.00	<1.00						1.9013807
Chlorobenzene	<1.00	<1.00	<1.00	<1.00						0.5
Chloromethane	<3.00	<3.00	<3.00	<3.00						1.9245763
1,1,1 Trichloroethane	<1.00	<1.00	<1.00	<1.00						0.5

Table 6 – Summary of Detections

STATISTICAL EVALUATION and CONTROL LIMITS

MW1R

Parameter	Baseline Mean ¹	Baseline Standard Deviation ¹	Control Limit ²	2024 Results	MCL ³
Chloride	14.413043	4.472068	23.357180	11.6	
BOD	2.705500	1.887007	6.479514	<6.00	
COD	6.256818	4.461792	15.180402	<5.00	--
Ammonia Nitrogen	0.085425	0.026574	0.138573	<0.200	
Total Organic Halogens	3.004581	13.393024	29.790629	<40	
Arsenic	0.002709	0.001815	0.006339	<0.00200	0.01
Barium	0.312364	0.184462	0.681287	1.05	2
Cadmium	0.000602	0.000763	0.002128	0.00101	0.005
Iron	0.436650	0.617971	1.672592		
Magnesium	25.340000	2.849105	31.038210		
Zinc	0.014485	0.012606	0.039698		
ug/L					
Benzene*	0.312500	0.108253	0.529006	<0.500	5
Methylene Chloride*	2.095000	0.844615	3.784231	<5.00	
Toluene*	0.673500	0.613940	1.901381	<1.00	
Chlorobenzene*	0.500000	0.000000	0.500000	<1.00	
Chloromethane*	1.411765	0.256406	1.924576	<3.00	
1,1,1 Trichloroethane*	0.500000	0.000000	0.500000	<1.00	

MW2

Parameter	Baseline Mean	Baseline Standard Deviation	Control Limit ²	2024 Results	MCL
Chloride	14.413043	4.472068	23.357180	93.2000	
BOD	2.705500	1.887007	6.479514	<3.00	
COD	6.256818	4.461792	15.180402	31.5000	--
Ammonia Nitrogen	0.085425	0.026574	0.138573	0.2080	
Total Organic Halogens	3.004581	13.393024	29.790629	306.0000	
Arsenic	0.002709	0.001815	0.006339	<0.00200	0.01
Barium	0.312364	0.184462	0.681287	0.7020	2
Cadmium	0.000602	0.000763	0.002128	0.0007	0.005
Iron	0.436650	0.617971	1.672592		
Magnesium	25.340000	2.849105	31.038210		
Zinc	0.014485	0.012606	0.039698		
ug/L					
Benzene*	0.312500	0.108253	0.529006	1.03	5
Methylene Chloride*	2.095000	0.844615	3.784231	<5.00	
Toluene*	0.673500	0.613940	1.901381	<1.00	
Chlorobenzene*	0.500000	0.000000	0.500000	3.21	
Chloromethane*	1.411765	0.256406	1.924576	<3.00	
1,1,1 Trichloroethane*	0.500000	0.000000	0.500000	<1.00	

MW3

Parameter	Baseline Mean	Baseline Standard Deviation	Control Limit ²	2024 Results	MCL
Chloride	14.413043	4.472068	23.357180	194.0000	
BOD	2.705500	1.887007	6.479514	3.9300	
COD	6.256818	4.461792	15.180402	115.0000	--
Ammonia Nitrogen	0.085425	0.026574	0.138573	0.4570	
Total Organic Halogens	3.004581	13.393024	29.790629	312.0000	
Arsenic	0.002709	0.001815	0.006339	0.0026	0.01
Barium	0.312364	0.184462	0.681287	0.0239	2
Cadmium	0.000602	0.000763	0.002128	0.0016	0.005
Iron	0.436650	0.617971	1.672592		
Magnesium	25.340000	2.849105	31.038210		
Zinc	0.014485	0.012606	0.039698		
ug/L					
Benzene*	0.312500	0.108253	0.529006	<0.500	5
Methylene Chloride*	2.095000	0.844615	3.784231	<5.00	
Toluene*	0.673500	0.613940	1.901381	<1.00	
Chlorobenzene*	0.500000	0.000000	0.500000	<1.00	
Chloromethane*	1.411765	0.256406	1.924576	<3.00	
1,1,1 Trichloroethane*	0.500000	0.000000	0.500000	<1.00	

MW4

Parameter	Baseline Mean	Baseline Standard Deviation	Control Limit ²	2024 Results	MCL
Chloride	14.413043	4.472068	23.357180	201.0000	
BOD	2.705500	1.887007	6.479514	10.3000	
COD	6.256818	4.461792	15.180402	205.0000	--
Ammonia Nitrogen	0.085425	0.026574	0.138573	1.5200	
Total Organic Halogens	3.004581	13.393024	29.790629	595.0000	
Arsenic	0.002709	0.001815	0.006339	0.0208	0.01
Barium	0.312364	0.184462	0.681287	0.6340	2
Cadmium	0.000602	0.000763	0.002128	0.0003	0.005
Iron	0.436650	0.617971	1.672592		
Magnesium	25.340000	2.849105	31.038210		
Zinc	0.014485	0.012606	0.039698		
ug/L					
Benzene*	0.312500	0.108253	0.529006	1.1600	5
Methylene Chloride*	2.095000	0.844615	3.784231	<5.00	
Toluene*	0.673500	0.613940	1.901381	<1.00	
Chlorobenzene*	0.500000	0.000000	0.500000	<1.00	
Chloromethane*	1.411765	0.256406	1.924576	<3.00	
1,1,1 Trichloroethane*	0.500000	0.000000	0.500000	<1.00	

MW5

Parameter	Baseline Mean	Baseline Standard Deviation	Control Limit ²	2024 Results	MCL
Chloride	14.413043	4.472068	23.357180	110.0000	
BOD	2.705500	1.887007	6.479514	<6.00	
COD	6.256818	4.461792	15.180402	16.8000	--
Ammonia Nitrogen	0.085425	0.026574	0.138573	<0.200	
Total Organic Halogens	3.004581	13.393024	29.790629	298.0000	
Arsenic	0.002709	0.001815	0.006339	<0.00200	0.01
Barium	0.312364	0.184462	0.681287	0.0536	2
Cadmium	0.000602	0.000763	0.002128	0.0005	0.005
Iron	0.436650	0.617971	1.672592		
Magnesium	25.340000	2.849105	31.038210		
Zinc	0.014485	0.012606	0.039698		
ug/L					
Benzene*	0.312500	0.108253	0.529006	<0.500	5
Methylene Chloride*	2.095000	0.844615	3.784231	<5.00	
Toluene*	0.673500	0.613940	1.901381	<1.00	
Chlorobenzene*	0.500000	0.000000	0.500000	<1.00	
Chloromethane*	1.411765	0.256406	1.924576	<3.00	
1,1,1 Trichloroethane*	0.500000	0.000000	0.500000	<1.00	

¹ Values calculated using historical monitoring results from MW1/MW1R .

² Control limit is equal to baseline mean plus 2 times baseline standard deviation of upgradient

³ MCL = Maximum Contaminant Level as found at 567 IAC 41

General Notes:

All results in Parts per million (mg/L) unless otherwise indicated.

* Results in parts per billion (ug/L).

Items in **bold** are above control limits

Table 9 – Analytical Data Summary

Keokuk Landfill Groundwater Monitoring Data

Statistical Evaluation and Control Limits

MWIR	1996	Mar-97	Jun-97	Oct-97	1998	2003	2004	2005	2006	2007	2008	2009
Parameters mg/L												
Chloride	5.5	5.3	6.6	5.5		18.0	18.5	19.3	14.1	*	16.2	20.8
BOD	<2	0.7	1.5	<2		<5	<3	<3	<6	*	<3	<3.00
COD	<20	<20	<20	<20		22.0	<5	<5	<5	*	8.0	6.60
Ammonia Nitrogen	<.1	<.1	0.017	<.1		<.1	<.2	<.2	<.2	<.2	<.2	<0.200
Total Organic Halogens	<.03	0.0052	0.0057	0.0069		<0.01	<0.01	<0.01	<0.01	0.0256	<0.01	<0.0100
Arsenic	<0.005	<0.005	<0.005	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	0.0011	<0.00100
Barium, dissolved	0.16	0.13	0.15	0.13		0.19	0.162	0.202	0.224	0.238	0.235	0.274
Cadmium	<0.0001	<0.0001	<0.0005	<0.001		<0.005	<0.0005	<0.0005	<0.0005	0.0	<0.0005	0.00110
Iron, dissolved	0.29	<1	0.024	0.024		0.054	<1	<1	<1	<1	1.97	2.17
Magnesium, dissolved	26.8	25.8	30.8	26.0		24.0	22.0	25.1	26.5	25.9	21.3	24.9
Zinc	<0.2	<0.2	<0.2	<0.1		<0.3	<0.2	<0.2	<0.2	0.0351	<0.2	0.0564
ug/L												
Benzene	<1	<1	<1	<1		<1	<0.5	<0.5	<0.5	<0.500	<0.5	<0.500
Chloroethane	<2	<2	<2	<2		<1	<5				<1	
1,1-Dichloroethane	<1	<1	<1	<1		<1	<1	<1		<1.00	<2	<2.00
cis-1,2-Dichloroethene	<1	<1	<1	<1		<1						
trans-1,2-Dichloroethene	<1	<1	<1	<1		<1						
Tetrachloroethene	<1	<1	<1	<1		<1						
Di-isopropyl ether	<1	<1	<1	<1		<1						
Acetone	<50	<10	<10	<10		<50						
Methylene Chloride	<5	<1	0.2	0.3		<5					<5	<5.00
Toluene	<5	0.2	0.2	<1		<5	<1.0	<1.0	<1.0	<1.00	<1	<1.00
Chlorobenzene				<1		<1.0	<1.0	<1.0	<1.0	<1.00	<1	<1.00
Chloroethane				<2		<1.0	<3.0	<3.0	<3.0	<3.00	<3	<3.00
1,1,1 Trichloroethane		<1	<1	<1		<1.0	<1.0	<1.0	<1.0	<1.00	<1	<1.00

* = Not enough water to obtain sample for these chemicals of concern.

MW1R													
Parameters	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cont. Lim.	
mg/L													
Chloride	16.3	Well	15.30	15.20		15.50	17.1000	15.1000	15.3000	18.6000	17.3000	4.4191	
BOD	<12.0	was	<12.0	<12.0	11.4	<6.0	<6.0	<3.0	<3.0	<3.0	<6.00	1.8870	
COD	6.1	dry	7.90	<5.00	<5.0	<5.0	<5.0	<5.0	<5.0	5.47	5.5500	4.4618	
Ammonia Nitrogen	<0.200		<0.200	<0.200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.200	0.0266	
Total Organic Halogens	<0.0100		0.01	<0.0300	<0.0300	<0.0200	<0.03	<0.03	<0.03	<0.01	<0.0400	13.3930	
Arsenic	<0.00100		<0.00100	0.00268	<0.00100	<0.00200	0.0024	<0.002	<0.002	<0.002	<0.00200	0.0018	
Barium, dissolved	0.114		0.315	0.394	0.438	0.429	0.3560	0.4080	0.445	0.4280		0.2349	
Cadmium	<0.000500		<0.000500	<0.000500	<0.000500	<0.000500	<0.0005	<0.0005	<0.0005	<0.0001		0.0008	
Iron, dissolved	<0.100		<0.100	<0.100	<0.100	1.22	<0.100	<0.100	<0.100	0.1310		0.6180	
Magnesium, dissolved	20.2		28.30	26.70	29.7	28.20	20.7000	22.5000	27.2000	24.2000		2.8491	
Zinc	0.0		<0.0200	0.01	<0.0200	<0.0100	<0.0100	<0.0200	<0.02	0.0264		0.0126	
ug/L													
Benzene	<0.500		<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.5	<0.5	<0.500	0.1083	
Chloroethane												0.6227	
1,1-Dichloroethane			<2.00	<2.00	<2.00	<2.00					<2.00	0.2474	
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Tetrachloroethene													
Di-isopropyl ether													
Acetone													
Methylene Chloride	<5.00		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.0	<0.5	<5.00	0.8446	
Toluene	<1.00		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<1.00	0.6139	
Chlorobenzene	<1.00		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<1.00	0.0000	
Chloromethane	<3.00		<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.0	<3.0	<3.00	0.2564	
1,1,1 Trichloroethane	<1.00		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.0	<1.0	<1.00	0.0000	

MWIR												
Parameters		2021	2022	2023	2024						Cont. Lim.	
	mg/L											
Chloride		17.1000	12.8	14.70	11.40						23.35718	
BOD		<6.00	4.6	<6.00	<6.00						6.4795136	
COD		6.7800	6.5	5.69	<5.00						15.180402	
Ammonia Nitrogen		<0.200	<0.200	<0.200	<0.200						0.1385732	
Total Organic Halogens		<0.010	<0.010	62.90	<40.0						29.790629	
Arsenic		<0.00200	<0.00200	<0.00200	<0.00200						0.0063388	
Barium			0.497	0.953	1.050						0.8142221	
Cadmium			0.0	0.00	0.00						0.0021218	
Iron											1.6725921	
Magnesium											31.03821	
Zinc											0.0396976	
	ug/L											
Benzene		<0.500	<0.500	<0.500	<0.500						0.5290064	
Chloroethane				<4.00	<4.00						2.3168283	
1,1-Dichloroethane		<2.00	<2.00	<1.00	<1.00						1.2091574	
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Tetrachloroethene												
Di-isopropyl ether												
Acetone												
Methylene Chloride		<5.00	<5.00	<5.00	<5.00						3.7842306	
Toluene		<1.00	<1.00	<1.00	<1.00						1.9013807	
Chlorobenzene		<1.00	<1.00	<1.00	<1.00						0.5	
Chloromethane		<3.00	<3.00	<3.00	<3.00						1.9245763	
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00						0.5	

MW2		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cont. Lim.
Parameters	mg/L												
Chloride		78.000	71.100	84.7	99.1	105.0	98.9	85.1000	94.3000	88.8000	77.6000	78.1000	4.4191
BOD		8.100	<3.00	<12.0	<12.0	<12.0	<6.0	<6.0	<3.0	<3	<3	<6.00	1.8870
COD		70.400	65.800	23.2	24.5	21.0	18.3	21.1000	26.0000	26.6000	23.0000	22.3000	4.4618
Ammonia Nitrogen		1.780	0.495	0.600	0.200	0.253	<0.20	<0.20	<0.20	<0.2	<0.2	<0.200	0.0266
Total Organic Halogens		0.029	0.038	0.0622	0.0577	0.0797	0.2190	0.0468	0.1560	0.0789	0.1660	0.1170	13.3930
Arsenic			0.0101	0.00305	0.00444	0.00377	0.00498	0.00553	0.00791	<0.002	<0.002	0.00235	0.0018
Barium, dissolved			0.844	0.947	0.949	0.928	0.821	0.6690	0.8880	0.6470	0.5480		0.2349
Cadmium			<0.0005	<0.000500	<0.000500	0.001	<0.000500	<0.0005	<0.0005	<0.0005	0.0002		0.0008
Iron, dissolved			7.42	12.4	6.8	5.1	6.3	2.6800	7.4300	<0.1	1.9000		0.6180
Magnesium, dissolved			49.1	63.0	51.1	56.1	58.9	50.7000	51.9000	52.2000	55.5000		2.8491
Zinc			0.0261	<0.0200	0.0	<0.0200	<0.0100	<0.01	<0.0200	<0.02	<0.02		0.0126
Benzene		0.900	1.04	0.860	1.190	1.220	1.260	1.2300	1.2400	1.5700	1.6200	1.6400	0.1083
Chloroethane													0.6227
1,1-Dichloroethane								<2.00				<2.00	0.2474
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Tetrachloroethene													
Di-isopropyl ether													
Acetone													
Methylene Chloride		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5	<5	<5.00	0.8446
Toluene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1	<1.00	0.6139
Chlorobenzene		1.59	1.86	1.61	2.65	3.91	4.50	<1.0	3.42	6.06	4.88	3.43	0.0000
Chloromethane		<3.00	8.22	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3	8.06	<3.00	0.2564
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.0	<1.00	0.0000

MW2		2021	2022	2023	2024							Cont. Lim.
Parameters												
mg/L												
Chloride		89.800	86.400	98.1	93.2							23.35718
BOD		<6.00	<3.00	<12.00	<3.00							6.4795136
COD		31.300	25.700	19.0	31.5							15.180402
Ammonia Nitrogen		<0.200	<0.200	<0.200	0.208							0.1385732
Total Organic Halogens		0.069	0.049	268	306.0000							29.790629
Arsenic		<0.00200	<0.00200	0.00252	<0.00200							0.0063388
Barium,			0.715	0.959	0.702							0.8142221
Cadmium			0.0	0.002	0.000681							0.0021218
Iron												1.6725921
Magnesium												31.03821
Zinc												0.0396976
ug/L												
Benzene		1.220	1.43	1.43	1.030							0.5290064
Chloroethane				<4.00	<4.00							2.3168283
1,1-Dichloroethane		<2.00	<2.00	<1.00	2.5							1.2091574
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
Tetrachloroethene												
Di-isopropyl ether												
Acetone												
Methylene Chloride		<5.00	<5.00	<5.00	<5.00							3.7842306
Toluene		<1.00	<1.00	<1.00	<1.00							1.9013807
Chlorobenzene		2.62	3.51	4.14	3.21							0.5
Chloromethane		<3.00	<3.00	<3.00	<3.00							1.9245763
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00							0.5

MW3		1996	Mar-97	Jun-97	Oct-97	1998	2003	2004	2005	2006	2007	2008	2009
Parameters		mg/L											
Cadmium		<0.005	<0.005	<.001	<.001		<.005	<.0005	<.0005	<.001	<.0005	<.0005	0.00184
Chloride		189	190	169	191	220	160	163	155	173	162	141	154
BOD		<2	7.3	6.9	9.1	<60	7	5.9	3.04	<6	4.89	<3	4.71
COD		158	157	179	149	119	170	84	87	79.1	94.2	92.9	76.6
Ammonia Nitrogen		<.1	0.28	0.34	0.20	0.37	<.1	0.26	0.375	0.289	0.244	<.2	0.246
Total Organic Halogens		0.257	0.289	0.118	0.278	0.0545	0.071	0.054	0.044	0.0414	0.133	0.0993	0.0662
Arsenic		<.005	<.005	<.005	<.01		<.01	0.0018	0.00375	0.00294	0.00233	0.00139	0.00364
Barium, dissolved		0.062	0.041	0.047	0.039		0.04	0.026	0.0281	0.0329	0.0322	0.0238	0.0729
Iron, dissolved		0.54	0.041	0.27	0.35		4.4	3.2	2.99	2.6	2.48	1.05	8.68
Magnesium, dissolved		172	160	186	178		160	200	244	264	218	218	243
Zinc		<.02	0.057	<.02	<.001		<.03	<.04	0.0332	<.05	0.106	<.02	0.147
ug/L													
Benzene		<.1	<.1	<.1	<.1		2.1	1.46	0.98	1.09	1	0.66	<.500
Chloroethane		3	5	3.7	6.6		3.6	<.5					
1,1-Dichloroethane		<.1	<.1	<.1	<.1		<.1	<.1			<.00		<.00
cis-1,2-Dichloroethene		<.1	<.1	<.1	<.1		<.1						
trans-1,2-Dichloroethene		<.1	<.1	<.1	<.1		<.1						
Tetrachloroethene		<.1	<.1	<.1	<.1		<.1						
Di-isopropyl ether		<.1	<.1	<.1	<.1		4.5						
Acetone		<.50	4.7	<.10	<.10		<.50						
Methylene Chloride		<.5	<.1	1.1	<.1		<.5				<.5.00	<.5	<.5.00
Toluene		<.5	<.1	<.1	<.1		<.5	<.1.0	<.1.0	<.1.0	<.1.00	<.1	<.1.00
Chlorobenzene					0.38		<.1.0	<.1.0	<.1.0	<.1.0	<.1.0	<.1	<.1.00
Chloromethane					<.2		<.1.0	<.3.0	<.3.0	<.3.0	<.3.0	<.3	<.3.00
1,1,1 Trichloroethane			<.1	<.1	<.1			<.1.0	<.1.0	<.1.0	<.1.0	<.1	<.1.00

MW3		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cont Lim
Parameters													
mg/L													
Chloride		151	161	145.0	149.0	164.0	175.0	172.0000	172.0000	158.0000	164.0000	175.0000	4.4191
BOD		<12.0	3.98	<12.0	<12.0	<12.0	3.98	<6	<3	<12	<3	<6.00	1.8870
COD		70.4	61.3	65.4	72.9	72.9	77.2	89.0000	8.0100	96.5000	76.1000	74.9000	4.4618
Ammonia Nitrogen		0.209	0.208	1.12	1.03	0.22	<0.2	0.2900	<0.200	0.2640	0.2480	0.3800	0.0266
Total Organic Halogens		5.80	0.209	0.1770	1.1010	0.2310	0.3910	0.1800	0.1130	0.1850	0.2330	0.1730	13.3930
Arsenic		<0.00100	0.00231	0.00188	0.00506	<0.00100	0.00207	0.0054	0.0020	<0.002	0.00267	0.00252	0.0018
Barium, dissolved		0.0166	0.0262	0.0211	0.0150	<0.0100	0.0249	0.1430	0.0231	0.0210	0.0235		0.2349
Cadmium		<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.0005	<0.0005	<0.0005	0.00028		0.0008
Iron, dissolved		0.720	1.64	1.62	2.21	1.27	1.42	1.0600	1.1000	0.6440	1.9900		0.6180
Magnesium, dissolved		257	245	246.0	235	259.0	318	227.0000	212.0000	249.0000	242.0000		2.8491
Zinc		0.0259	<0.0200	<0.0200	0.0076	<0.0200	<0.0100	<0.0100	<0.0200	<0.02	<0.02		0.0126
ug/L													
Benzene		<0.500	<0.500	<0.500	<0.500	0.506	<0.500	<0.500	<0.500	<0.5	<0.5	<0.500	0.1083
Chloroethane												<2.00	0.6227
1,1-Dichloroethane													0.2474
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Tetrachloroethene													
Di-isopropyl ether													
Acetone													
Methylene Chloride		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5	<5.00	0.8446
Toluene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.6139
Chlorobenzene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000
Chloromethane		<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3	<3.00	0.2564
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000

MW4		1996	Mar-97	Jun-97	Oct-97	1998	2003	2004	2005	2006	2007	2008	2009
Parameters	mg/L												
Cadmium		<0.005	<0.005	<0.005	<0.001		<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.000500
Chloride		0.85	318	293	292	249	<1	242	231	242	234	230	254
BOD		5.5	8.3	33.3	13.1	30.9	35	46	27	11	11.9	25.8	38.7
COD		214	188	150	153	183	330	180	223	147	207	180	160
Ammonia Nitrogen		0.85	0.86	1.3	1	0.98	0.97	1.12	1.79	1.19	1.14	1.6	3.03
Total Organic Halogens		0.255	0.344	0.292	0.262	0.19	0.11	0.103	0.094	0.0915	0.136	0.16	0.108
Arsenic		0.011	0.012	0.013	0.014		0.011	0.0188	0.0184	0.0174	0.00892	0.0106	0.00674
Barium, dissolved		0.71	0.75	0.84	0.7		0.68	0.594	0.528	0.572	0.537	0.464	0.435
Iron, dissolved		38.3	43.3	47.5	36.8		46	34.7	29.6	31.6	25.3	18.6	11.9
Magnesium, dissolved		112	115	123	114		91	89.3	85	95.5	91.5	82.1	80.6
Zinc		<0.02	0.033	<0.02	<0.001		<0.03	<0.03	<0.02	<0.02	0.052	<0.02	0.0345
ug/L													
Benzene		<1	<1	<1	<1		<1	0.89	0.76	0.85	0.85	0.95	0.930
Chloroethane		7	7.3	7.8	8.7		9.2	<5					
1,1-Dichloroethane		<1	<1	<1	<1		<1	<1					<2.00
cis-1,2-Dichloroethene		<1	<1	<1	<1		<1						
trans-1,2-Dichloroethene		<1	<1	<1	<1		<1						
Tetrachloroethene		<1	<1	<1	<1		<1						
Di-isopropyl ether		<1	<1	<1	<1		<1						
Acetone		<50	<10	<10	<10		<50						
Methylene Chloride		<5	<1	<1	<1		<5						<5.00
Toluene		<5	<1	<1	<1		<5	<1.0	<1.0	<1.0	<1.00	<1	<1.00
Chlorobenzene					0.33		<1.0	<0.5	<1.0	<1.0	<1.00	<1	<1.00
Chloromethane					<2		<1.0	<1.0	<3.0	<3.0	<3.00	<3	<3.00
1,1,1 Trichloroethane			<1	<1	<1			<1.0	<1.0	<1.0	<1.00	<1	<1.00

MW4		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cont Lim
Parameters													
mg/L													
Chloride		240	238	245.0	236.0	215.0	227.0	224.0000	216.0000	194.0000	187.0000	200.0000	4.4191
BOD		27.2	23.2	14.90	12.60	20.90	25.00	18.1000	22.6000	23.7000	<3	13.3000	1.8870
COD		81.2	167	236.0	179.0	158.0	68.7	238.0000	215.0000	188.0000	247.0000	213.0000	4.4618
Ammonia Nitrogen		2.11	1.21	3.53	1.68	2.11	1.62	3.3800	2.2100	1.4400	1.9000	1.6000	0.0266
Total Organic Halogens		3.24	0.240	0.2780	0.1360	0.2000	0.4390	0.0834	0.1870	0.1060	0.4670	0.2680	13.3930
Arsenic		0.0167	0.00934	0.0619	0.0191	0.0152	0.0208	0.0426	0.0272	0.0061	0.0227	0.0181	0.0018
Barium, dissolved		0.476	0.411	0.654	0.521	0.465	0.505	0.5430	0.5290	0.4020	0.5980		0.2349
Cadmium		<0.000500	<0.000500	0.00121	<0.000500	<0.000500	<0.000500	<0.000500	<0.0005	<0.0005	0.0001		0.0008
Iron, dissolved		20.0	19.3	54.20	22.4	15.80	23.7	29.2000	26.1000	9.6100	26.4000		0.6180
Magnesium, dissolved		80.8	78.5	77.7	79.4	86.0	81.4	69.3000	71.2000	76.8000	77.6000		2.8491
Zinc		<0.0200	<0.0200	<0.200	0.0059	<0.0200	<0.0100	<0.0100	<0.02	<0.02	0.0432		0.0126
ug/L													0.0000
Benzene		0.940	1.05	0.780	0.959	1.160	0.985	1.1200	1.0400	1.0700	1.1600	1.2400	0.1083
Chloroethane												<2.00	0.6227
1,1-Dichloroethane													0.2474
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Tetrachloroethene													
Di-isopropyl ether													
Acetone													
Methylene Chloride		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5	<5.00	0.8446
Toluene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<11	<1.00	0.6139
Chlorobenzene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000
Chloromethane		<3.00	3.34	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3	<3.00	0.2564
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000

MW5		Mar-97	Jun-97	Oct-97	1998	2003	2004	2005	2006	2007	2008	2009
Parameters	mg/L											
Cadmium		<.0005	<.0001	<.001		<.005	<.0005	0.0012	<.0005	0.00118	<.001	0.00256
Chloride		145	143	335	126	140	130	136	142	128	118	115
BOD		<2	0.66	<2	<2	<5	<3	<3	<6	<3	<6	<6.00
COD		<20	8.4	<20	91	<20	12	18	13.2	15	14.1	15.1
Ammonia Nitrogen		<.1	0.057	<.1	0.038	<.1	<.2	<.2	<.2	<.2	<.2	<0.200
Total Organic Halogens		0.0857	0.1	0.0506	0.0466	0.038	0.082	0.037	0.0517	0.0391	0.0377	0.0390
Arsenic		<.005	<.005	<.01		>.01	<.01	<.01	<.01	<.01	<.01	0.00112
Barium, dissolved		0.04	0.049	0.14		0.02	0.016	0.0233	0.0348	0.0259	0.0229	0.0176
Iron, dissolved		0.021	0.2	1.7		<.05	<.1	<.1	<.1	<.1	<.1	0.119
Magnesium, dissolved		181	200	223		140	140	142	153	175	142	140
Zinc		0.083	<.02	<.01		<.03	<.04	0.0455	<.05	0.133	0.0286	
ug/L												
Benzene		<.1	<.1	<.1		<.1	<.05	<0.500	291	<0.500	<0.5	<0.500
Chloroethane		<2	<2	<2		<.1	<5					
1,1-Dichloroethane		<.1	<.1	<.1		<.1	<.1					<2.00
cis-1,2-Dichloroethene		<.1	<.1	<.1		<.1						
trans-1,2-Dichloroethene		<.1	<.1	<.1		<.1						
Tetrachloroethene		<.1	<.1	<.1		<.1						
Di-isopropyl ether		<.1	<.1	<.1		<.1						
Acetone		<10	<10	<10		<50						
Methylene Chloride		<.1	<.1	<.1		<5				<5.00	<5	<5.00
Toluene		<.1	<.1	<.1		<5	<1.0	<1.0	45.2	<1.00	<.1	<1.00
Chlorobenzene				<.1		<1.0	<1.0	<1.0	<1.0	<1.00	<.1	<1.00
Chloromethane				<2		<1.0	<3.0	<3.0	<3.0	<3.00	<3	<3.00
1,1,1 Trichloroethane		<.1	<.1	<.1			<1.0	<1.0	<1.0	<1.00	<.1	<1.00

MW5		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cont Lim
Parameters													
mg/L													
Chloride		122	137	133.0	149.0	113.0	113.0	133.0000	126.0000	113.0000	187.0000	124.0000	4.4191
BOD		<12.0	<6.00	<12.00	<12.00	<12.0	<6.0	<6.0	<3	<6	<3	<6.00	1.8870
COD		23.0	11.0	14.9	19.7	14.2	<5.0	21.1000	14.5000	17.2000	247.0000	27.1000	4.4618
Ammonia Nitrogen		<0.200	<0.200	<0.200	<0.200	<0.200	<0.2	<0.2	<0.2	<0.2	1.9000	<0.200	0.0266
Total Organic Halogens		0.0365	0.0401	0.0703	0.0932	0.0744	0.1780	0.1710	0.1810	0.1360	<0.01	0.0752	13.3930
Arsenic		<0.00100	0.00147	<0.00100	0.00331	<0.00100	0.00301	0.0047	<0.002	<0.002	<0.002	<0.00200	0.0018
Barium, dissolved		0.0151	0.0177	0.0365	0.0388	0.0107	0.0901	0.0216	0.0533	0.0265	0.4280	0.2349	0.2349
Cadmium		0.000986	0.00173	<0.000500	0.00341	0.0008020	0.00052	0.000769	<0.000500	0.0006	<0.0001	0.0008	0.0008
Iron, dissolved		<0.100	<0.100	<0.100	0.46	<0.100	5.57	<0.100	<0.100	0.3390	0.1310	0.6180	0.6180
Magnesium, dissolved		153	119	131.0	149	146.0	195	125.0000	116.0000	138.0000	24.2000	2.8491	2.8491
Zinc		<0.0200	<0.0200	<0.0200	0.0126	<0.0200	0.0186	<0.0100	<0.0200	<0.02	0.2640	0.0126	0.0126
ug/L													
Benzene		<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.5	<0.5	<0.5	0.1083
Chloroethane													0.6227
1,1-Dichloroethane												<2.00	0.2474
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
Tetrachloroethene													
Di-isopropyl ether													
Acetone													
Methylene Chloride		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5	<5.00	0.8446
Toluene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.6139
Chlorobenzene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000
Chloromethane		<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3	<3.00	0.2564
1,1,1 Trichloroethane		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1	<1.00	0.0000

Table 12 – Leachate Elevation Data (Current Year)

Leachate Depths

Keokuk Landfill

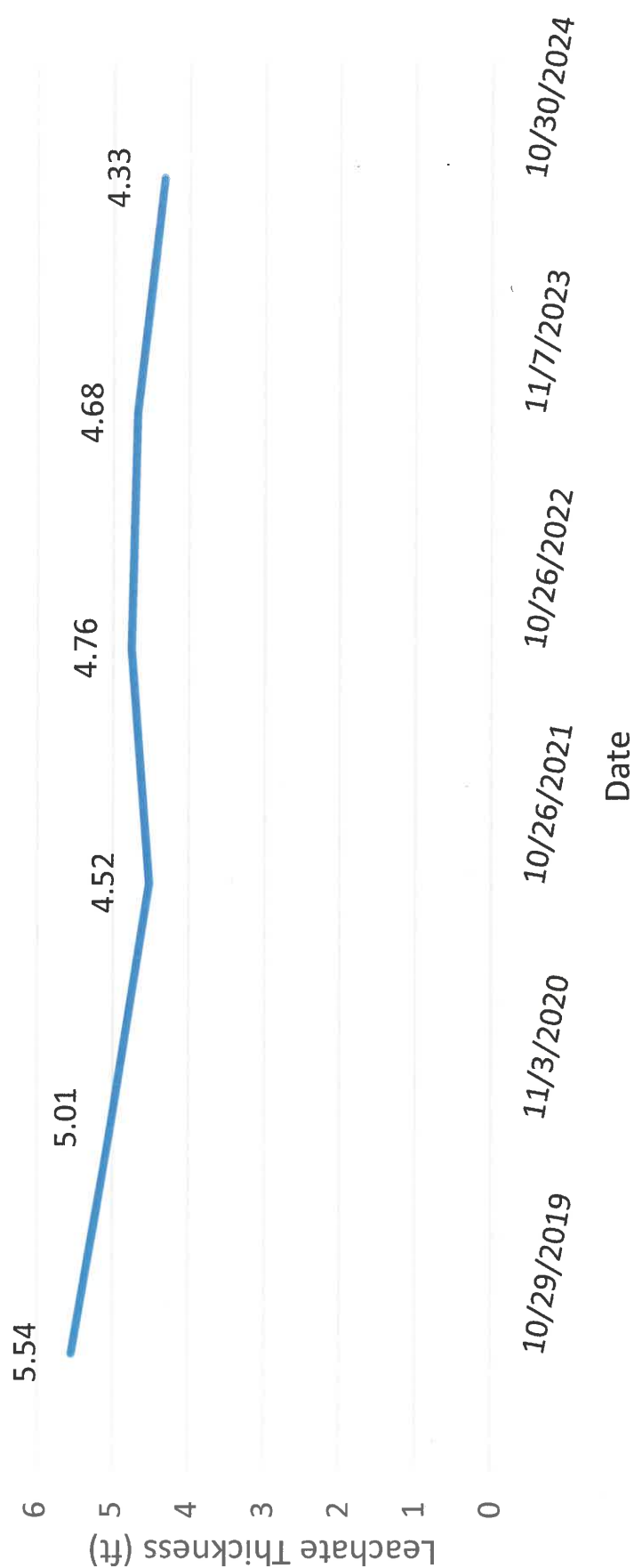
	P1	P1	P1	P1	P1	P1	P1
	10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024
Depth to leachate (ft.)	14.68	14.81	15.35	15.3	15.29	15.64	15.97
Total Depth (ft.)	20.8	20.35	20.36	19.82	20.05	20.32	20.3
Leachate Thickness (ft.)	6.12	5.54	5.01	4.52	4.76	4.68	4.33

	P2	P2	P2	P2	P2	P2	P2
	10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024
Depth to leachate (ft.)	11.1	11.36	11.14	11.41	11.51	11.23	11.71
Total Depth (ft.)	38.72	38.52	38.55	38.42	38.66	38.66	38.67
Leachate Thickness (ft.)	27.62	27.16	27.41	27.01	27.15	27.43	26.96

	P3	P3	P3	P3	P3	P3	P3
	10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024
Depth to leachate (ft.)	8.56	8.03	9.18	8.84	9.68	9.95	10.1
Total Depth (ft.)	16.24	15.9	15.77	15.95	15.95	15.97	15.95
Leachate Thickness (ft.)	7.68	7.87	6.59	7.11	6.27	6.02	5.85

Table 12A – Leachate Elevation Data (Over Time)

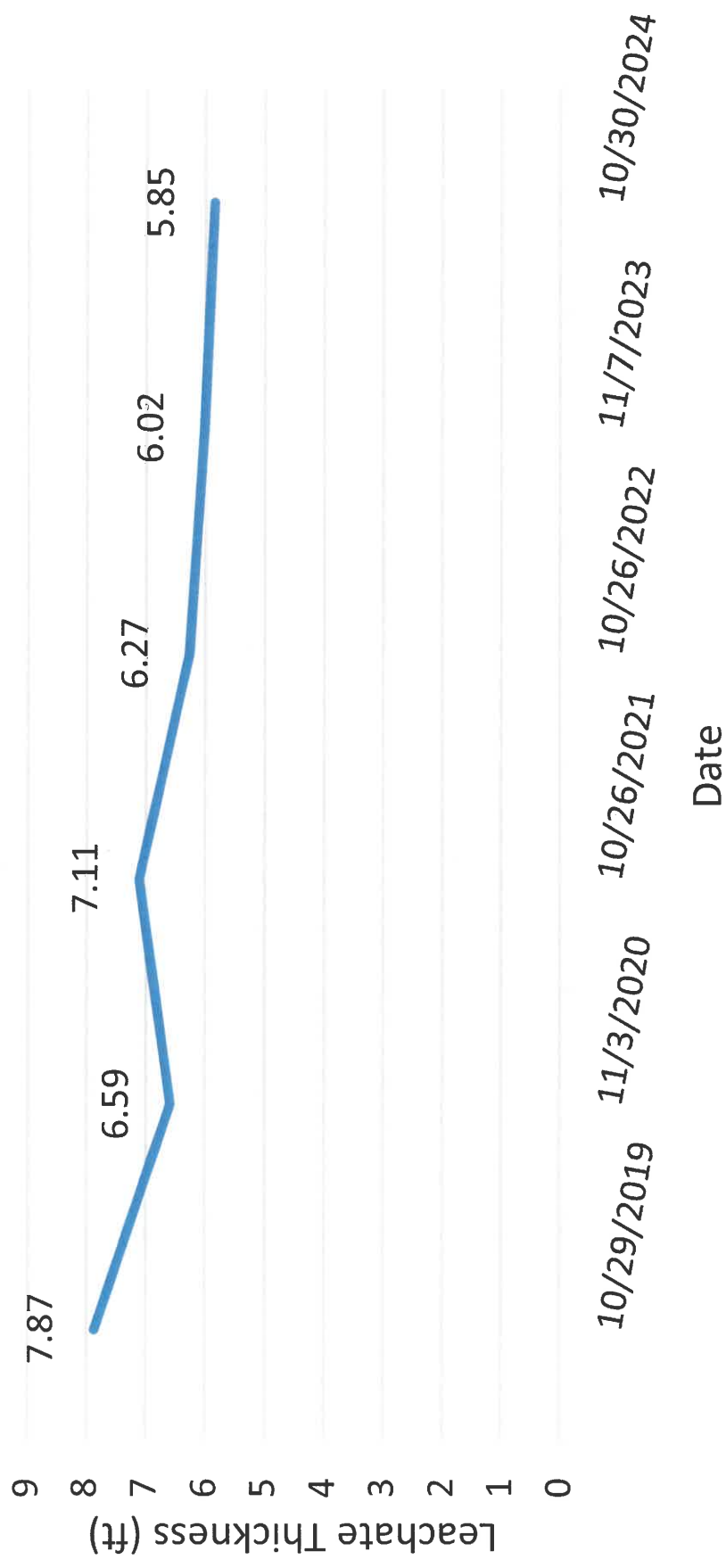
P1 Leachate Thickness



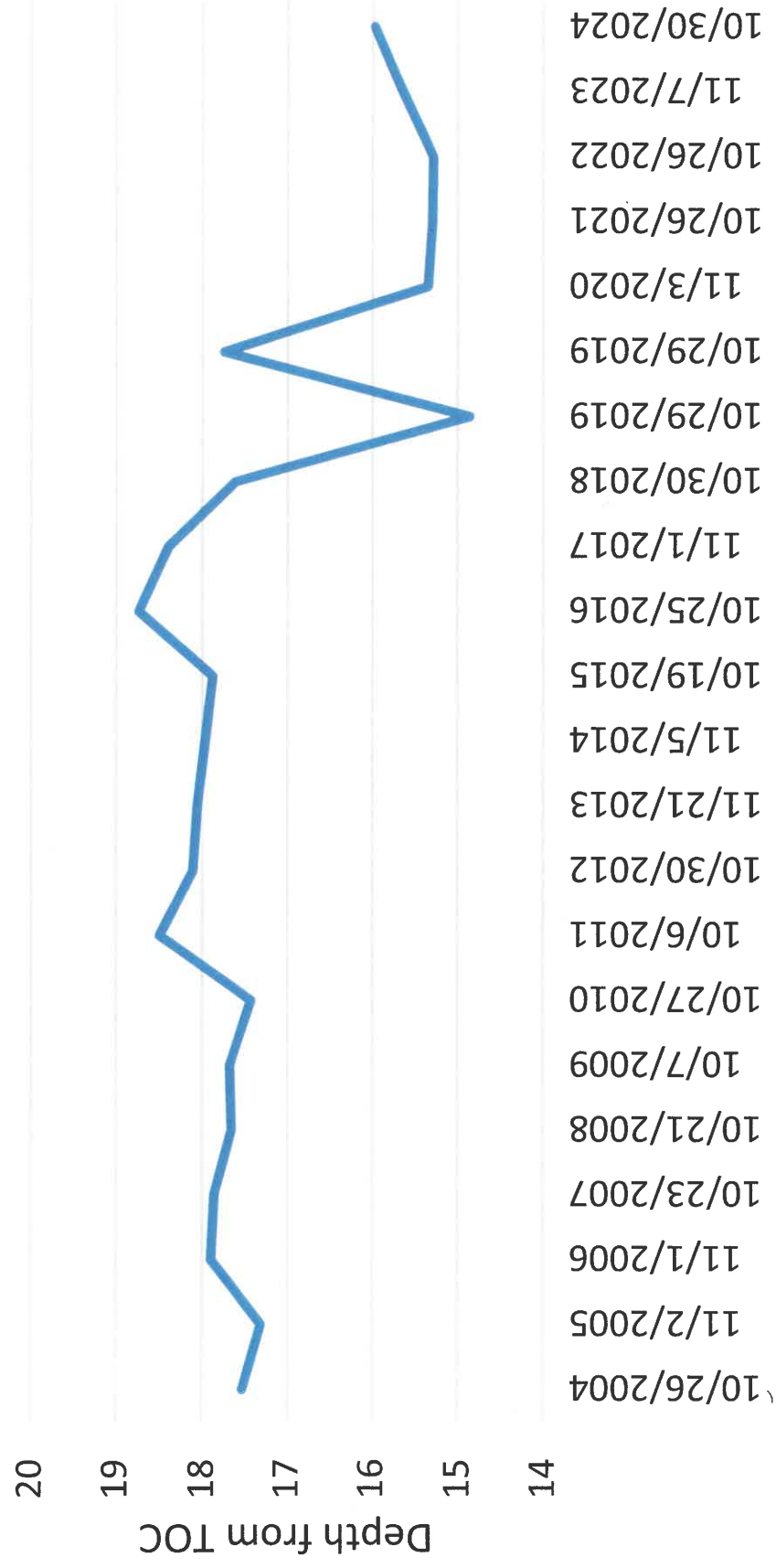
P2 Leachate Thickness



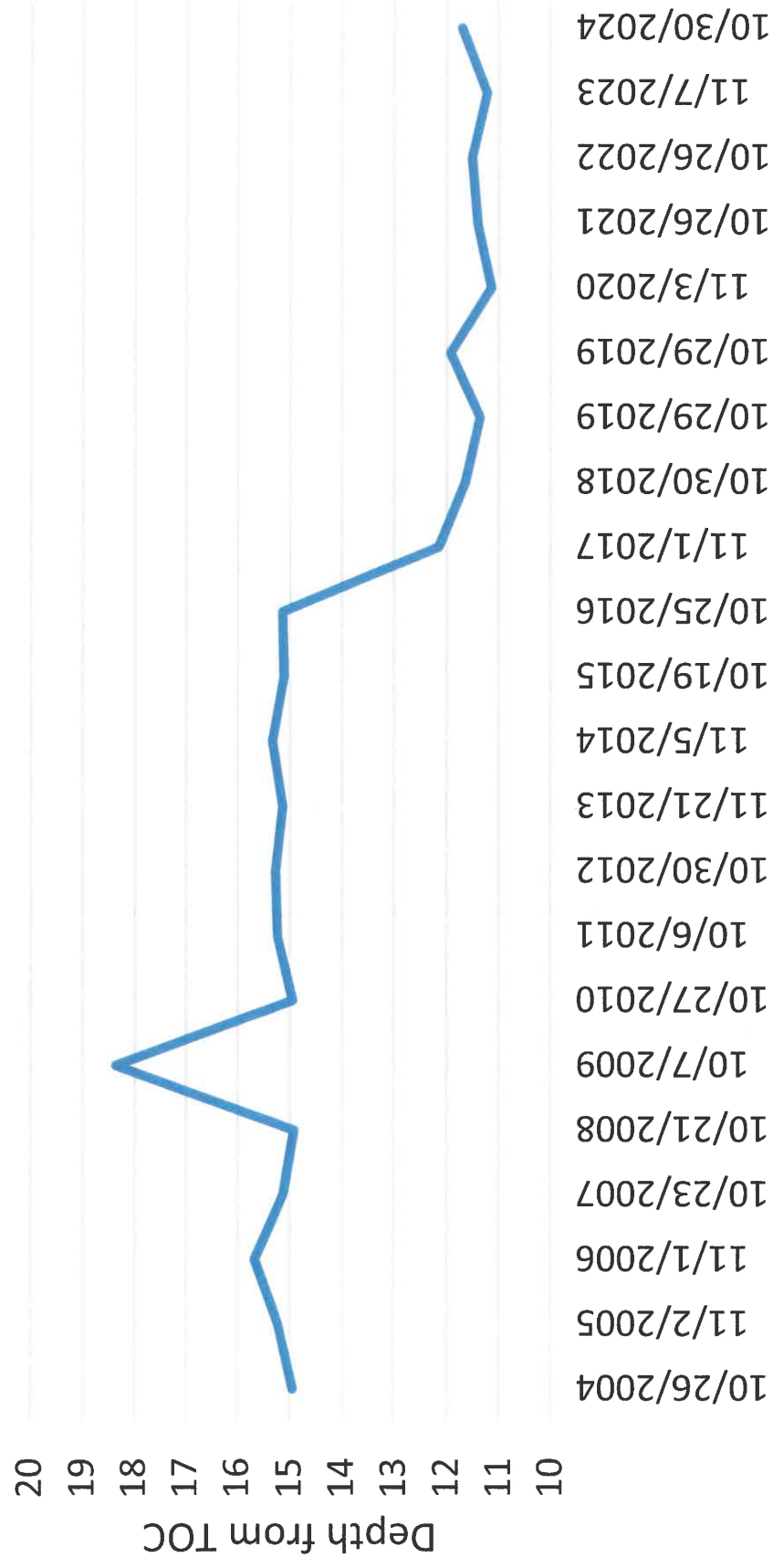
P3 Leachate Thickness



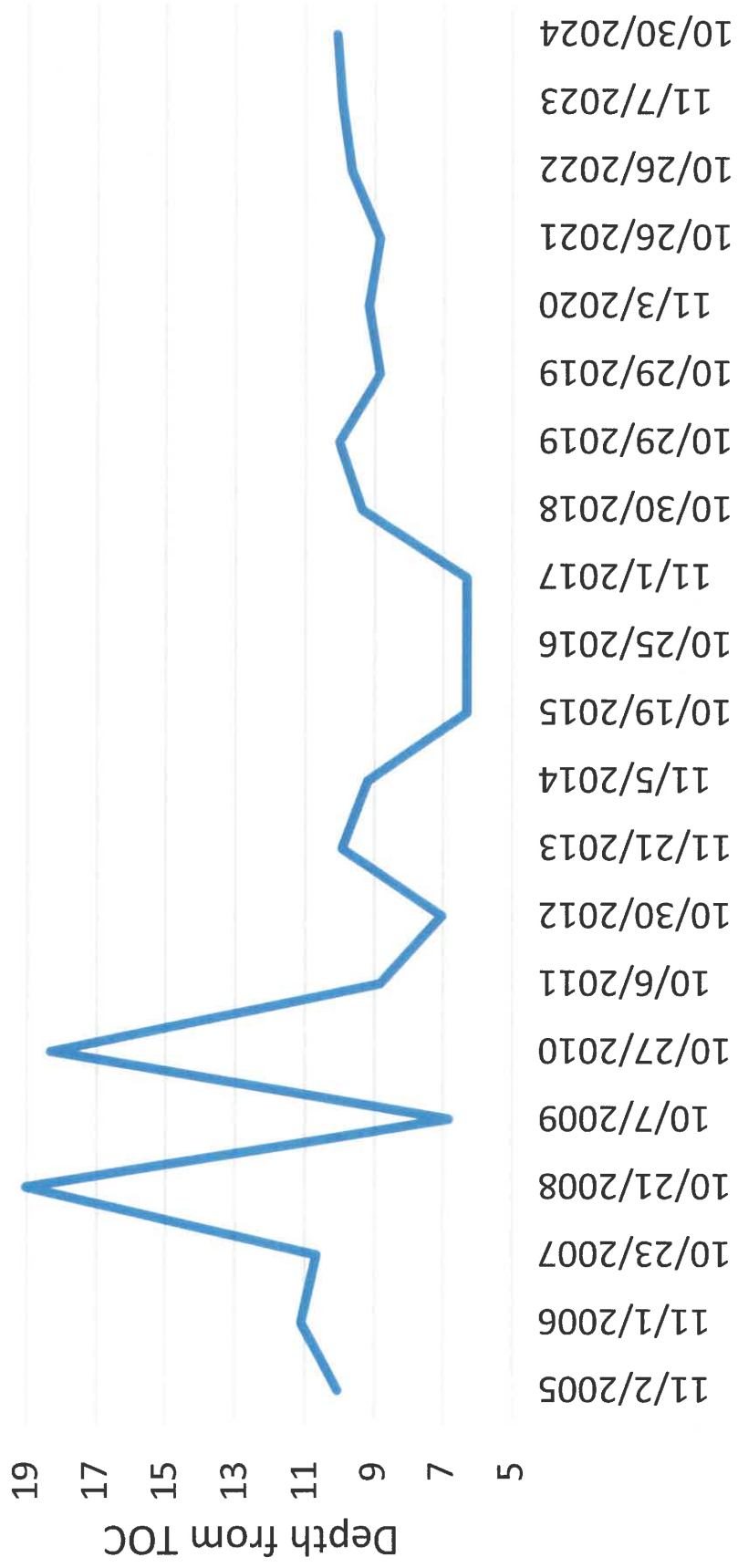
P1 Leachate Levels



P2 Leachate Levels



P3 Leachate Levels



Appendix 2
Sampling Forms

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Requette America-Landfill Keokuk</u>	Permit No. <u>56-SDP-02-75C</u>
Monitoring Well/Piezometer No. <u>MW1</u>	
Upgradient	Downgradient
Name of person sampling <u>William Smolar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>636.46</u>	Ground Elevation <u>634.20</u>		
Depth of Well <u>30.03</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM Solonist</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/31/24 0939</u>	<u>21.92</u>	<u>614.54</u>
*After Purging	<u>10/30/24 1005</u>	<u>30.03</u>	<u>606.43</u>
*Before Purging	<u>10/30/24 0939</u>	<u>21.92</u>	<u>614.54</u>

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level) <u>3</u>	
Was well pumped/bailed dry? <u>Yes</u>	
Equipment used:	
Bailer type <u>Plastic</u>	Dedicated Bailer? <u>Yes</u>
Pump type <u>—</u>	Dedicated Pump?
If not dedicated, method of cleaning	

*D. FIELD MEASUREMENT	
Weather Conditions Sunny 70°	
Field Measurements (after stabilization):	
Temperature 14.73	Units °C
Equipment Used YSI meter	
pH 6.85	
Equipment Used YSI meter	
Specific Conductance 0.710	Units mg/l/cm²
Equipment Used YSI meter	

[illegible]

CERTIFICATION I certify under penalty of law I believe the information reported above is true, accurate and complete.		
Signature <i>William S. [Signature]</i>		Date <i>10/30/24</i>
Telephone <i>563-332-8200</i>	Fax <i>563-332-9465</i>	Email <i>WSindelar@seneca.co.com</i>
NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Roquette America - Keokuk Landfill</u>	Permit No. <u>56-SDP-02-75C</u>
Monitoring Well/Piezometer No. <u>MW2</u>	
Upgradient	Downgradient
Name of person sampling <u>William Sindelar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>620.48</u>	Ground Elevation <u>619.45</u>		
Depth of Well <u>29.06</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>W2M</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24 12:04</u>	<u>24.88</u>	<u>595.60</u>
*After Purging	<u>10/30/24 12:14</u>	<u>29.06</u>	<u>591.42</u>
*Before Purging	<u>10/30/24 12:04</u>	<u>24.88</u>	<u>595.60</u>

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level) <u>3</u>	
Was well pumped/bailed dry? <u>Yes</u>	
Equipment used:	
Bailer type <u>flexic</u>	Dedicated Bailer? <u>Yes</u>
Pump type <u>-</u>	Dedicated Pump?
If not dedicated, method of cleaning	

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Roquette America - Wapak Landfill</u>	Permit No. <u>56-SDP-02-75C</u>
Monitoring Well/Piezometer No. <u>MW3</u>	
Upgradient	Downgradient
Name of person sampling <u>William Jindeler</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>590.62</u>	Ground Elevation <u>588.70</u>		
Depth of Well <u>41.13</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24 1130</u>	<u>18.75</u>	<u>571.87</u>
*After Purging	<u>10/30/24 1144</u>	<u>38.62</u>	<u>552.00</u>
*Before Purging	<u>10/30/24 1130</u>	<u>18.75</u>	<u>571.87</u>

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level) <u>3</u>	
Was well pumped/bailed dry? <u>NO</u>	
Equipment used:	
Bailer type <u>plastic</u>	Dedicated Bailer? <u>yes</u>
Pump type <u>-</u>	Dedicated Pump?
If not dedicated, method of cleaning	

*D. FIELD MEASUREMENT	
Weather Conditions Sunny 70°	
Field Measurements (after stabilization):	
Temperature 13.56	Units °C
Equipment Used YSI meter	
pH 6.95	
Equipment Used YSI meter	
Specific Conductance 3.743	Units mS/cm
Equipment Used YSI meter	

[illegible]

CERTIFICATION I certify under penalty of law I believe the information reported above is true, accurate and complete.		
Signature <i>William J. [Signature]</i>		Date <i>10/30/24</i>
Telephone <i>563-332-8200</i>	Fax <i>563-332-9465</i>	Email <i>wsjndelar@seveco.com</i>
NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Roquette America - Hookvik Landfill</u>	Permit No. <u>SB-SDP-02-75C</u>
Monitoring Well/Piezometer No. <u>MW4</u>	
Upgradient	Downgradient
Name of person sampling <u>William Sindelar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>591.47</u>	Ground Elevation <u>589.79</u>		
Depth of Well <u>25.70</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24</u> <u>1032</u>	<u>8.95</u>	<u>582.52</u>
*After Purging	<u>10/30/24</u>	<u>19.53</u>	<u>571.94</u>
*Before Purging	<u>10/30/24</u> <u>1032</u>	<u>8.95</u>	<u>582.52</u>

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level) <u>3</u>	
Was well pumped/bailed dry? <u>NO</u>	
Equipment used:	
Bailer type <u>Austic</u>	Dedicated Bailer? <u>YES</u>
Pump type <u>-</u>	Dedicated Pump?
If not dedicated, method of cleaning	

*D. FIELD MEASUREMENT

Weather Conditions Sunny 70°

Field Measurements (after stabilization):

Temperature	14.24	Units	°C
-------------	-------	-------	----

Equipment Used YSI meter

pH 6.77

Equipment Used 451 meters

Specific Conductance	2.127	Units	mS/cm ²
----------------------	-------	-------	--------------------

Equipment Used YSI meter, 4 Gas 2 EL Meter

Comments

Well in good condition, continue to hear bubbling under during boiling activities. Methan 2E2 1%

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature Wahid Raza

Date 10/30/24

Telephone 962-3321-8000

Fax 563-332-9465

Email WShindekar@Server101.co.in

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Reggie's America - Hooker Landfill</u>	Permit No. <u>56-SOP-02-75C</u>
Monitoring Well/Piezometer No. <u>MWS</u>	
Upgradient	Downgradient
Name of person sampling <u>William Sindelar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>593.15</u>	Ground Elevation <u>592.14</u>		
Depth of Well <u>22.63</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24</u> <u>1057</u>	<u>12.19</u>	<u>580.96</u>
*After Purging	<u>10/30/24</u> <u>1107</u>	<u>22.63</u>	<u>570.52</u>
*Before Purging	<u>10/30/24</u> <u>1057</u>	<u>12.19</u>	<u>580.96</u>

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level) <u>3</u>	
Was well pumped/bailed dry? <u>YES</u>	
Equipment used:	
Bailer type <u>plastic</u>	Dedicated Bailer? <u>YES</u>
Pump type <u>—</u>	Dedicated Pump?
If not dedicated, method of cleaning	

*D. FIELD MEASUREMENT	
Weather Conditions Sunny 70°	
Field Measurements (after stabilization):	
Temperature 14.77	Units °C
Equipment Used YSI meter	
pH 6.78	
Equipment Used YSI meter	
Specific Conductance 2.631	Units mS/cm ²
Equipment Used YSI meter	

[illegible]

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature <i>William A. J.</i>		Date <i>10/30/24</i>
Telephone <i>563-332-8000</i>	Fax <i>563-332-9465</i>	Email <i>W.A.J@seriocal.com</i>
NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Republic America - Hooker Landfill</u>	Permit No. <u>56-SDP-02-75C</u>
Monitoring Well/Piezometer No. <u>P1</u>	
Upgradient	Downgradient
Name of person sampling <u>William Snelgar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>623.39</u>	Ground Elevation <u>620.46</u>		
Depth of Well <u>20.30</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24 11:58</u>	<u>15.97</u>	<u>607.42</u>
*After Purging			
*Before Purging			

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level)	
Was well pumped/bailed dry?	
Equipment used:	
Bailer type	Dedicated Bailer?
Pump type	Dedicated Pump?
If not dedicated, method of cleaning	

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

*D. FIELD MEASUREMENT	
Weather Conditions Sunny 70°	
Field Measurements (after stabilization):	
Temperature	Units
Equipment Used	
pH	
Equipment Used	
Specific Conductance	Units
Equipment Used	

[illegible]

CERTIFICATION I certify under penalty of law I believe the information reported above is true, accurate and complete.		
Signature <i>W. H. H. - [Signature]</i>		Date <i>10/30/24</i>
Telephone <i>863-332-8000</i>	Fax <i>863-332-9465</i>	Email <i>wsheglar@sheglar.com</i>
NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <u>Reggie's America - Keokuk Landfill</u>	Permit No. <u>56-JDP-02-75C</u>
Monitoring Well/Piezometer No. <u>P2</u>	
Upgradient	Downgradient
Name of person sampling <u>William Radelar</u>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <u>624.68</u>	Ground Elevation <u>621.02</u>		
Depth of Well <u>38.67</u>	Inside Casing Diameter (in inches)		
Equipment Used <u>WLM</u>			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/30/24</u> <u>11:24</u>	<u>11.71</u>	<u>612.97</u>
*After Purging			
*Before Purging			

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level)	
Was well pumped/bailed dry?	
Equipment used:	
Bailer type	Dedicated Bailer?
Pump type	Dedicated Pump?
If not dedicated, method of cleaning	

*D. FIELD MEASUREMENT	
Weather Conditions Sunny 70°	
Field Measurements (after stabilization):	
Temperature	Units
Equipment Used	
pH	
Equipment Used	
Specific Conductance	Units
Equipment Used	

[illegible]

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature <i>Will M. [Signature]</i>	Date <i>10/30/24</i>
--------------------------------------	----------------------

Telephone 563-332-8000

Fax 563-332-9465

Email wsinclair@peru.cc.com

NOTE: Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

GROUNDWATER SAMPLING AND/OR GROUNDWATER ELEVATION MEASUREMENT FORM

Site Name <i>Roguebe America - Newkuk Landfill</i>	Permit No. <i>56-SDP-02-75C</i>
Monitoring Well/Piezometer No. <i>P3</i>	
Upgradient	Downgradient
Name of person sampling <i>William Sindelar</i>	

A. MONITORING WELL/PIEZOMETER CONDITIONS	
Well/Piezometer Properly Capped? (please check)	☒ YES ☐ NO
If no, explain	
Standing Water or Litter? (please check)	☐ YES ☒ NO
If yes, explain	

B. GROUNDWATER ELEVATION MEASUREMENT (± 0.01 foot, MSL)			
Elevation:			
Top of inner well casing <i>624.94</i>	Ground Elevation <i>622.94</i>		
Depth of Well <i>15.95</i>	Inside Casing Diameter (in inches)		
Equipment Used			
Groundwater Level (± 0.01 foot below top of inner casing, MSL):			
	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<i>10/30/24 10:24</i>	<i>10.10</i>	<i>614.84</i>
*After Purging			
*Before Purging			

*C. WELL PURGING	
Quantity of Water Removed from Well (gallons)	
No. of Well Volumes (based on current water level)	
Was well pumped/bailed dry?	
Equipment used:	
Bailer type	Dedicated Bailer?
Pump type	Dedicated Pump?
If not dedicated, method of cleaning	

D. FIELD MEASUREMENT*Weather Conditions**

Sunny 70°

Field Measurements (after stabilization):**Temperature****Units****Equipment Used****pH****Equipment Used****Specific Conductance****Units****Equipment Used****Comments**

well in good condition

leachate thickness was 5.85'

CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate and complete.

Signature**Date** 10/30/24**Telephone** 563-332-8000**Fax** 563-332-9465**Email** wsdeler@serica.com**NOTE:** Attach Laboratory Report and 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

*Omit if only measuring groundwater elevations.

SURFACE WATER SAMPLING FORM

Site Name <i>Roguetto America - Keokuk Landfill</i>	Permit No. <i>56-SDP-02-75C</i>
Surface Monitoring Point No. <i>SW1</i>	Date/Time <i>10/30/24</i>
Name of person sampling <i>William Sindelar</i>	

A. TYPE OF MONITORING POINT	
☐ Stream	☐ Open Tile
☐ Road Ditch	☐ Tile with Riser
☐ Drainage Ditch	☐ Other (describe)

B. PURPOSE OF MONITORING POINT	
☒ Upstream	☐ Downstream
☐ Within Landfill	☐ Other (describe)

C. MONITORING POINT CONDITIONS	
General description/condition of monitoring point	
<i>Upstream mountain - Dry</i>	
<i>Creek Dry</i>	
Was monitoring point dry?	Too little water to sample?
Was water flowing?	☐ YES ☐ NO
If yes, estimate quantity	If yes, estimate depth
Was water discolored?	☐ YES ☐ NO
If yes, describe	
Does water have odor?	☐ YES ☐ NO
If yes, describe	
Was ground discolored?	☐ YES ☐ NO
If yes, describe	
Litter present?	☐ YES ☐ NO
If yes, describe	

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

D. FIELD MEASUREMENT	
Weather Conditions	
Field Measurements (after stabilization):	
Temperature	Units
Equipment Used	
D. FIELD MEASUREMENT (continued)	
pH	
Equipment Used	
Specific Conditions	Units
Equipment Used	

Comments
All Creek bed locations were Dry

CERTIFICATION		
I certify under penalty of law I believe the information reported above is true, accurate and complete.		
Signature <i>Willie J...</i>	Date <i>10/30/24</i>	
Telephone <i>563 332-8000</i>	Fax	Email <i>WJindelen@SenecaCo.com</i>
NOTE: Attach 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

SURFACE WATER SAMPLING FORM

Site Name <u>Roquette America - Reokuk Landfill</u>	Permit No. <u>56-SDP-02-DSC</u>
Surface Monitoring Point No. <u>SW2</u>	Date/Time <u>10/30/24</u>
Name of person sampling <u>William Sindeler</u>	

A. TYPE OF MONITORING POINT	
☐ Stream	☐ Open Tile
☐ Road Ditch	☐ Tile with Riser
☐ Drainage Ditch	☐ Other (describe)

B. PURPOSE OF MONITORING POINT	
☐ Upstream	☒ Downstream
☐ Within Landfill	☐ Other (describe)

C. MONITORING POINT CONDITIONS	
General description/condition of monitoring point	
<u>Downstream monitoring - Dry</u>	
Was monitoring point dry? <u>yes</u>	Too little water to sample?
Was water flowing?	☐ YES ☐ NO
If yes, estimate quantity	If yes, estimate depth
Was water discolored?	☐ YES ☐ NO
If yes, describe	
Does water have odor?	☐ YES ☐ NO
If yes, describe	
Was ground discolored?	☐ YES ☐ NO
If yes, describe	
Litter present?	☐ YES ☐ NO
If yes, describe	

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9th St, Des Moines, IA 50319.
 Questions? Call or Email: Nina Koger Environmental Engineer Sr., 515-725-8309, nina.koger@dnr.iowa.gov

D. FIELD MEASUREMENT	
Weather Conditions	
Field Measurements (after stabilization):	
Temperature	Units
Equipment Used	
D. FIELD MEASUREMENT (continued)	
pH	
Equipment Used	
Specific Conditions	Units
Equipment Used	

Comments
All Down Stream monitoring points were Dry

CERTIFICATION		
I certify under penalty of law I believe the information reported above is true, accurate and complete.		
Signature <i>Kuh Jr</i>	Date <i>10/30/24</i>	
Telephone <i>563-332-8000</i>	Fax	Email <i>Wendy@SenecaCo.com</i>
NOTE: Attach 8 1/2" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.		

Appendix B
Laboratory Analytical Data



ANALYTICAL REPORT

PREPARED FOR

Attn: Todd Felderman
Seneca Companies
7241 Gaines Street Court
Davenport, Iowa 52806

Generated 11/13/2024 12:39:34 PM

JOB DESCRIPTION

Roquette America Landfill
6247600.1

JOB NUMBER

310-294193-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
(319)277-2401

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Case Narrative

Client: Seneca Companies
Project: Roquette America Landfill

Job ID: 310-294193-1

Job ID: 310-294193-1

Eurofins Cedar Falls

Job Narrative 310-294193-1

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

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

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

Receipt

The samples were received on 11/1/2024 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.4°C and 2.7°C.

GC/MS VOA

Method 8260D: The following sample was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The sample was analyzed within the 7-day holding time specified for unpreserved samples: MW5 (310-294193-5).

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-438570 recovered above the upper control limit for Carbon disulfide (-20.1%D). The LCS associated with this CCV passed CCV criteria for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-438570/3).

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

Metals

Method 6020B: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: MW5 (310-294193-5). The sample(s) was preserved to the appropriate pH in the laboratory.

Method 7470A: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: MW5 (310-294193-5). The sample(s) was preserved to the appropriate pH in the laboratory.

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

General Chemistry

Method 9020B: Breakthrough exceeded 10% for the following sample: MW1 (310-294193-1).

Method 9020B: Breakthrough exceeded 10% for the following samples: MW2 (310-294193-2), MW3 (310-294193-3) and MW4 (310-294193-4).

Method 9020B: Breakthrough exceeded 10% for the following sample: MW5 (310-294193-5).

Method 9020B: Breakthrough exceeded 10% for the following sample: MW5 (310-294193-5).

Method SM5210B_Calc: All the dilutions failed to deplete the method-required 2 mgO₂/L for the following samples: MW1 (310-294193-1). Only a "less than" result could be calculated from the least dilute preparation.

Method SM5210B_Calc: All the dilutions failed to deplete the method-required 2 mgO₂/L for the following samples: MW5 (310-294193-5). Only a "less than" result could be calculated from the least dilute preparation.

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

Eurofins Cedar Falls

Case Narrative

Client: Seneca Companies
Project: Roquette America Landfill

Job ID: 310-294193-1

Job ID: 310-294193-1 (Continued)

Eurofins Cedar Falls



Eurofins Cedar Falls

Sample Summary

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-294193-1	MW1	Ground Water	10/30/24 13:00	11/01/24 08:30
310-294193-2	MW2	Ground Water	10/30/24 13:30	11/01/24 08:30
310-294193-3	MW3	Ground Water	10/30/24 14:00	11/01/24 08:30
310-294193-4	MW4	Ground Water	10/30/24 14:30	11/01/24 08:30
310-294193-5	MW5	Ground Water	10/30/24 15:00	11/01/24 08:30



Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW1

Lab Sample ID: 310-294193-1

Date Collected: 10/30/24 13:00

Matrix: Ground Water

Date Received: 11/01/24 08:30

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			11/05/24 13:20	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/05/24 13:20	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 13:20	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 13:20	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			11/05/24 13:20	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/05/24 13:20	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/05/24 13:20	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/05/24 13:20	1
2-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 13:20	1
4-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 13:20	1
Acetone	<10.0		10.0		ug/L			11/05/24 13:20	1
Benzene	<0.500		0.500		ug/L			11/05/24 13:20	1
Bromobenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Bromochloromethane	<5.00		5.00		ug/L			11/05/24 13:20	1
Bromodichloromethane	<1.00		1.00		ug/L			11/05/24 13:20	1
Bromoform	<5.00		5.00		ug/L			11/05/24 13:20	1
Bromomethane	<4.00		4.00		ug/L			11/05/24 13:20	1
Carbon disulfide	<1.00		1.00		ug/L			11/05/24 13:20	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/05/24 13:20	1
Chlorobenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/05/24 13:20	1
Chloroethane	<4.00		4.00		ug/L			11/05/24 13:20	1
Chloroform	<3.00		3.00		ug/L			11/05/24 13:20	1
Chloromethane	<3.00		3.00		ug/L			11/05/24 13:20	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 13:20	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 13:20	1
Dibromomethane	<1.00		1.00		ug/L			11/05/24 13:20	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/05/24 13:20	1
Ethylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Hexachlorobutadiene	<5.00		5.00		ug/L			11/05/24 13:20	1
Hexane	<1.00		1.00		ug/L			11/05/24 13:20	1
Isopropylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			11/05/24 13:20	1
Methylene chloride	<5.00		5.00		ug/L			11/05/24 13:20	1
Naphthalene	<5.00		5.00		ug/L			11/05/24 13:20	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW1

Lab Sample ID: 310-294193-1

Date Collected: 10/30/24 13:00

Matrix: Ground Water

Date Received: 11/01/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
n-Propylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
p-Isopropyltoluene	<1.00		1.00		ug/L			11/05/24 13:20	1
sec-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Styrene	<1.00		1.00		ug/L			11/05/24 13:20	1
tert-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:20	1
Tetrachloroethene	<1.00		1.00		ug/L			11/05/24 13:20	1
Toluene	<1.00		1.00		ug/L			11/05/24 13:20	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 13:20	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 13:20	1
Trichloroethene	<1.00		1.00		ug/L			11/05/24 13:20	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/05/24 13:20	1
Vinyl chloride	<1.00		1.00		ug/L			11/05/24 13:20	1
Xylenes, Total	<3.00		3.00		ug/L			11/05/24 13:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	112		73 - 130					11/05/24 13:20	1
Toluene-d8 (Surr)	96		80 - 120					11/05/24 13:20	1
4-Bromofluorobenzene (Surr)	105		80 - 120					11/05/24 13:20	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200		mg/L		11/08/24 09:30	11/08/24 19:46	1
Barium	1.05		0.00200		mg/L		11/08/24 09:30	11/08/24 19:46	1
Cadmium	0.00101		0.000200		mg/L		11/08/24 09:30	11/08/24 19:46	1
Chromium	0.0122		0.00500		mg/L		11/08/24 09:30	11/08/24 19:46	1
Lead	0.0125		0.000500		mg/L		11/08/24 09:30	11/08/24 19:46	1
Selenium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 19:46	1
Silver	<0.00100		0.00100		mg/L		11/08/24 09:30	11/08/24 19:46	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000201		0.000200		mg/L		11/05/24 14:50	11/06/24 11:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200	F1	0.200		mg/L			11/04/24 23:37	1
Phenols, Total (EPA 420.4)	<0.0212		0.0212		mg/L		11/01/24 10:36	11/01/24 22:06	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			11/05/24 10:40	1
Halogens, Total Organic (SW846 9020B)	<40.0		40.0		ug/L		11/07/24 07:48	11/07/24 14:30	1
Total Suspended Solids (USGS I-3765-85)	3940		60.0		mg/L			11/05/24 12:32	1
Chloride (SM 4500 Cl- E)	11.4		2.00		mg/L			11/04/24 15:57	1
Biochemical Oxygen Demand (SM 5210B)	<6.00		6.00		mg/L			11/01/24 09:35	2

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW2

Lab Sample ID: 310-294193-2

Date Collected: 10/30/24 13:30

Matrix: Ground Water

Date Received: 11/01/24 08:30

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			11/05/24 13:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,1-Dichloroethane	2.45		1.00		ug/L			11/05/24 13:42	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/05/24 13:42	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 13:42	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 13:42	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			11/05/24 13:42	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/05/24 13:42	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/05/24 13:42	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/05/24 13:42	1
2-Chlorotoluene	15.0		1.00		ug/L			11/05/24 13:42	1
4-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 13:42	1
Acetone	<10.0		10.0		ug/L			11/05/24 13:42	1
Benzene	1.03		0.500		ug/L			11/05/24 13:42	1
Bromobenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
Bromochloromethane	<5.00		5.00		ug/L			11/05/24 13:42	1
Bromodichloromethane	<1.00		1.00		ug/L			11/05/24 13:42	1
Bromoform	<5.00		5.00		ug/L			11/05/24 13:42	1
Bromomethane	<4.00		4.00		ug/L			11/05/24 13:42	1
Carbon disulfide	<1.00		1.00		ug/L			11/05/24 13:42	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/05/24 13:42	1
Chlorobenzene	3.21		1.00		ug/L			11/05/24 13:42	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/05/24 13:42	1
Chloroethane	<4.00		4.00		ug/L			11/05/24 13:42	1
Chloroform	<3.00		3.00		ug/L			11/05/24 13:42	1
Chloromethane	<3.00		3.00		ug/L			11/05/24 13:42	1
cis-1,2-Dichloroethene	1.69		1.00		ug/L			11/05/24 13:42	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 13:42	1
Dibromomethane	<1.00		1.00		ug/L			11/05/24 13:42	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/05/24 13:42	1
Ethylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
Hexachlorobutadiene	<5.00		5.00		ug/L			11/05/24 13:42	1
Hexane	<1.00		1.00		ug/L			11/05/24 13:42	1
Isopropylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			11/05/24 13:42	1
Methylene chloride	<5.00		5.00		ug/L			11/05/24 13:42	1
Naphthalene	<5.00		5.00		ug/L			11/05/24 13:42	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW2

Lab Sample ID: 310-294193-2

Date Collected: 10/30/24 13:30

Matrix: Ground Water

Date Received: 11/01/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
n-Propylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
p-Isopropyltoluene	<1.00		1.00		ug/L			11/05/24 13:42	1
sec-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
Styrene	<1.00		1.00		ug/L			11/05/24 13:42	1
tert-Butylbenzene	<1.00		1.00		ug/L			11/05/24 13:42	1
Tetrachloroethene	<1.00		1.00		ug/L			11/05/24 13:42	1
Toluene	<1.00		1.00		ug/L			11/05/24 13:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 13:42	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 13:42	1
Trichloroethene	<1.00		1.00		ug/L			11/05/24 13:42	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/05/24 13:42	1
Vinyl chloride	<1.00		1.00		ug/L			11/05/24 13:42	1
Xylenes, Total	<3.00		3.00		ug/L			11/05/24 13:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	110		73 - 130					11/05/24 13:42	1
Toluene-d8 (Surr)	95		80 - 120					11/05/24 13:42	1
4-Bromofluorobenzene (Surr)	100		80 - 120					11/05/24 13:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200		mg/L		11/08/24 09:30	11/08/24 19:57	1
Barium	0.702		0.00200		mg/L		11/08/24 09:30	11/08/24 19:57	1
Cadmium	0.000681		0.000200		mg/L		11/08/24 09:30	11/08/24 19:57	1
Chromium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 19:57	1
Lead	0.00242		0.000500		mg/L		11/08/24 09:30	11/08/24 19:57	1
Selenium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 19:57	1
Silver	<0.00100		0.00100		mg/L		11/08/24 09:30	11/08/24 19:57	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		11/05/24 14:50	11/06/24 11:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	0.208		0.200		mg/L			11/04/24 23:39	1
Phenols, Total (EPA 420.4)	<0.0200		0.0200		mg/L		11/01/24 10:36	11/01/24 22:07	1
Chemical Oxygen Demand (SM 5220D LL)	31.5		5.00		mg/L			11/05/24 10:40	1
Halogens, Total Organic (SW846 9020B)	306		40.0		ug/L		11/09/24 07:30	11/09/24 11:21	1
Total Suspended Solids (USGS I-3765-85)	732		60.0		mg/L			11/05/24 12:32	1
Chloride (SM 4500 Cl- E)	93.2		2.00		mg/L			11/04/24 15:57	1
Biochemical Oxygen Demand (SM 5210B)	<3.00		3.00		mg/L			11/01/24 09:38	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW3

Date Collected: 10/30/24 14:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-3

Matrix: Ground Water

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			11/05/24 14:04	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/05/24 14:04	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:04	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:04	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			11/05/24 14:04	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:04	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/05/24 14:04	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/05/24 14:04	1
2-Chlorotoluene	1.01		1.00		ug/L			11/05/24 14:04	1
4-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 14:04	1
Acetone	<10.0		10.0		ug/L			11/05/24 14:04	1
Benzene	<0.500		0.500		ug/L			11/05/24 14:04	1
Bromobenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Bromochloromethane	<5.00		5.00		ug/L			11/05/24 14:04	1
Bromodichloromethane	<1.00		1.00		ug/L			11/05/24 14:04	1
Bromoform	<5.00		5.00		ug/L			11/05/24 14:04	1
Bromomethane	<4.00		4.00		ug/L			11/05/24 14:04	1
Carbon disulfide	<1.00		1.00		ug/L			11/05/24 14:04	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/05/24 14:04	1
Chlorobenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/05/24 14:04	1
Chloroethane	<4.00		4.00		ug/L			11/05/24 14:04	1
Chloroform	<3.00		3.00		ug/L			11/05/24 14:04	1
Chloromethane	<3.00		3.00		ug/L			11/05/24 14:04	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:04	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:04	1
Dibromomethane	<1.00		1.00		ug/L			11/05/24 14:04	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/05/24 14:04	1
Ethylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Hexachlorobutadiene	<5.00		5.00		ug/L			11/05/24 14:04	1
Hexane	<1.00		1.00		ug/L			11/05/24 14:04	1
Isopropylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			11/05/24 14:04	1
Methylene chloride	<5.00		5.00		ug/L			11/05/24 14:04	1
Naphthalene	<5.00		5.00		ug/L			11/05/24 14:04	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW3

Date Collected: 10/30/24 14:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-3

Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
n-Propylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
p-Isopropyltoluene	<1.00		1.00		ug/L			11/05/24 14:04	1
sec-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Styrene	<1.00		1.00		ug/L			11/05/24 14:04	1
tert-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:04	1
Tetrachloroethene	<1.00		1.00		ug/L			11/05/24 14:04	1
Toluene	<1.00		1.00		ug/L			11/05/24 14:04	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:04	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:04	1
Trichloroethene	<1.00		1.00		ug/L			11/05/24 14:04	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/05/24 14:04	1
Vinyl chloride	<1.00		1.00		ug/L			11/05/24 14:04	1
Xylenes, Total	<3.00		3.00		ug/L			11/05/24 14:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	103		73 - 130					11/05/24 14:04	1
Toluene-d8 (Surr)	96		80 - 120					11/05/24 14:04	1
4-Bromofluorobenzene (Surr)	102		80 - 120					11/05/24 14:04	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00263		0.00200		mg/L		11/08/24 09:30	11/08/24 20:03	1
Barium	0.0239		0.00200		mg/L		11/08/24 09:30	11/08/24 20:03	1
Cadmium	0.00160		0.000200		mg/L		11/08/24 09:30	11/08/24 20:03	1
Chromium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 20:03	1
Lead	0.00829		0.000500		mg/L		11/08/24 09:30	11/08/24 20:03	1
Selenium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 20:03	1
Silver	<0.00100		0.00100		mg/L		11/08/24 09:30	11/08/24 20:03	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		11/05/24 14:50	11/06/24 11:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	0.457		0.200		mg/L			11/04/24 23:40	1
Phenols, Total (EPA 420.4)	<0.0200		0.0200		mg/L		11/01/24 10:36	11/01/24 22:07	1
Chemical Oxygen Demand (SM 5220D LL)	115		10.0		mg/L			11/05/24 10:40	2
Halogens, Total Organic (SW846 9020B)	312		40.0		ug/L		11/09/24 07:30	11/09/24 13:12	1
Total Suspended Solids (USGS I-3765-85)	1090		150		mg/L			11/05/24 12:32	1
Chloride (SM 4500 Cl- E)	194		20.0		mg/L			11/04/24 16:09	10
Biochemical Oxygen Demand (SM 5210B)	3.93		3.00		mg/L			11/01/24 09:42	1

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Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW4

Date Collected: 10/30/24 14:30

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-4

Matrix: Ground Water

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			11/05/24 14:25	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/05/24 14:25	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:25	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:25	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			11/05/24 14:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:25	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/05/24 14:25	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/05/24 14:25	1
2-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 14:25	1
4-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 14:25	1
Acetone	11.0		10.0		ug/L			11/05/24 14:25	1
Benzene	1.16		0.500		ug/L			11/05/24 14:25	1
Bromobenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
Bromochloromethane	<5.00		5.00		ug/L			11/05/24 14:25	1
Bromodichloromethane	<1.00		1.00		ug/L			11/05/24 14:25	1
Bromoform	<5.00		5.00		ug/L			11/05/24 14:25	1
Bromomethane	<4.00		4.00		ug/L			11/05/24 14:25	1
Carbon disulfide	<1.00		1.00		ug/L			11/05/24 14:25	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/05/24 14:25	1
Chlorobenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/05/24 14:25	1
Chloroethane	4.70		4.00		ug/L			11/05/24 14:25	1
Chloroform	<3.00		3.00		ug/L			11/05/24 14:25	1
Chloromethane	<3.00		3.00		ug/L			11/05/24 14:25	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:25	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:25	1
Dibromomethane	<1.00		1.00		ug/L			11/05/24 14:25	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/05/24 14:25	1
Ethylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
Hexachlorobutadiene	<5.00		5.00		ug/L			11/05/24 14:25	1
Hexane	<1.00		1.00		ug/L			11/05/24 14:25	1
Isopropylbenzene	10.1		1.00		ug/L			11/05/24 14:25	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			11/05/24 14:25	1
Methylene chloride	<5.00		5.00		ug/L			11/05/24 14:25	1
Naphthalene	<5.00		5.00		ug/L			11/05/24 14:25	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW4

Lab Sample ID: 310-294193-4

Date Collected: 10/30/24 14:30

Matrix: Ground Water

Date Received: 11/01/24 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
n-Propylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
p-Isopropyltoluene	<1.00		1.00		ug/L			11/05/24 14:25	1
sec-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
Styrene	<1.00		1.00		ug/L			11/05/24 14:25	1
tert-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:25	1
Tetrachloroethene	<1.00		1.00		ug/L			11/05/24 14:25	1
Toluene	<1.00		1.00		ug/L			11/05/24 14:25	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:25	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:25	1
Trichloroethene	<1.00		1.00		ug/L			11/05/24 14:25	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/05/24 14:25	1
Vinyl chloride	<1.00		1.00		ug/L			11/05/24 14:25	1
Xylenes, Total	<3.00		3.00		ug/L			11/05/24 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	110		73 - 130					11/05/24 14:25	1
Toluene-d8 (Surr)	94		80 - 120					11/05/24 14:25	1
4-Bromofluorobenzene (Surr)	103		80 - 120					11/05/24 14:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0208		0.00200		mg/L		11/08/24 09:30	11/08/24 20:06	1
Barium	0.634		0.00200		mg/L		11/08/24 09:30	11/08/24 20:06	1
Cadmium	0.000288		0.000200		mg/L		11/08/24 09:30	11/08/24 20:06	1
Chromium	0.00707		0.00500		mg/L		11/08/24 09:30	11/08/24 20:06	1
Lead	0.00615		0.000500		mg/L		11/08/24 09:30	11/08/24 20:06	1
Selenium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 20:06	1
Silver	<0.00100		0.00100		mg/L		11/08/24 09:30	11/08/24 20:06	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		11/05/24 14:50	11/06/24 11:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	1.52		0.200		mg/L			11/04/24 23:40	1
Phenols, Total (EPA 420.4)	<0.0212		0.0212		mg/L		11/01/24 10:41	11/01/24 22:08	1
Chemical Oxygen Demand (SM 5220D LL)	205		10.0		mg/L			11/05/24 10:40	2
Halogens, Total Organic (SW846 9020B)	595		40.0		ug/L		11/09/24 07:30	11/09/24 13:59	1
Total Suspended Solids (USGS I-3765-85)	2280		150		mg/L			11/05/24 12:32	1
Chloride (SM 4500 Cl- E)	201		20.0		mg/L			11/04/24 16:09	10
Biochemical Oxygen Demand (SM 5210B)	10.3		3.00		mg/L			11/01/24 09:45	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW5

Date Collected: 10/30/24 15:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-5

Matrix: Ground Water

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			11/05/24 14:47	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/05/24 14:47	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2,3-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:47	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/05/24 14:47	1
1,2,4-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2-Dibromo-3-chloropropane	<5.00		5.00		ug/L			11/05/24 14:47	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,3,5-Trimethylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/05/24 14:47	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/05/24 14:47	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/05/24 14:47	1
2-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 14:47	1
4-Chlorotoluene	<1.00		1.00		ug/L			11/05/24 14:47	1
Acetone	<10.0		10.0		ug/L			11/05/24 14:47	1
Benzene	<0.500		0.500		ug/L			11/05/24 14:47	1
Bromobenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Bromochloromethane	<5.00		5.00		ug/L			11/05/24 14:47	1
Bromodichloromethane	<1.00		1.00		ug/L			11/05/24 14:47	1
Bromoform	<5.00		5.00		ug/L			11/05/24 14:47	1
Bromomethane	<4.00		4.00		ug/L			11/05/24 14:47	1
Carbon disulfide	<1.00		1.00		ug/L			11/05/24 14:47	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/05/24 14:47	1
Chlorobenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/05/24 14:47	1
Chloroethane	<4.00		4.00		ug/L			11/05/24 14:47	1
Chloroform	<3.00		3.00		ug/L			11/05/24 14:47	1
Chloromethane	<3.00		3.00		ug/L			11/05/24 14:47	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:47	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:47	1
Dibromomethane	<1.00		1.00		ug/L			11/05/24 14:47	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/05/24 14:47	1
Ethylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Hexachlorobutadiene	<5.00		5.00		ug/L			11/05/24 14:47	1
Hexane	<1.00		1.00		ug/L			11/05/24 14:47	1
Isopropylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			11/05/24 14:47	1
Methylene chloride	<5.00		5.00		ug/L			11/05/24 14:47	1
Naphthalene	<5.00		5.00		ug/L			11/05/24 14:47	1

Eurofins Cedar Falls

Client Sample Results

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW5

Date Collected: 10/30/24 15:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-5

Matrix: Ground Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
n-Propylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
p-Isopropyltoluene	<1.00		1.00		ug/L			11/05/24 14:47	1
sec-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Styrene	<1.00		1.00		ug/L			11/05/24 14:47	1
tert-Butylbenzene	<1.00		1.00		ug/L			11/05/24 14:47	1
Tetrachloroethene	<1.00		1.00		ug/L			11/05/24 14:47	1
Toluene	<1.00		1.00		ug/L			11/05/24 14:47	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/05/24 14:47	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/05/24 14:47	1
Trichloroethene	<1.00		1.00		ug/L			11/05/24 14:47	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/05/24 14:47	1
Vinyl chloride	<1.00		1.00		ug/L			11/05/24 14:47	1
Xylenes, Total	<3.00		3.00		ug/L			11/05/24 14:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	117		73 - 130					11/05/24 14:47	1
Toluene-d8 (Surr)	96		80 - 120					11/05/24 14:47	1
4-Bromofluorobenzene (Surr)	104		80 - 120					11/05/24 14:47	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200		mg/L		11/08/24 09:30	11/08/24 20:08	1
Barium	0.0536		0.00200		mg/L		11/08/24 09:30	11/08/24 20:08	1
Cadmium	0.000494		0.000200		mg/L		11/08/24 09:30	11/08/24 20:08	1
Chromium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 20:08	1
Lead	0.00202		0.000500		mg/L		11/08/24 09:30	11/08/24 20:08	1
Selenium	<0.00500		0.00500		mg/L		11/08/24 09:30	11/08/24 20:08	1
Silver	<0.00100		0.00100		mg/L		11/08/24 09:30	11/08/24 20:08	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000342		0.000200		mg/L		11/05/24 14:50	11/06/24 11:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.200		0.200		mg/L			11/04/24 23:42	1
Phenols, Total (EPA 420.4)	<0.0200		0.0200		mg/L		11/01/24 10:41	11/02/24 01:28	1
Chemical Oxygen Demand (SM 5220D LL)	16.8		5.00		mg/L			11/05/24 10:40	1
Halogens, Total Organic (SW846 9020B)	298		40.0		ug/L		11/12/24 06:44	11/12/24 13:10	1
Total Suspended Solids (USGS I-3765-85)	1140		30.0		mg/L			11/05/24 12:32	1
Chloride (SM 4500 Cl- E)	110		20.0		mg/L			11/04/24 16:09	10
Biochemical Oxygen Demand (SM 5210B)	<6.00		6.00		mg/L			11/01/24 09:49	2

Eurofins Cedar Falls

Lab Chronicle

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW1

Date Collected: 10/30/24 13:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438570	WSE8	EET CF	11/05/24 13:20
Total/NA	Prep	3005A			439044	F5MW	EET CF	11/08/24 09:30
Total/NA	Analysis	6020B		1	439231	A6US	EET CF	11/08/24 19:46
Total/NA	Prep	7470A			438720	QTZ5	EET CF	11/05/24 14:50
Total/NA	Analysis	7470A		1	438887	QTZ5	EET CF	11/06/24 11:02
Total/NA	Analysis	350.1		1	438641	ZJX4	EET CF	11/04/24 23:37
Total/NA	Prep	Distill/Phenol			438340	HE7K	EET CF	11/01/24 10:36
Total/NA	Analysis	420.4		1	438471	ZJX4	EET CF	11/01/24 22:06
Total/NA	Analysis	5220D LL		1	438691	HE7K	EET CF	11/05/24 10:40
Total/NA	Prep	Carbon Trap			863786	CLJ	EET SAV	11/07/24 07:48
Total/NA	Analysis	9020B		1	863791	CLJ	EET SAV	11/07/24 14:30
Total/NA	Analysis	I-3765-85		1	438722	DGU1	EET CF	11/05/24 12:32
Total/NA	Analysis	SM 4500 Cl- E		1	438619	ENB7	EET CF	11/04/24 15:57
Total/NA	Analysis	SM 5210B		2	438336	W9YR	EET CF	11/01/24 09:35

Client Sample ID: MW2

Date Collected: 10/30/24 13:30

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438570	WSE8	EET CF	11/05/24 13:42
Total/NA	Prep	3005A			439045	F5MW	EET CF	11/08/24 09:30
Total/NA	Analysis	6020B		1	439231	A6US	EET CF	11/08/24 19:57
Total/NA	Prep	7470A			438720	QTZ5	EET CF	11/05/24 14:50
Total/NA	Analysis	7470A		1	438887	QTZ5	EET CF	11/06/24 11:04
Total/NA	Analysis	350.1		1	438641	ZJX4	EET CF	11/04/24 23:39
Total/NA	Prep	Distill/Phenol			438340	HE7K	EET CF	11/01/24 10:36
Total/NA	Analysis	420.4		1	438471	ZJX4	EET CF	11/01/24 22:07
Total/NA	Analysis	5220D LL		1	438691	HE7K	EET CF	11/05/24 10:40
Total/NA	Prep	Carbon Trap			863822	CLJ	EET SAV	11/09/24 07:30
Total/NA	Analysis	9020B		1	863829	CLJ	EET SAV	11/09/24 11:21
Total/NA	Analysis	I-3765-85		1	438722	DGU1	EET CF	11/05/24 12:32
Total/NA	Analysis	SM 4500 Cl- E		1	438619	ENB7	EET CF	11/04/24 15:57
Total/NA	Analysis	SM 5210B		1	438336	W9YR	EET CF	11/01/24 09:38

Client Sample ID: MW3

Date Collected: 10/30/24 14:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438570	WSE8	EET CF	11/05/24 14:04
Total/NA	Prep	3005A			439045	F5MW	EET CF	11/08/24 09:30
Total/NA	Analysis	6020B		1	439231	A6US	EET CF	11/08/24 20:03

Eurofins Cedar Falls

Lab Chronicle

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW3

Date Collected: 10/30/24 14:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	7470A			438720	QTZ5	EET CF	11/05/24 14:50
Total/NA	Analysis	7470A		1	438887	QTZ5	EET CF	11/06/24 11:06
Total/NA	Analysis	350.1		1	438641	ZJX4	EET CF	11/04/24 23:40
Total/NA	Prep	Distill/Phenol			438340	HE7K	EET CF	11/01/24 10:36
Total/NA	Analysis	420.4		1	438471	ZJX4	EET CF	11/01/24 22:07
Total/NA	Analysis	5220D LL		2	438691	HE7K	EET CF	11/05/24 10:40
Total/NA	Prep	Carbon Trap			863822	CLJ	EET SAV	11/09/24 07:30
Total/NA	Analysis	9020B		1	863829	CLJ	EET SAV	11/09/24 13:12
Total/NA	Analysis	I-3765-85		1	438722	DGU1	EET CF	11/05/24 12:32
Total/NA	Analysis	SM 4500 Cl- E		10	438619	ENB7	EET CF	11/04/24 16:09
Total/NA	Analysis	SM 5210B		1	438336	W9YR	EET CF	11/01/24 09:42

Client Sample ID: MW4

Date Collected: 10/30/24 14:30

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438570	WSE8	EET CF	11/05/24 14:25
Total/NA	Prep	3005A			439045	F5MW	EET CF	11/08/24 09:30
Total/NA	Analysis	6020B		1	439231	A6US	EET CF	11/08/24 20:06
Total/NA	Prep	7470A			438720	QTZ5	EET CF	11/05/24 14:50
Total/NA	Analysis	7470A		1	438887	QTZ5	EET CF	11/06/24 11:09
Total/NA	Analysis	350.1		1	438641	ZJX4	EET CF	11/04/24 23:40
Total/NA	Prep	Distill/Phenol			438374	HE7K	EET CF	11/01/24 10:41
Total/NA	Analysis	420.4		1	438471	ZJX4	EET CF	11/01/24 22:08
Total/NA	Analysis	5220D LL		2	438691	HE7K	EET CF	11/05/24 10:40
Total/NA	Prep	Carbon Trap			863822	CLJ	EET SAV	11/09/24 07:30
Total/NA	Analysis	9020B		1	863829	CLJ	EET SAV	11/09/24 13:59
Total/NA	Analysis	I-3765-85		1	438722	DGU1	EET CF	11/05/24 12:32
Total/NA	Analysis	SM 4500 Cl- E		10	438619	ENB7	EET CF	11/04/24 16:09
Total/NA	Analysis	SM 5210B		1	438336	W9YR	EET CF	11/01/24 09:45

Client Sample ID: MW5

Date Collected: 10/30/24 15:00

Date Received: 11/01/24 08:30

Lab Sample ID: 310-294193-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	438570	WSE8	EET CF	11/05/24 14:47
Total/NA	Prep	3005A			439045	F5MW	EET CF	11/08/24 09:30
Total/NA	Analysis	6020B		1	439231	A6US	EET CF	11/08/24 20:08
Total/NA	Prep	7470A			438720	QTZ5	EET CF	11/05/24 14:50
Total/NA	Analysis	7470A		1	438887	QTZ5	EET CF	11/06/24 11:11
Total/NA	Analysis	350.1		1	438641	ZJX4	EET CF	11/04/24 23:42

Eurofins Cedar Falls

Lab Chronicle

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Client Sample ID: MW5

Lab Sample ID: 310-294193-5

Date Collected: 10/30/24 15:00

Matrix: Ground Water

Date Received: 11/01/24 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	Distill/Phenol			438374	HE7K	EET CF	11/01/24 10:41
Total/NA	Analysis	420.4		1	438471	ZJX4	EET CF	11/02/24 01:28
Total/NA	Analysis	5220D LL		1	438691	HE7K	EET CF	11/05/24 10:40
Total/NA	Prep	Carbon Trap			864196	CLJ	EET SAV	11/12/24 06:44
Total/NA	Analysis	9020B		1	864308	CLJ	EET SAV	11/12/24 13:10
Total/NA	Analysis	I-3765-85		1	438722	DGU1	EET CF	11/05/24 12:32
Total/NA	Analysis	SM 4500 Cl- E		10	438619	ENB7	EET CF	11/04/24 16:09
Total/NA	Analysis	SM 5210B		2	438336	W9YR	EET CF	11/01/24 09:49

Laboratory References:

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

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

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
DLG	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

Accreditation/Certification Summary

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

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		Ground Water	1,2,3-Trichlorobenzene
8260D		Ground Water	1,2,4-Trichlorobenzene
8260D		Ground Water	Bromobenzene
8260D		Ground Water	Hexane
8260D		Ground Water	p-Isopropyltoluene
8260D		Ground Water	sec-Butylbenzene
8260D		Ground Water	tert-Butylbenzene

Laboratory: Eurofins Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-25
ANAB	Dept. of Defense ELAP	L2463	09-22-26
Arkansas (DW)	State	GA00006	06-30-25
Arkansas DEQ	State	88-00692	02-01-25
Florida	NELAP	E87052	06-30-25
Georgia	State	E87052	06-30-25
Georgia (DW)	State	803	06-30-25
Guam	State	24-05R	04-17-25
Hawaii	State	<cert No.>	06-30-25
Illinois	NELAP	200022	11-30-24
Iowa	State	353	07-01-25
Kentucky (UST)	State	108138	06-30-24 *
Louisiana (All)	NELAP	30690	06-30-25
Louisiana (DW)	State	LA009	12-31-24
Maryland	State	250	12-31-24
Michigan	State	9925	03-05-25
Mississippi	State	<cert No.>	06-30-25
Nebraska	State	NE-OS-7-04	06-30-25
New Mexico	State	GA00006	06-30-25
North Carolina (DW)	State	13701	07-31-25
North Carolina (WW/SW)	State	269	12-31-24
Puerto Rico	State	GA00006	01-01-25
South Carolina	State	98001	06-30-24 *
Tennessee	State	TN02961	06-30-25
Texas	NELAP	T1047004185	11-30-24
Texas	TCEQ Water Supply	T104704185	06-30-24 *
USDA	US Federal Programs	P330-18-00313	04-04-27
Virginia	NELAP	460161	06-14-25
Wyoming	State	8TMS-L	06-30-25

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

Eurofins Cedar Falls

Method Summary

Client: Seneca Companies
Project/Site: Roquette America Landfill

Job ID: 310-294193-1
SDG: 6247600.1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
420.4	Phenolics, Total Recoverable	EPA	EET CF
5220D LL	COD	SM	EET CF
9020B	Organic Halides, Total (TOX)	SW846	EET SAV
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 4500 Cl- E	Chloride, Total	SM	EET CF
SM 5210B	BOD, 5-Day	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET CF
Carbon Trap	Carbon Trap Preparation	EPA-17	EET SAV
Distill/Phenol	Distillation, Phenolics	None	EET CF

Protocol References:

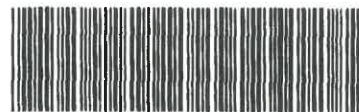
EPA = US Environmental Protection Agency
EPA-17 = "Method 1650, Revision A, Adsorbable Organic Halides By Adsorption And Colormetric Titration," EPA, February 1992
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401
EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858



Environment Testing
America



310-294193 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Specu</u>			
City/State:	<u>Davenport</u>	STATE: <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE: <u>11-1-24</u>	TIME: <u>830</u>	Received By: <u>PH</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 # <u>1</u> of <u>2</u>
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? <u>↓</u>
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>P</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>2.7</u>		Corrected Temp (°C): <u>2.7</u>	
Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
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			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Seneca</u>			
City/State:	<u>Davenport</u>	STATE: <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE: <u>11-1-24</u>	TIME: <u>830</u>	Received By: <u>PH</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 # <u>2</u> of <u>2</u>
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>P</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>1.4</u>		Corrected Temp (°C): <u>1.4</u>	
Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
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			



Environment Testing
TestAmerica

Cedar Falls Division
3019 Venture Way
Cedar Falls, IA 50613

ES 707 Ca 21/6

Phone: 319 - 277 - 2401 or 1 - 800 - 750 - 2401
Fax: 319 - 277 - 2425

Company:
Seneca Environmental

Send Report To:

Todd Feldman

Your PO #:

P-ORD017371

Invoice To:

Address:
7241 Gaines Street Court

City/State/Zip Code:
Davenport, IA 52806

Telephone Number:

563-332-8000

Project Number:

6247600.1

Project Name:

Reverde America Landfill

Sampled by: (Print Name)

William Lindler

Project Manager:

TF

(Signature)

William Lindler

Proj. Mgr. Telephone:

563-332-8000

Sample ID	Date Sampled	Time Sampled	# of containers shipped	Grab	Composite	Field Filtered	Preservative										Matrix						Analyze For:	RUSH TAT (Must call ahead)	Standard TAT	Fax Results	Send QC with report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
							Ice	HNO ₃ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Other (Specify)	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other Specify:	OA-1 w/MTBE (GCMS)	OA-1 (GC)						GA-2 TSS Total Suspended Solids	Ammonia, Nitrogen	CO ₂	Total Metals & Reagents	Phenols	8460 VOCs	BOD	Chloride	TOX																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
MW1	10/30/24	11:00	8	✓			✓	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

NOTE: All turn around times are calculated from the time of receipt at TestAmerica.

NOTICE: Pre-Arrangements must be made AT LEAST 48 Hours in ADVANCE to receive results with RUSH turn around time commitments; additional charges may be assessed.

NOTE: There may be a charge assessed for TestAmerica disposing of sample remainders.

Relinquished by:

William Lindler

Date

10/30/24

Time

1936

Date

10/31/24

Time

10/31/24

Date

Time

Shipped Via:

Received for TestAmerica by:

William Lindler

Date

11/11/24

Time

Date

10/31/24

Time

10/31/24

Date

Time

Laboratory Comments:

Shipped Via:

10/31/24

Date

Time

Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record



Environment Testing

Client Information (Sub Contract Lab)						Lab P/N:		Carrier Tracking No(s):		COC No:	
Shipping/Receiving						N/A		N/A		310-77951.1	
Company:						E-Mail:		State of Origin:		Page:	
Eurofins Environment Testing Southeast L						Conner.Calhoun@et.eurofins.com		Iowa		Page 1 of 1	
Address:						Accreditations Required (See note):		Job #:		Preservation Codes:	
5102 LaRoche Avenue,						State Program - Iowa		310-294193-1			
City:						Analysis Requested					
Savannah											
State, Zip:											
GA, 31404											
Phone:											
912-354-7858(Tel) 912-352-0165(Fax)											
Email:											
N/A											
Project Name:											
Roquette America Landfill											
Site:											
N/A											
Sample Identification - Client ID (Lab ID)						Field Filtered Sample (Yes or No)		Perform M&MD (Yes or No)		Total Number of Containers	
MW1 (310-294193-1)						X		X		1	
MW2 (310-294193-2)						X		X		1	
MW3 (310-294193-3)						X		X		1	
MW4 (310-294193-4)						X		X		1	
MW5 (310-294193-5)						X		X		1	
Special Instructions/Note:											
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.											
Possible Hazard Identification											
Unconfirmed											
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 1		Return To Client		Archive For	
Empty Kit Relinquished by:						Date:		Special Instructions/QC Requirements:		Months	
Relinquished by:						Date/Time:		Received by:		Date/Time:	
Relinquished by:						Date/Time:		Received by:		Date/Time:	
Relinquished by:						Date/Time:		Received by:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No						Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		4 4 / 4A	

Login Sample Receipt Checklist

Client: Seneca Companies

Job Number: 310-294193-1

SDG Number: 6247600.1

Login Number: 294193

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Homolar, Dana J

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	



Login Sample Receipt Checklist

Client: Seneca Companies

Job Number: 310-294193-1

SDG Number: 6247600.1

Login Number: 294193

List Number: 2

Creator: Lincoln, Alyssa

List Source: Eurofins Savannah

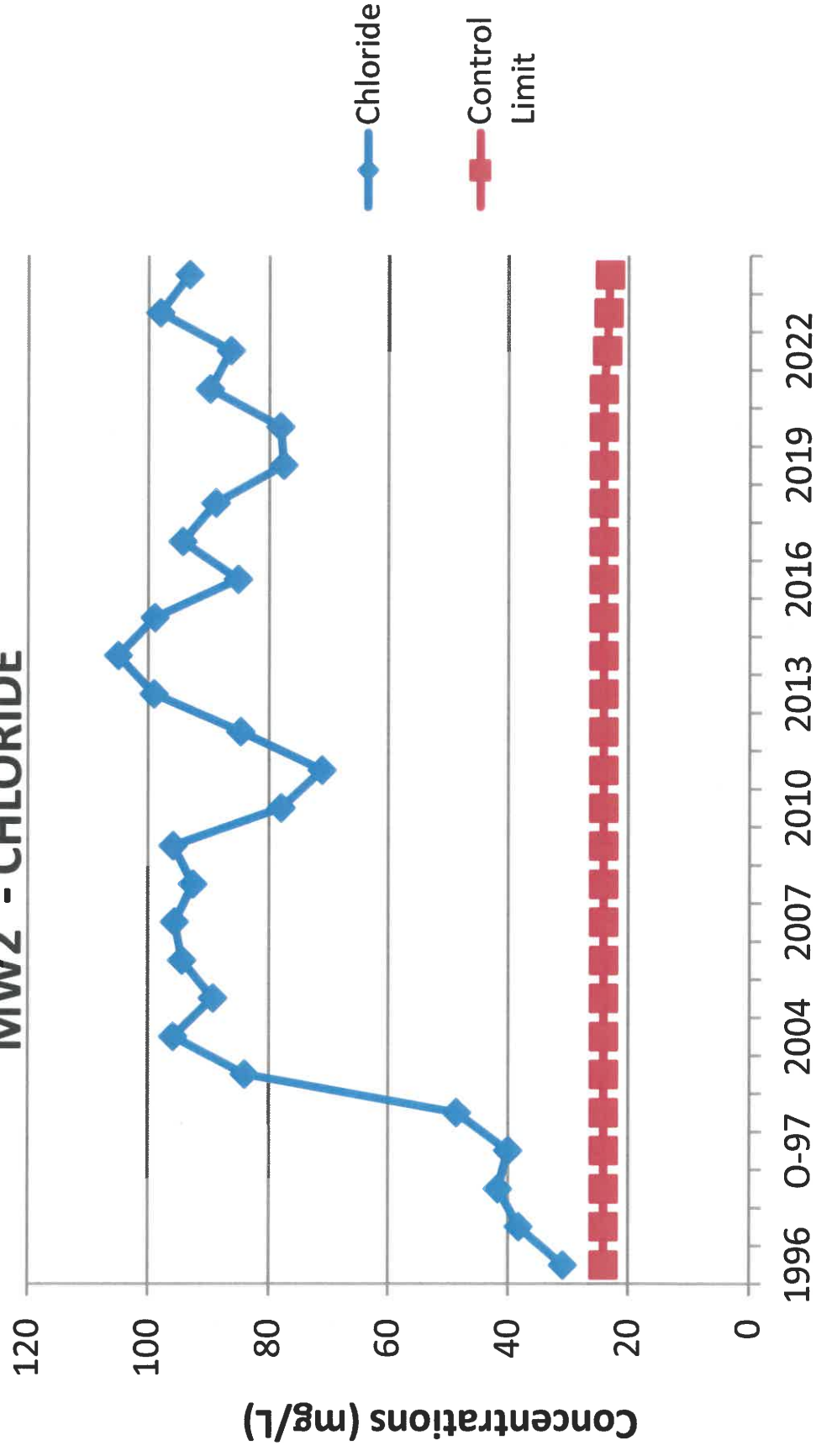
List Creation: 11/02/24 01:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <= 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.	True	
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

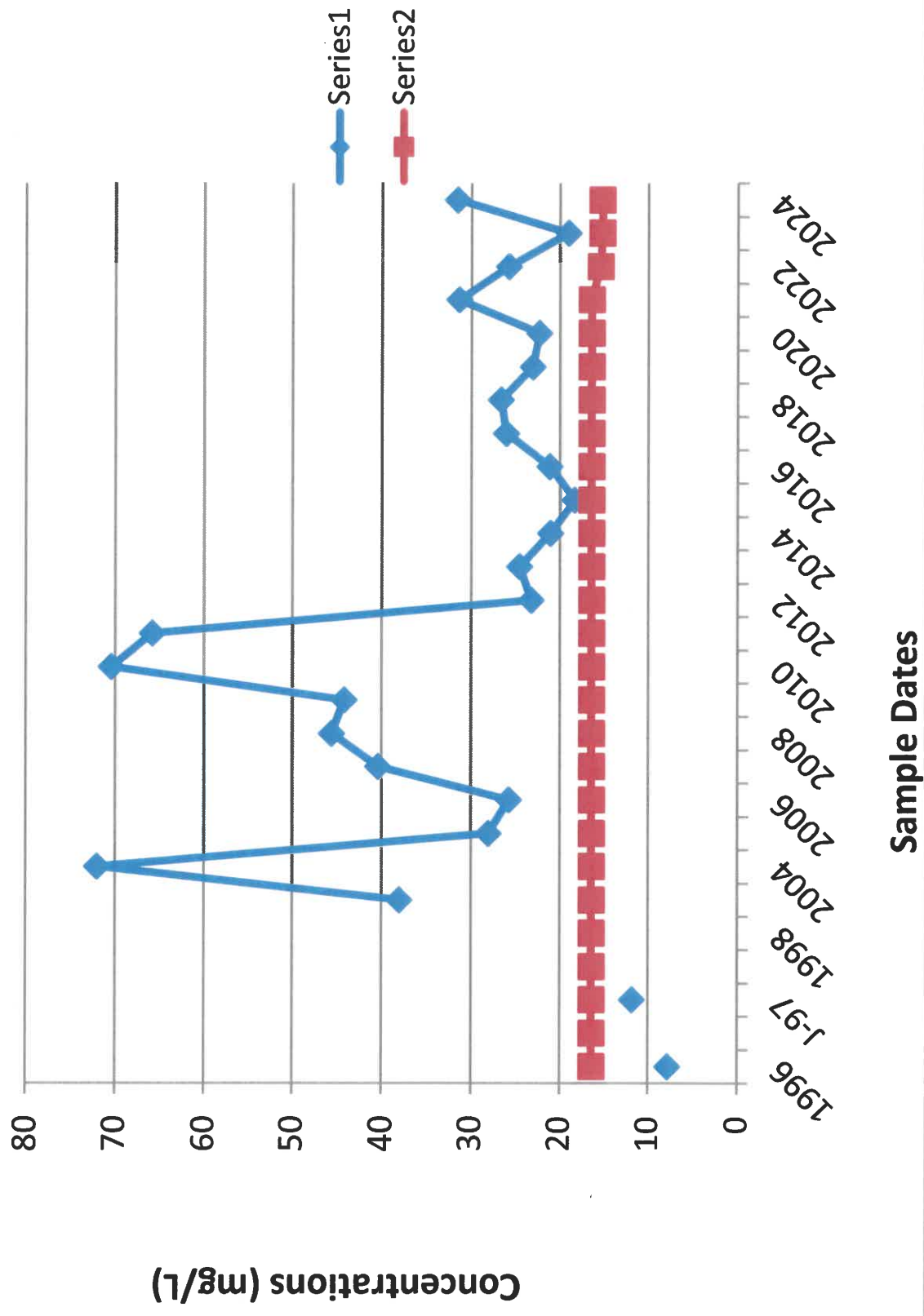


Appendix C
Statistical Reports

MW2 - CHLORIDE



MW2-COD

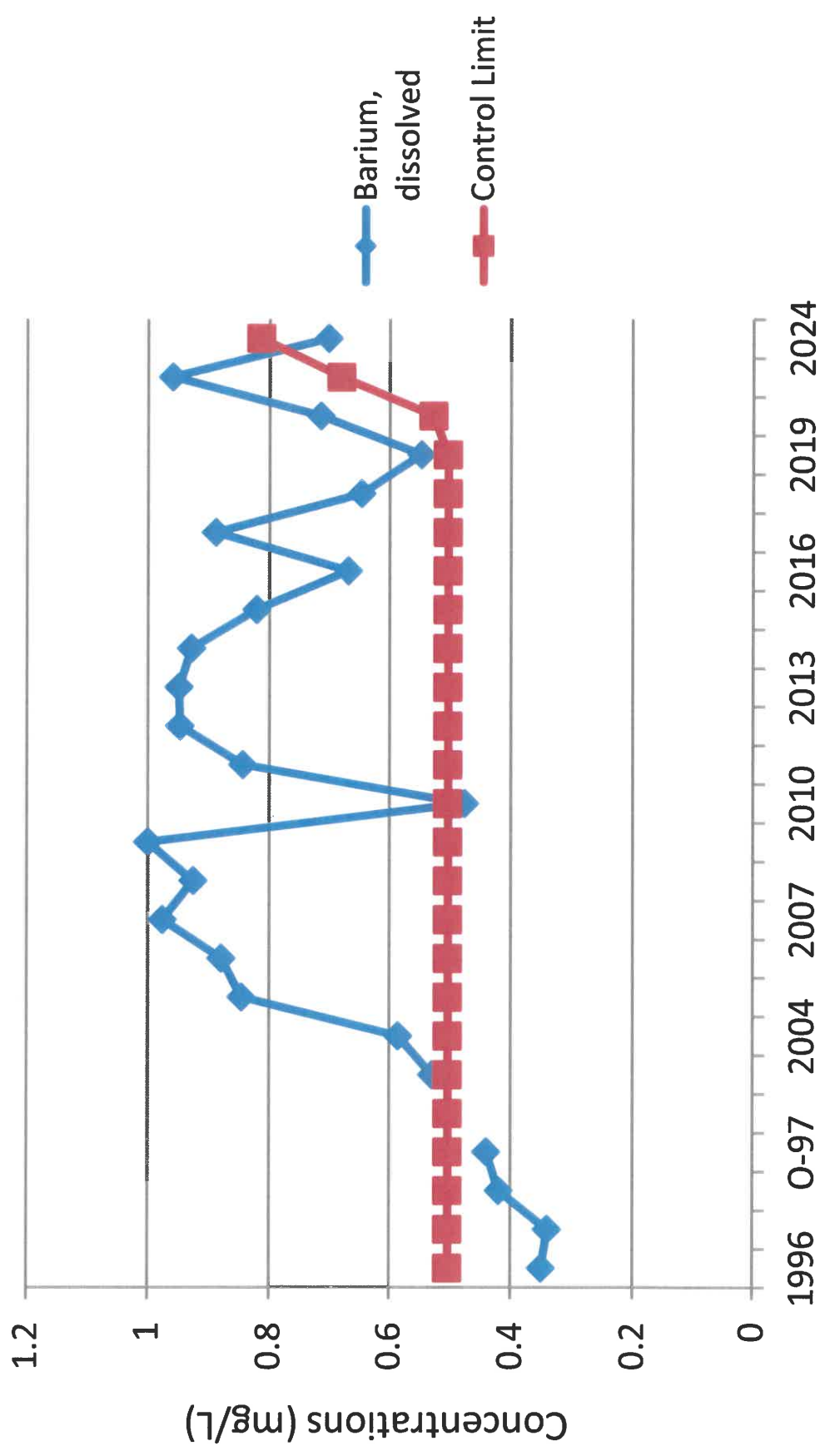


MW2-TOH

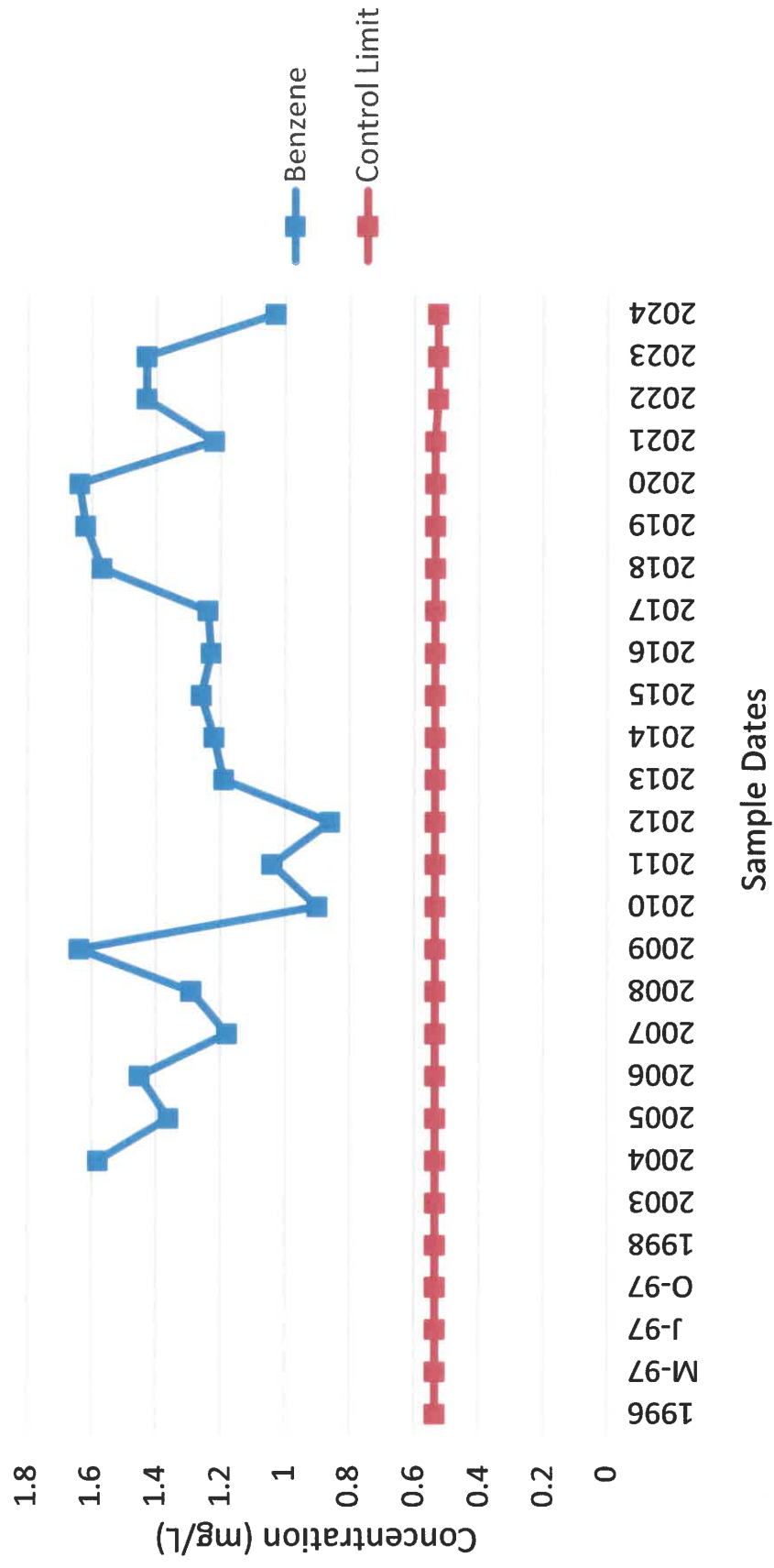


Sample Dates

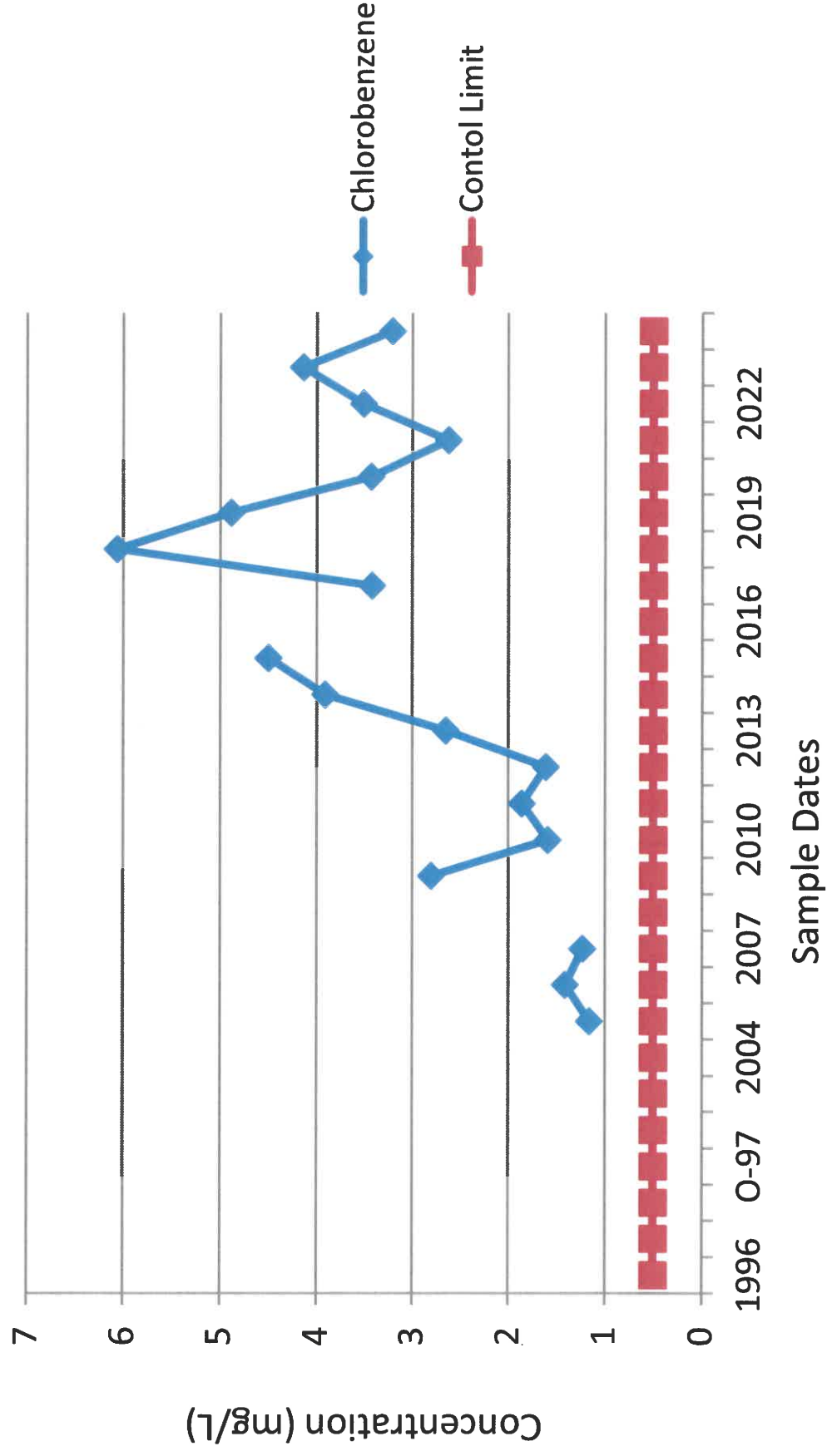
MW2 - BARIUM



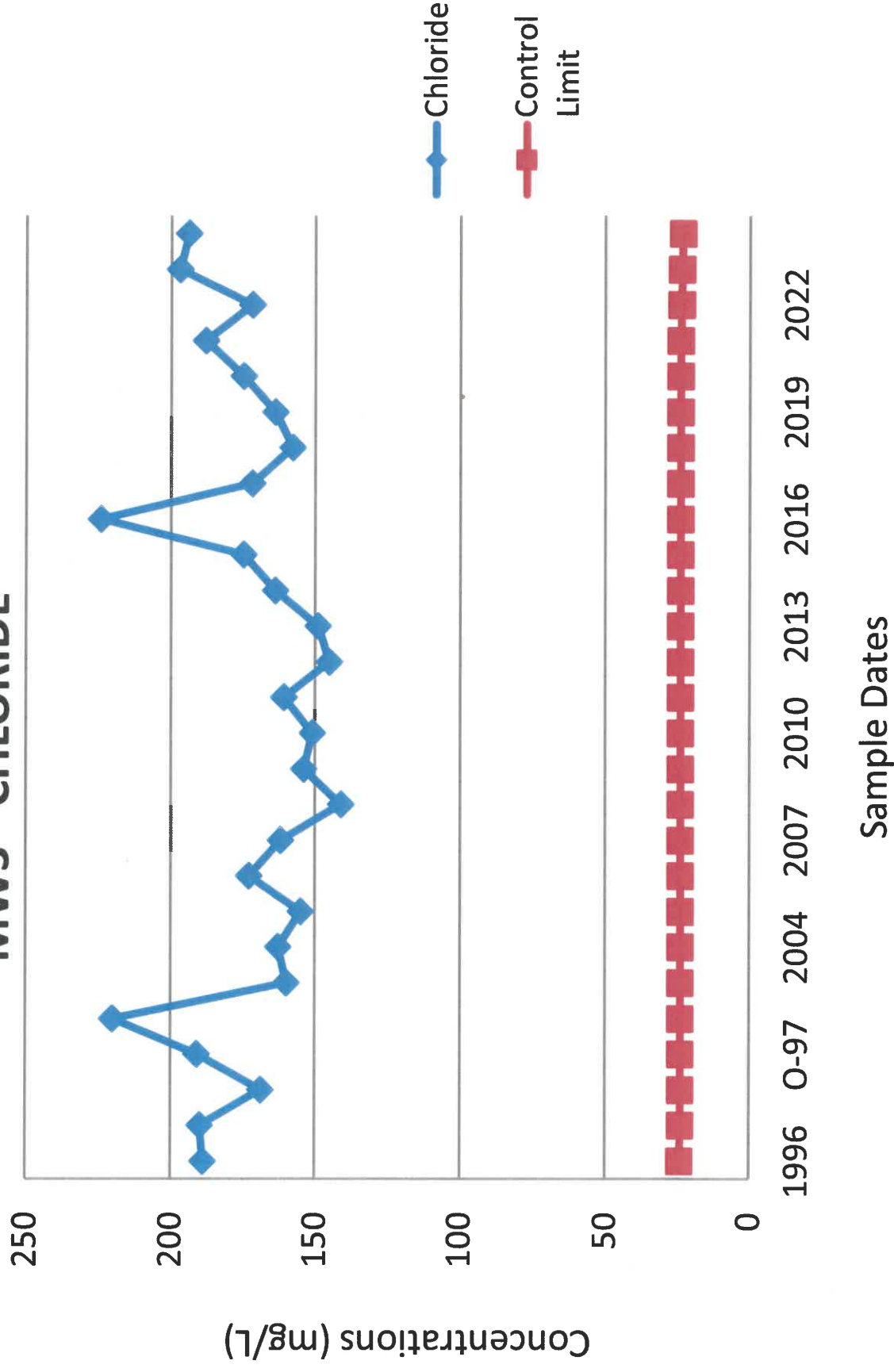
MW2 - Benzene



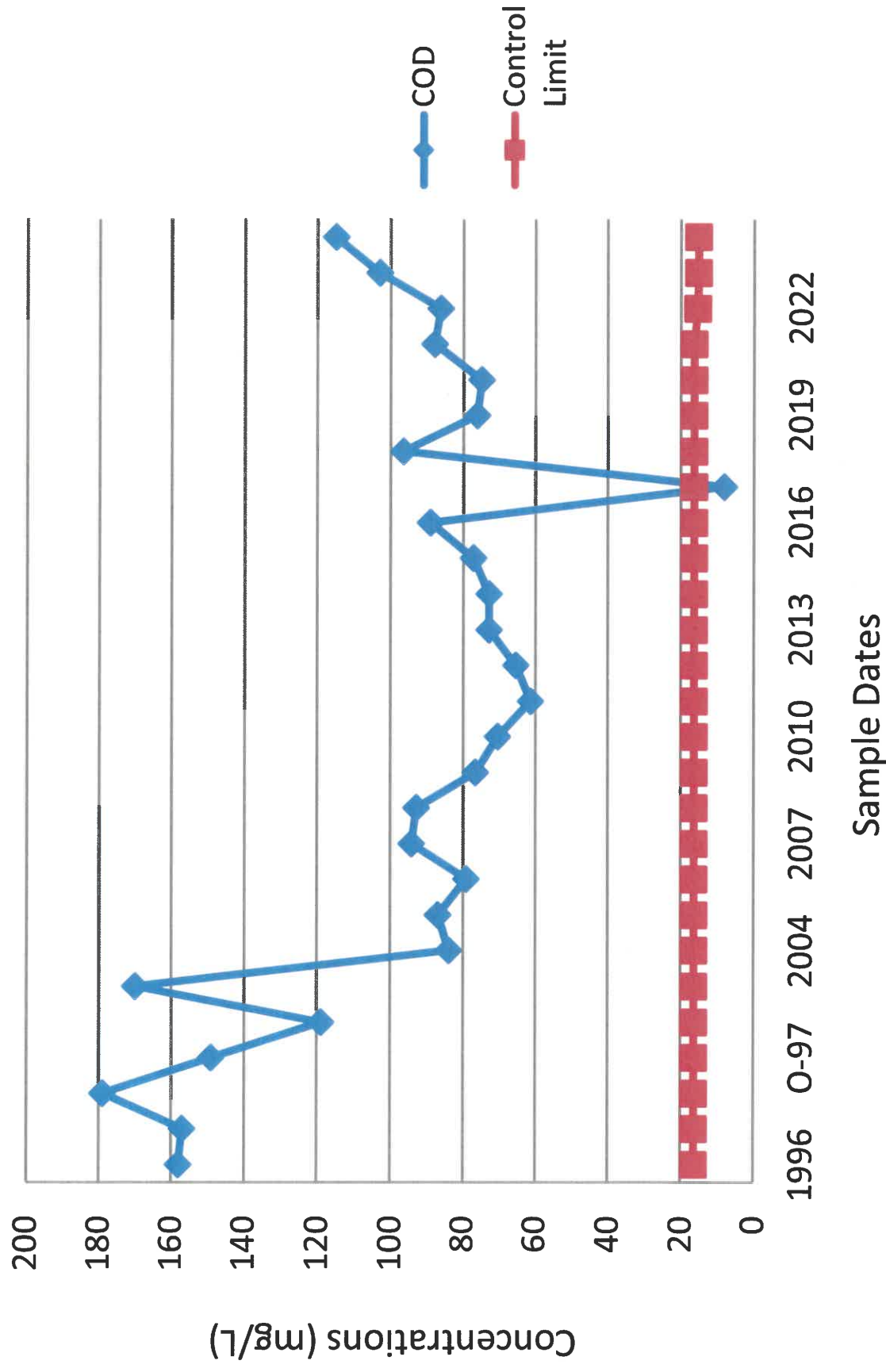
MW2 - Chlorobenzene



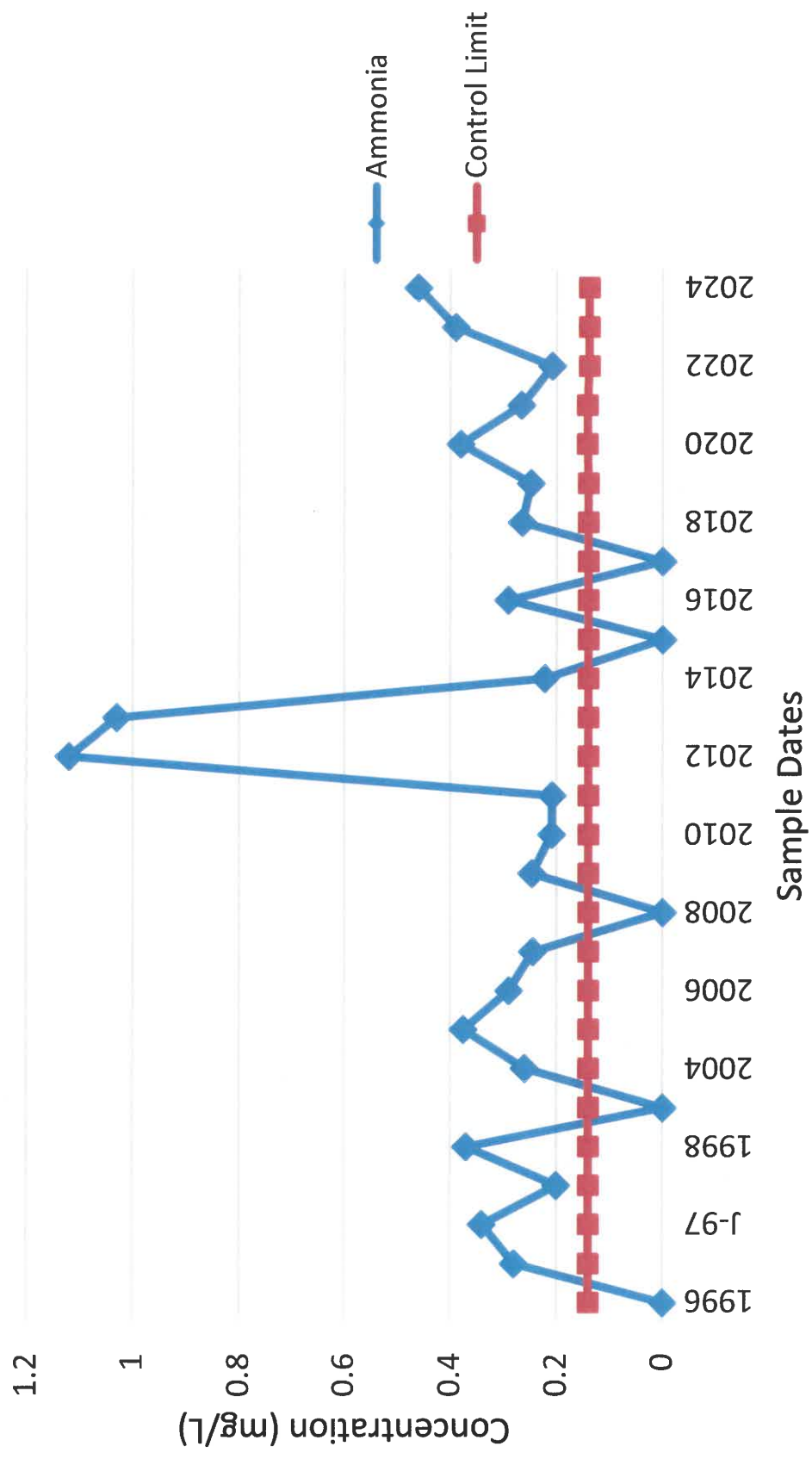
MW3 - CHLORIDE



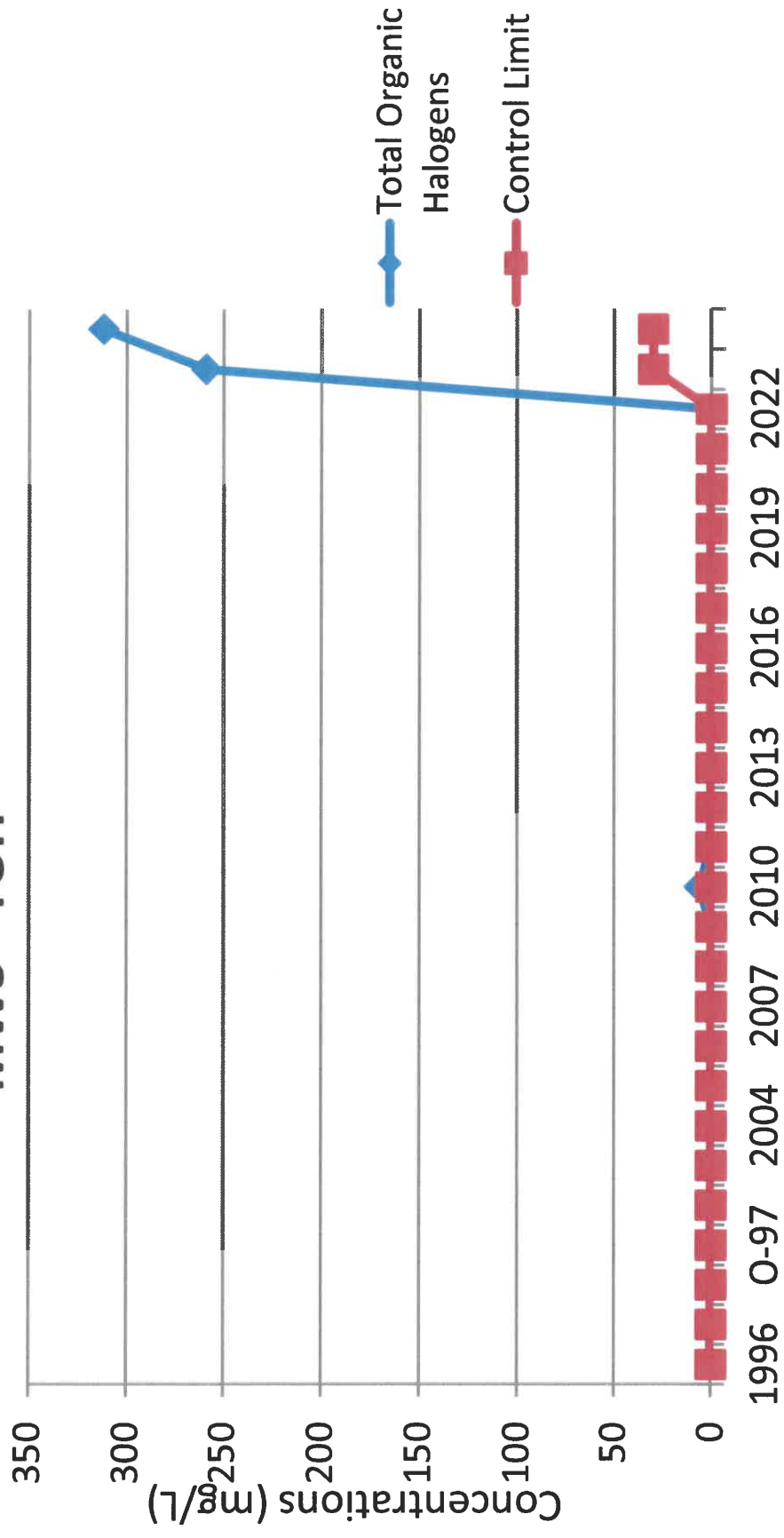
MW3 - COD



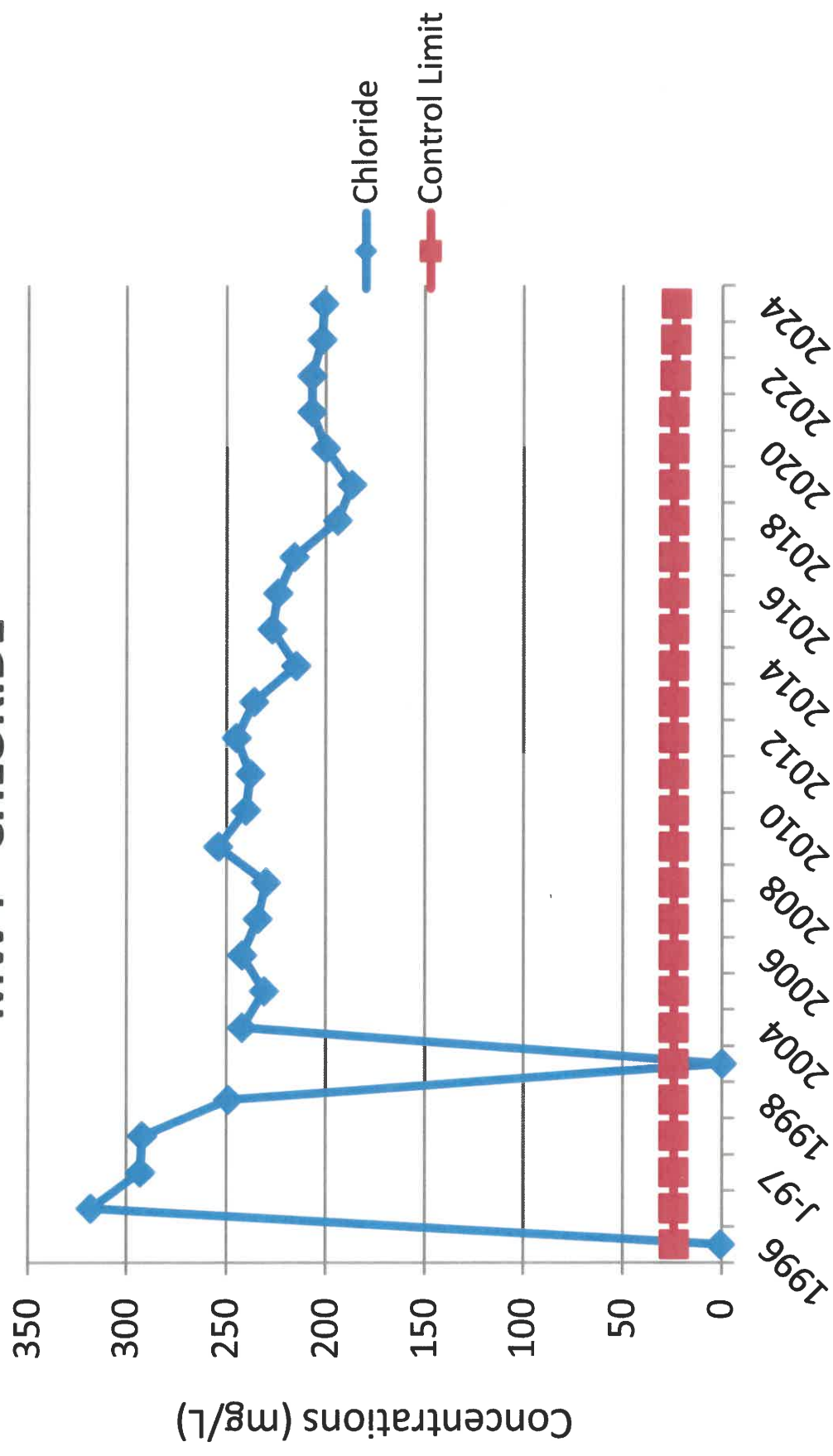
MW3-Ammonia as N



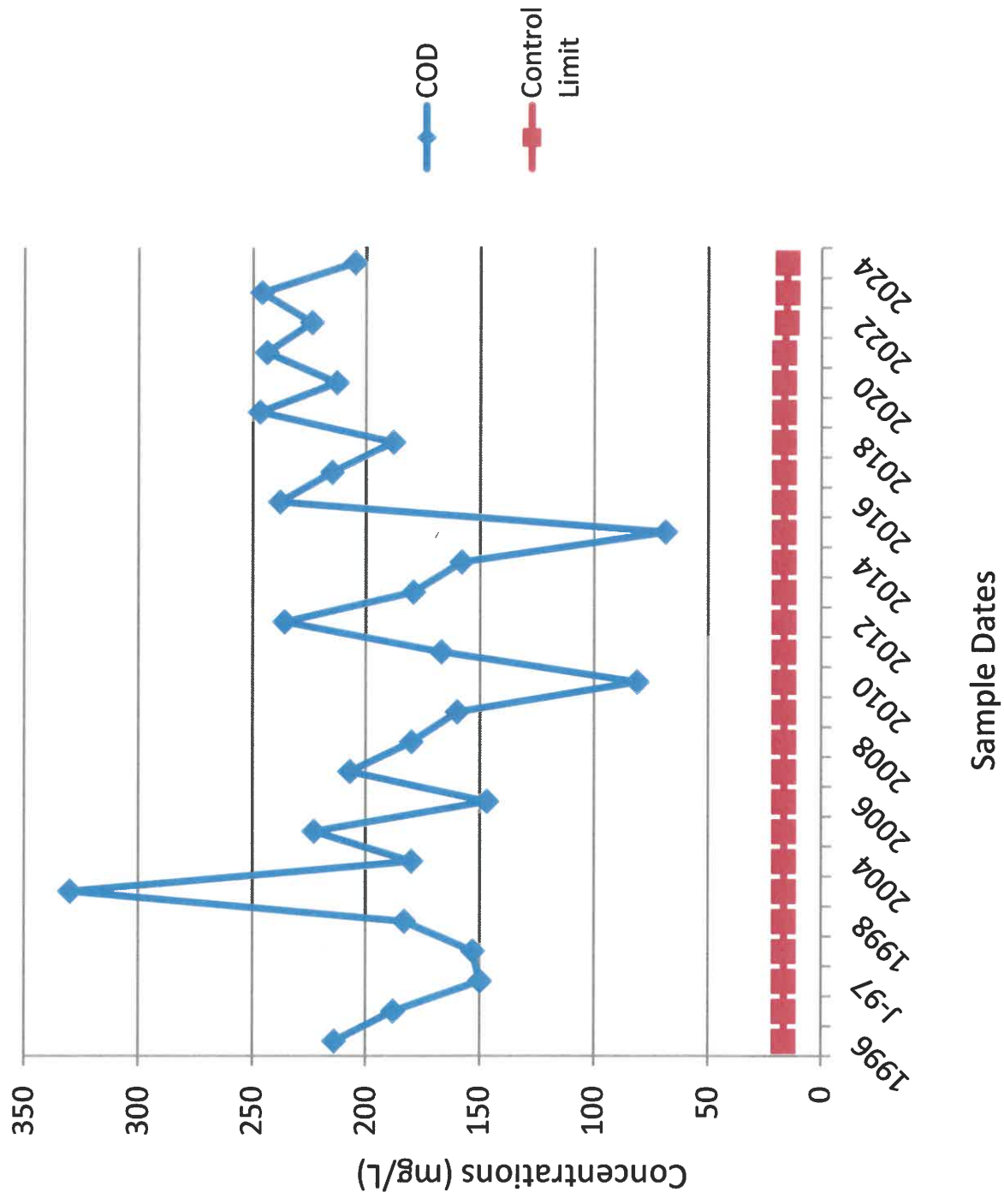
MW3 - TOH



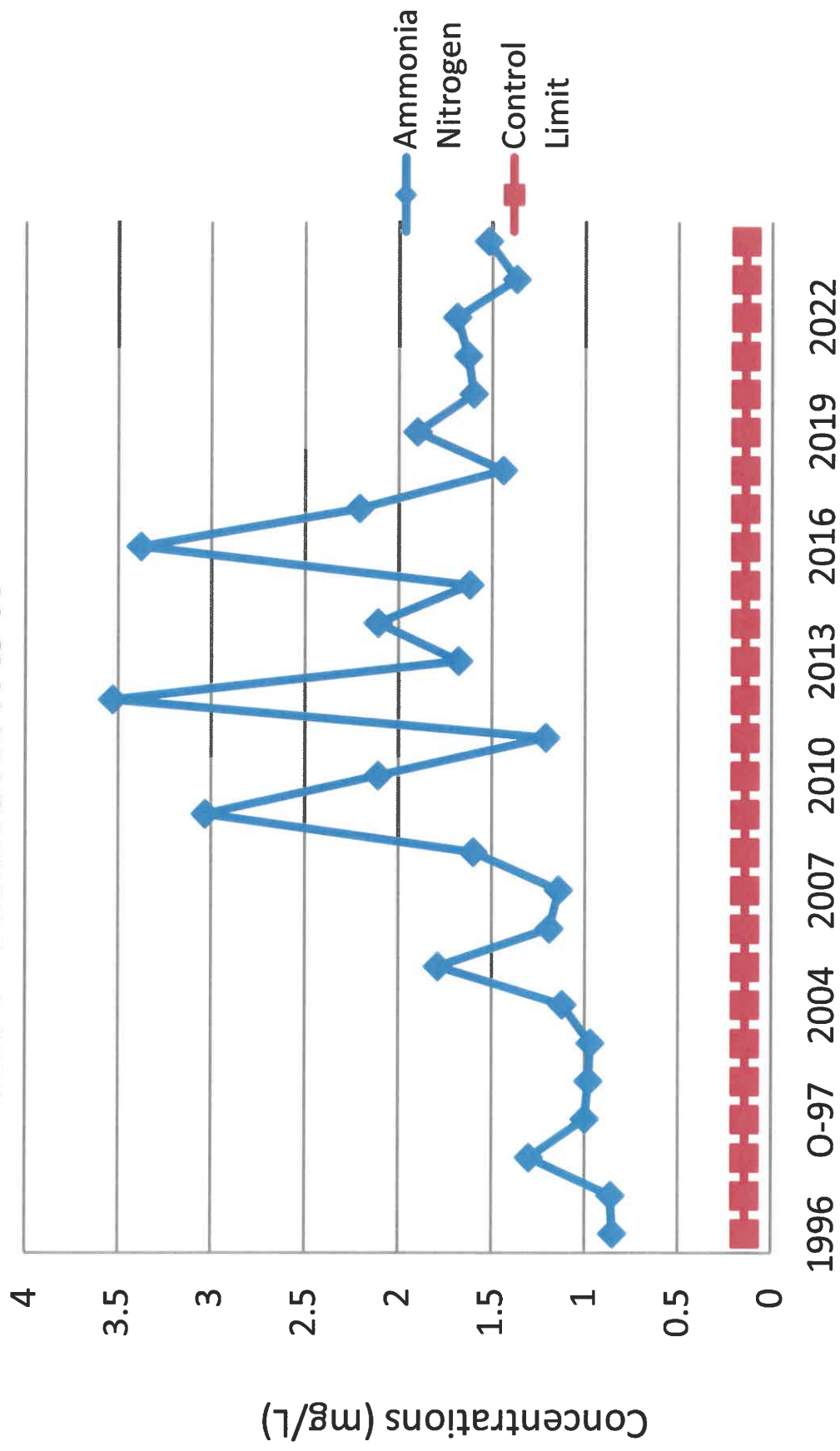
MW4 - CHLORIDE



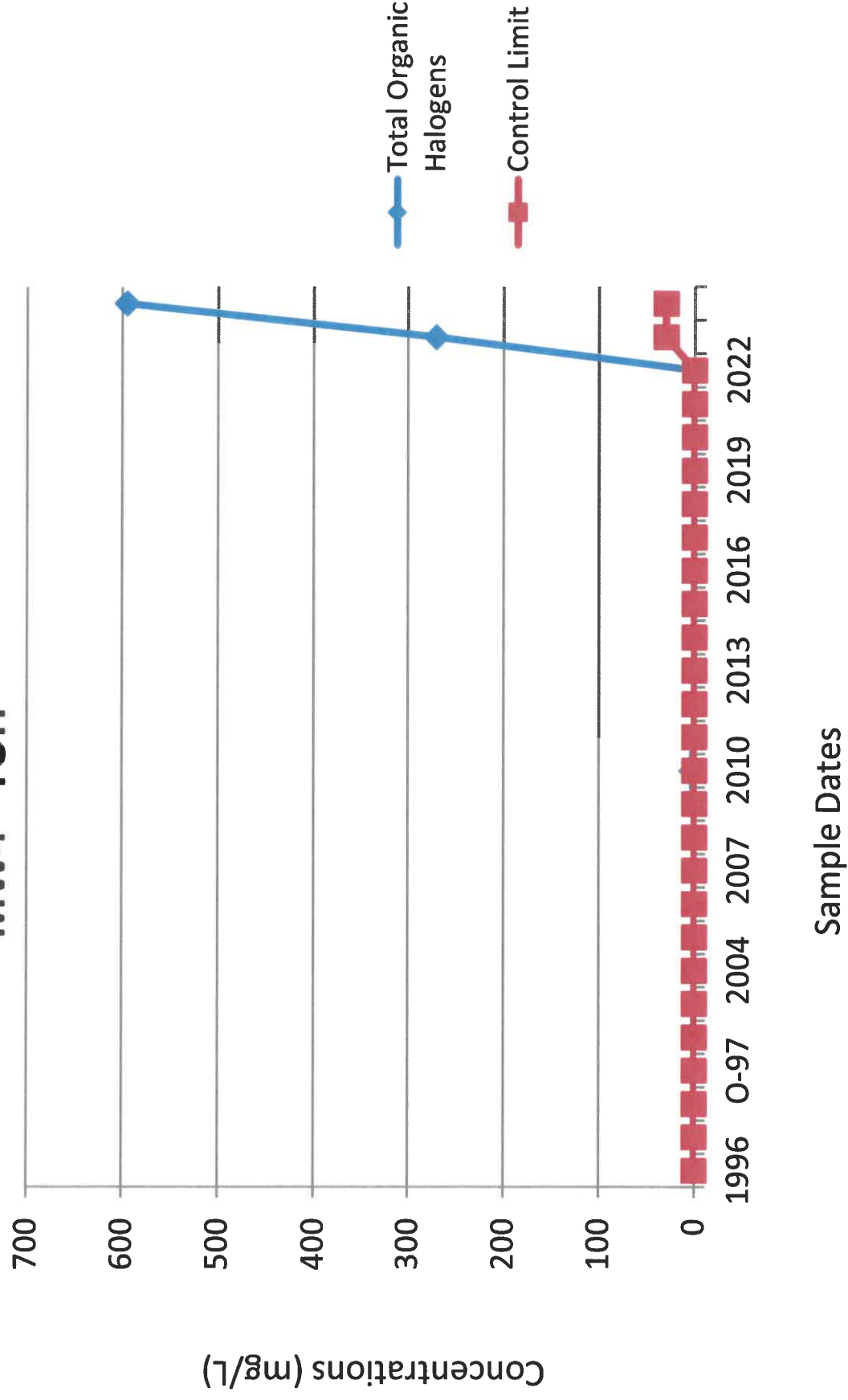
MW4 - COD



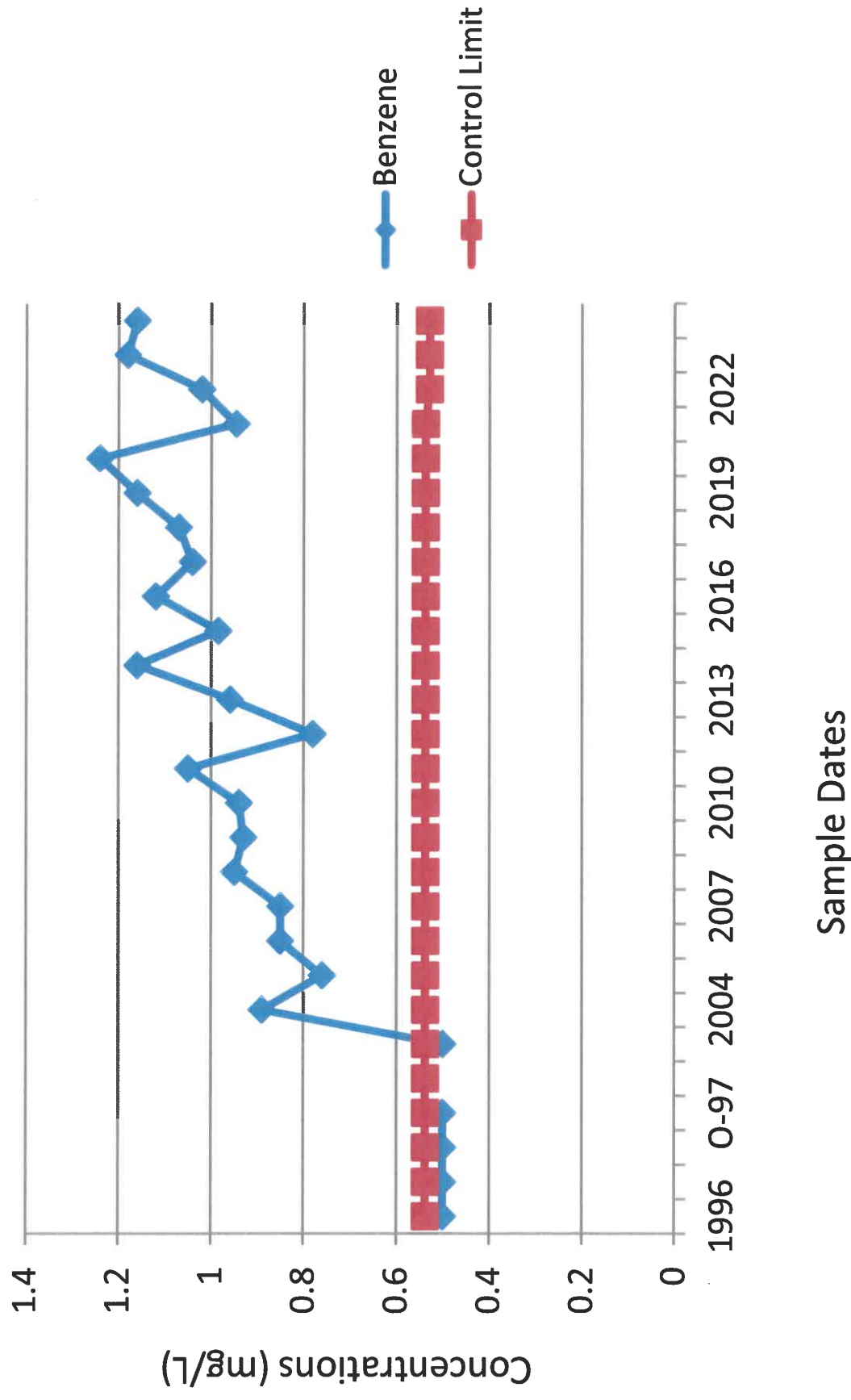
MW4 - AMMONIA AS N



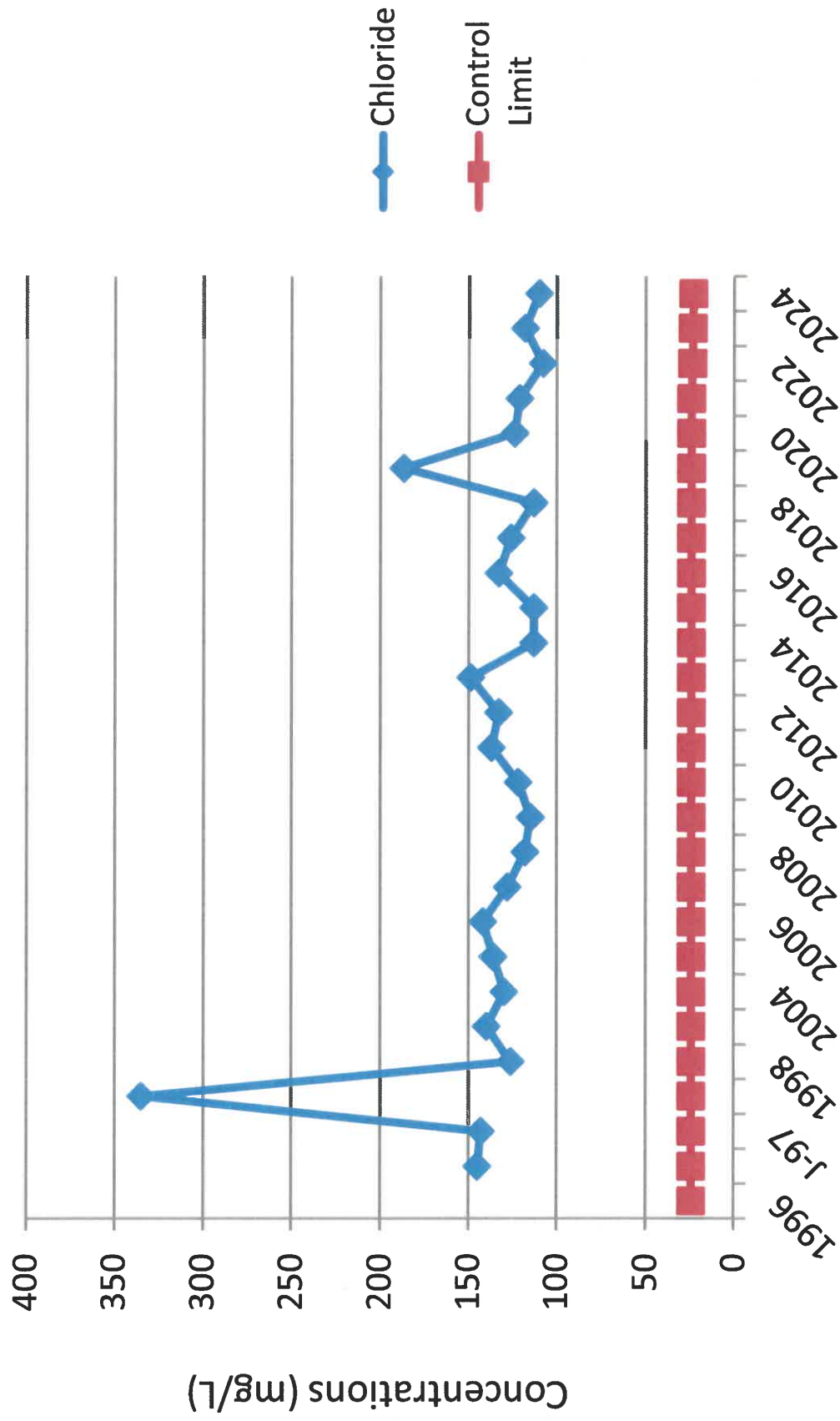
MW4 - TOH



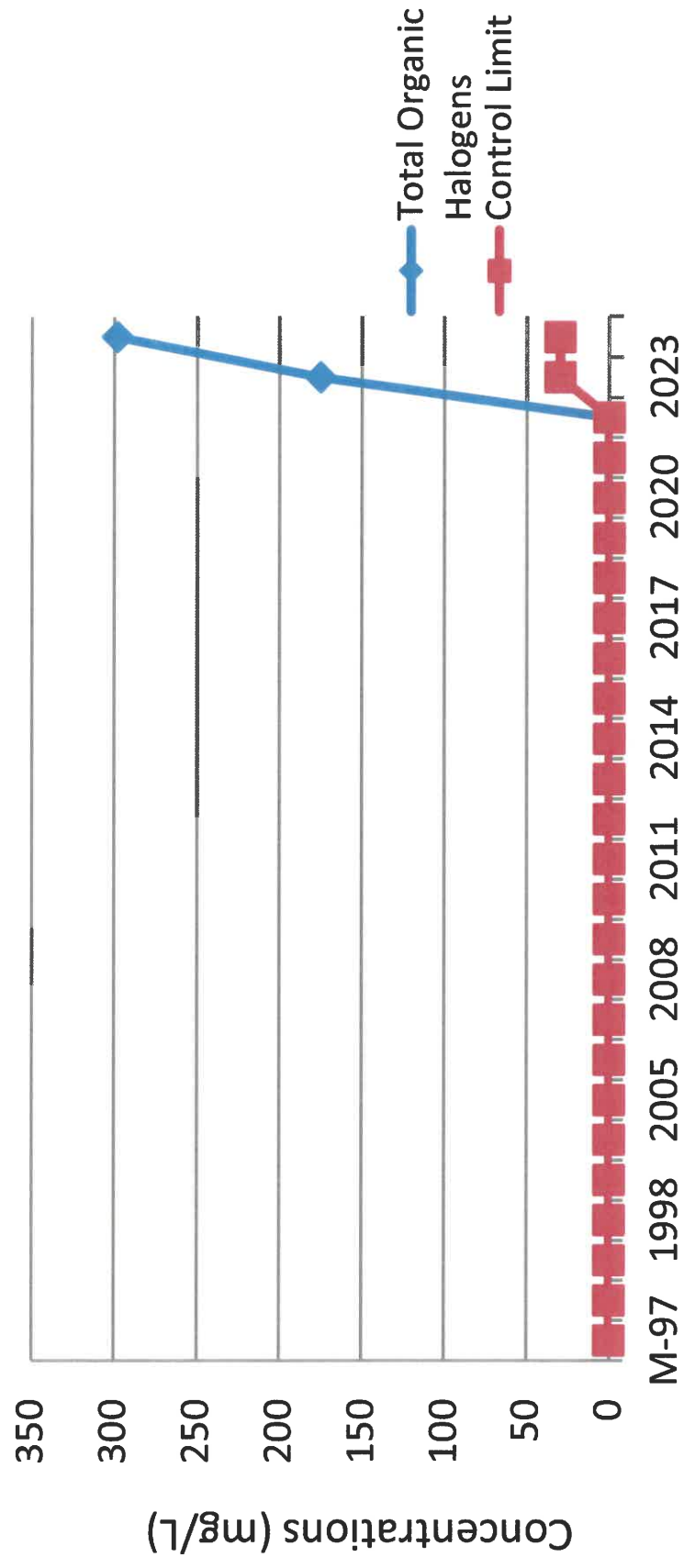
MW4 - Benzene



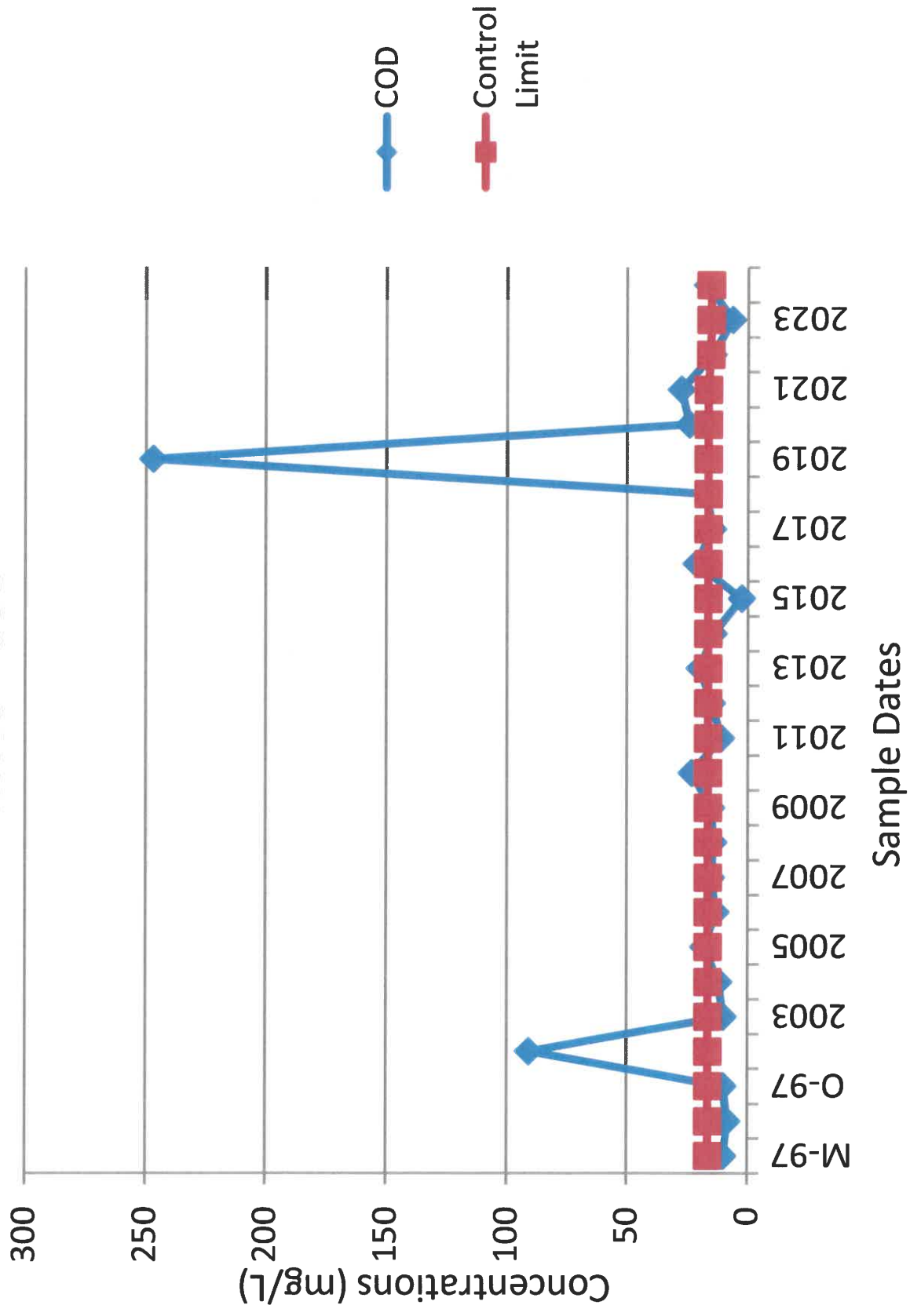
MW5 - CHLORIDE



MW5 - TOH



MW5 - COD



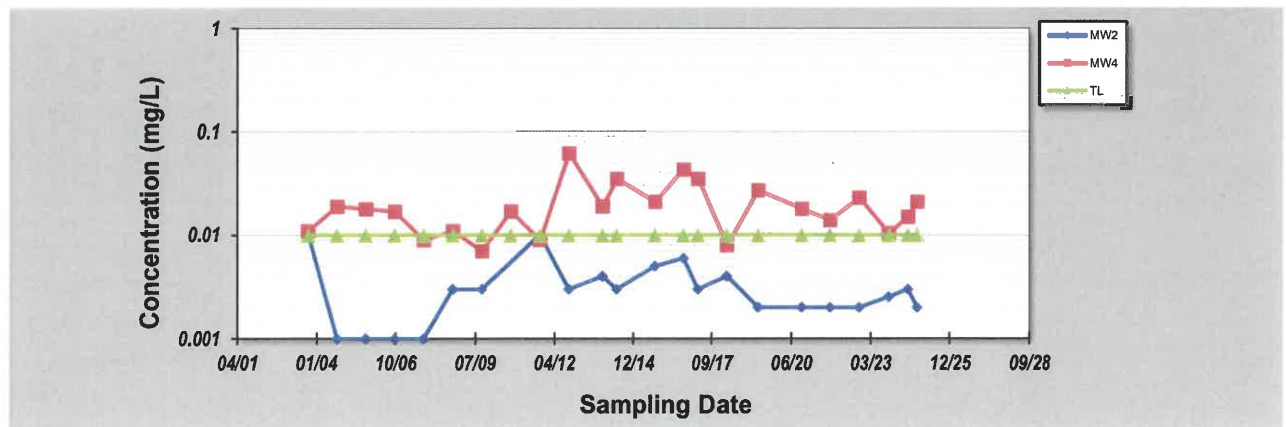
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: **15-Jan-25**
 Facility Name: **Keokuk Landfill**
 Conducted By: **Todd Felderman**

Job ID: **6247600**
 Constituent: **Arsenic**
 Concentration Units: **mg/L**

Sampling Point ID:		MW2	MW4	TL				
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (mg/L)						
1	1-Oct-03	0.01	0.011	0.010				
2	1-Oct-04	0.001	0.019	0.010				
3	1-Oct-05	0.001	0.018	0.010				
4	1-Oct-06	0.001	0.017	0.010				
5	1-Oct-07	0.001	0.009	0.010				
6	1-Oct-08	0.003	0.011	0.010				
7	1-Oct-09	0.003	0.007	0.010				
8	1-Oct-10		0.017	0.010				
9	1-Oct-11	0.01	0.009	0.010				
10	1-Oct-12	0.003	0.062	0.010				
11	1-Dec-13	0.004	0.019	0.010				
12	1-Jun-14	0.003	0.035	0.010				
13	1-Oct-15	0.005	0.021	0.010				
14	1-Oct-16	0.006	0.043	0.010				
15	1-Apr-17	0.003	0.035	0.010				
16	1-Apr-18	0.004	0.008	0.010				
17	1-May-19	0.002	0.027	0.010				
18	1-Nov-20	0.002	0.018	0.010				
19	26-Oct-21	0.002	0.014	0.010				
20	26-Oct-22	0.002	0.0231	0.010				
21	7-Nov-23	0.00252	0.0105	0.010				
22	7-Jul-24	0.003	0.015	0.010				
23	30-Oct-24	0.002	0.021	0.010				
24								
25								
Coefficient of Variation:		0.75	0.63	0.00				
Mann-Kendall Statistic (S):		-2	28	0				
Confidence Factor:		51.1%	76.0%	48.9%				
Concentration Trend:		Stable	No Trend	Stable				



Notes:

- At least four independent sampling events per well are required for calculating the trend. Methodology is valid for 4 to 40 samples.
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gorzales, *Ground Water*, 41(3):355-367, 2003.

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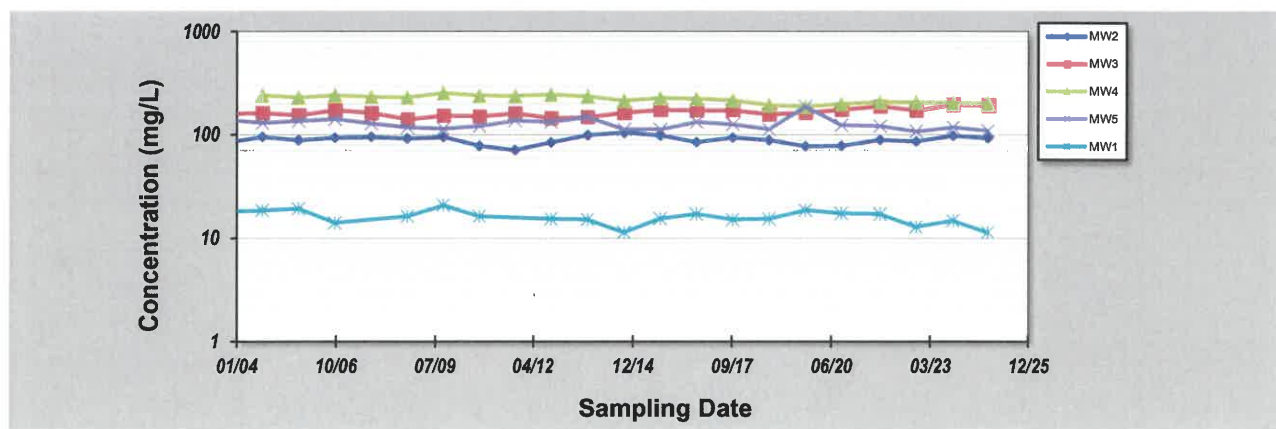
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: **15-Jan-25**
 Facility Name: **Keokuk Landfill**
 Conducted By: **Todd Felderman**

Job ID: **6247600**
 Constituent: **Chloride**
 Concentration Units: **mg/L**

Sampling Point ID:		MW2	MW3	MW4	MW5	MW1		
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	1-Oct-03	84.0	160.0		140.0	18.0		
2	1-Oct-04	95.8	163.0	242.0	130.00	18.5		
3	1-Oct-05	89.2	155.0	231.0	136.0	19.3		
4	1-Oct-06	94.4	173.0	242.0	142.0	14.1		
5	1-Oct-07	95.6	162.0	234.0	128.0			
6	1-Oct-08	92.5	141.0	230.0	118.0	16.2		
7	1-Oct-09	95.8	154.0	254.0	115.0	20.8		
8	1-Oct-10	78.0	151.0	240.0	122.0	16.3		
9	1-Oct-11	71.1	161.0	238.0	137.0			
10	1-Oct-12	84.7	145.0	245.0	133.0	15.3		
11	1-Oct-13	99.1	149.0	236.0	149.0	15.2		
12	1-Oct-14	105.0	164.0	215.0	113.0	11.4		
13	1-Oct-15	98.9	175.0	227.0	113.0	15.5		
14	1-Oct-16	85.1	172.0	224.0	133.0	17.1		
15	1-Oct-17	94.3	172.0	216.0	126.0	15.1		
16	1-Oct-18	88.8	158.0	194.0	113.0	15.3		
17	1-Oct-19	77.6	164.0	187.0	187.0	18.6		
18	1-Oct-20	78.1	175.0	200.0	124.0	17.3		
19	26-Oct-21	89.8	188.0	207.0	121.0	17.1		
20	26-Oct-22	86.4	172.0	207.0	108.0	12.8		
21	7-Nov-23	98.1	197.0	202.0	118.0	14.7		
22	30-Oct-24	93.2	194.0	201.0	110.0	11.4		
23								
24								
25								
Coefficient of Variation:		0.09	0.09	0.09	0.14	0.15		
Mann-Kendall Statistic (S):		-4	102	-128	-82	-57		
Confidence Factor:		53.3%	99.8%	>99.9%	99.0%	96.6%		
Concentration Trend:		Stable	Increasing	Decreasing	Decreasing	Decreasing		



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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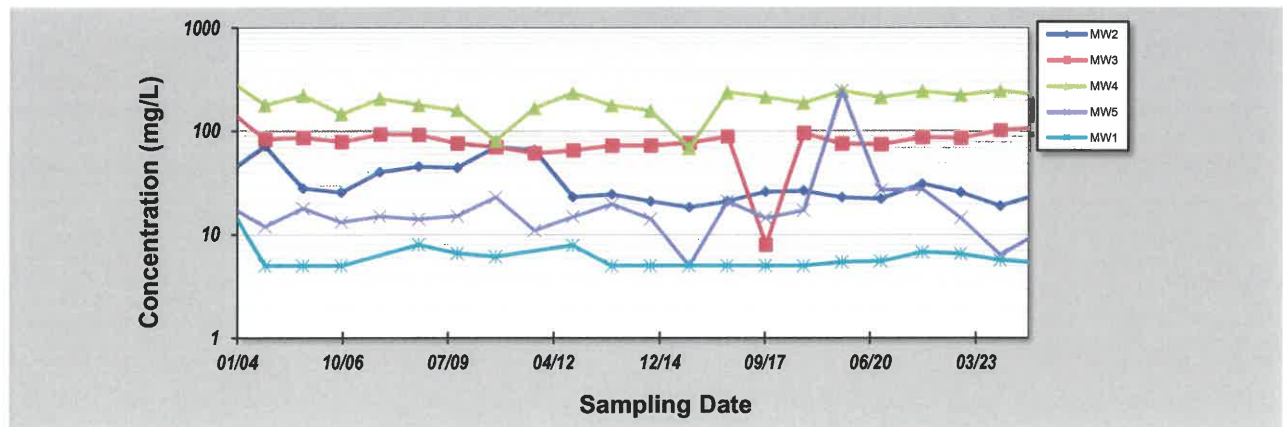
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: **15-Jan-25**
 Facility Name: **Keokuk Landfill**
 Conducted By: **Todd Felderman**

Job ID: **6247600**
 Constituent: **COD**
 Concentration Units: **mg/L**

Sampling Point ID:		MW2	MW3	MW4	MW5	MW1		
Sampling Event	Sampling Date	COD CONCENTRATION (mg/L)						
1	1-Oct-03	38.0	170.0	330.0	20.0	22.0		
2	1-Oct-04	72.0	84.0	180.0	12.0	5.0		
3	1-Oct-05	28.0	87.0	223.0	18.0	5.0		
4	1-Oct-06	25.7	79.1	147.0	13.2	5.0		
5	1-Oct-07	40.4	94.2	207.0	15.0			
6	1-Oct-08	45.6	92.9	180.0	14.1	8.0		
7	1-Oct-09	44.2	76.6	160.0	15.1	6.6		
8	1-Oct-10	70.4	70.4	81.2	23.0	6.1		
9	1-Oct-11	65.8	61.3	167.0	11.0			
10	1-Oct-12	23.2	65.4	236.0	14.9	7.9		
11	1-Oct-13	24.5	72.9	179.0	19.7	5.0		
12	1-Oct-14	21.0	72.9	158.0	14.2	5.0		
13	1-Oct-15	18.3	77.2	68.7	5.0	5.0		
14	1-Oct-16	21.1	89.0	238.0	21.1	5.0		
15	1-Oct-17	26	8.0	215.0	14.5	5.0		
16	1-Oct-18	26.6	96.5	188.0	17.2	5.0		
17	1-Oct-19	23	76.1	247.0	247.0	5.47		
18	1-Oct-20	22.3	74.9	213.0	27.1	5.55		
19	26-Oct-21	31.1	87.9	244.0	27.5	6.78		
20	26-Oct-22	25.7	86.3	224.0	14.5	6.53		
21	7-Nov-23	19.0	103.0	246.0	6.4	5.69		
22	30-Oct-25	31.5	115.0	205.0	16.8	5.0		
23								
24								
25								
Coefficient of Variation:		0.49	0.33	0.29	1.85	0.58		
Mann-Kendall Statistic (S):		-72	10	44	28	-7		
Confidence Factor:		97.8%	59.9%	88.6%	77.5%	57.7%		
Concentration Trend:		Decreasing	No Trend	No Trend	No Trend	Stable		



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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Appendix D

Semi-Annual Landfill Inspection Report

**Semi-Annual Landfill Inspection Report
Keokuk Landfill**

Keokuk, Iowa

December 28, 2024

IDNR Permit #56-SDP-2-75C

1.0 Overview

The Iowa Department of Natural Resources (IDNR) issued an operations permit (#56 SDP-2-75P) for the Keokuk Landfill on May 29, 1975. There are two known generators of materials placed in the landfill, they are: Lear Corporation Automotive Systems, who is the successor of United Technologies Automotive Systems, who is the successor of Sheller-Globe Corporation; and Roquette America, Inc. (Roquette) who is the successor of the Hubinger Company. The landfill was operated by Keokuk Land Fill, Inc. and/or Keokuk Contractors, Inc. on land owned by Charles and Gale Peters.

The landfill received materials until 1987, at which time the fill areas were covered with compacted soil. A Post Closure Hydrologic Monitoring System Plan was prepared by others dated November 5, 1996. The IDNR issued a Site Closure and Post-Closure Authorization dated June 10, 1999. Roquette and Keokuk Landfill Inc. and Keokuk Contracts, Inc. are responsible for post-closure care for a minimum period of five years and a maximum of thirty years. Specifically, Roquette is responsible for providing the semi-annual site inspections and the annual water quality monitoring.

2.0 Purpose

The purpose of this Semi-Annual Landfill Inspection Report for Roquette America, Inc. (Roquette) in Keokuk, IA is to describe the general conditions and maintenance activities at the existing landfill. According to Iowa Department of Natural resources (IDNR) Administrative Order No. 2001-SW-06, signed in 2001, Roquette shall be responsible for “site inspections of the integrity of the landfill cover and vegetative cover, condition of the landfill slopes, storm water appurtenances, and groundwater monitoring wells”. In addition, Roquette shall also be responsible for groundwater “Monitoring and reporting to the Department as specified in Sections 4.0 and 5.0 of the Closure and Post-closure Plan and the Site Closure and Post-closure Authorization issued by the Department on June 10, 1999”.

3.0 Site Inspection Requirements

Seneca Companies, Inc. (Seneca) was contracted to perform a semi-annual site inspection. The landfill is in the SE ¼, SW ¼ Section 27, T65N, R5W in Lee County, Iowa. The following general conditions were checked during the site inspection:

- Integrity of the landfill soil cover;
 - Checked for presence of exposed waste materials;
- Integrity of vegetation;
 - Checked for presence of bare ground; dead, sparse or unhealthy appearing vegetation;
- Condition of the landfill slopes;
 - Checked for erosion gullies or rills;
 - Checked for leachate or groundwater seeps;
- Storm water appurtenances;
 - Checked for presence and adequate maintenance of storm water and erosion control features;
- Groundwater monitoring wells;
 - Checked wellheads for proper locks and caps and for signs of abuse or vandalism.

Additionally, supplemental semi-annual monitoring of total metal arsenic levels in MW2 and MW4 was completed, and leachate elevations were measured in piezometers P2 and P3.

According to the previously mentioned Administrative Order, the Keokuk Landfill has been granted variances for leachate control and/or treatment, side slopes over 25 percent and landfill gas management. Therefore, the inspection did not include checking for these items.

4.0 Site Inspection

Seneca personnel conducted a site inspection on October 30, 2024.

Seneca inspected the integrity of the landfill soil cover by checking for the presence of exposed waste materials. Exposed waste materials were not observed.

Seneca checked the integrity of vegetation by checking for the presence of bare ground or dead, sparse, or unhealthy appearing vegetation. In general, vegetation throughout the landfill area appeared healthy and abundant. Storm damaged trees and limbs have fallen in a few locations along the perimeter of the cap. The landfill cells are covered with a dense, grassy vegetative cover, with numerous signs of healthy wildlife.

Seneca checked the condition of the landfill slopes by checking for erosion gullies or rills. In locations noted in previous inspections where tree falls have exposed areas of bare soil on the wooded slopes below the landfill cap, undergrowth that will likely prevent the formation of large gullies has started growing. The slopes otherwise are generally vegetated.

Seneca checked for leachate or groundwater seeps along the slopes. Seeps with active water flow were not noted. At this time there were no small pools of standing water observed in the ephemeral creek below the landfill during this inspection.

Seneca checked stormwater appurtenances. In the case of the Keokuk Landfill, the surface runoff is controlled by a diversion ditch that circumvents runoff around the landfill, rather than flowing across the landfill. The ditch was inspected for signs of erosion or blockage and none of which were observed. Surface runoff is also controlled by the placement of limestone riprap in the runoff conveyance channels to dissipate runoff energy and prevent erosion. The rip rap conveyance linings and dense vegetation appears to be adequately controlling runoff and preventing erosion.

Seneca checked the groundwater monitoring wells. MW-1R, MW2, MW-3, MW-4, and MW-5 were in good condition. P-1 and P3 were in good condition. Collision protection around the wells and piezometers appeared adequate, and there were no indications of abuse, tampering or vandalism.

Seneca collected groundwater from monitoring wells MW-2 and MW-4 which was analyzed for total metals arsenic by Eurofins Test America. The result from MW-4 depicted arsenic levels remained within historical levels. The most recent sample at MW-4 just exceeded the arsenic mcl concentration. The arsenic concentration at MW-2 remained below the MCL. Refer to table 1 below for historical arsenic results for these two wells. Please refer to Appendices 2 and 3 for copies of the groundwater sampling forms and laboratory reports.

Table 1: Historical Arsenic Concentrations in MW-2 and MW-4:

Year	MW-2 (mg/L)	MW-4 (mg/L)	MCL (mg/L)
1996	0.0021	0.011	0.01
1997 (March)	<0.005	0.012	0.01
1997 (June)	<0.005	0.013	0.01
1997 (October)	<0.01	0.014	0.01
1998	No Data	No Data	0.01
2003	<0.01	0.011	0.01
2004	<0.001	0.0188	0.01
2005	0.00102	0.0184	0.01
2006	<0.001	0.0174	0.01
2007	0.00139	0.00892	0.01
2008	0.00261	0.0106	0.01
2009	0.00286	0.00674	0.01
2010	No Data	0.0167	0.01
2011	0.0101	0.00934	0.01

2012	0.00305	0.0619	0.01
2013 (July)	0.00268	0.0105	0.01
2013 (Dec.)	0.00444	0.0191	0.01
2014 (June)	0.00254	0.0346	0.01
2014 (Nov.)	0.00377	0.0152	0.01
2015(May)	0.00398	0.0164	0.01
2015(Oct.)	0.00498	0.0208	0.01
2016(May)	0.00326	0.0377	0.01
2016(Oct.)	0.00553	0.0426	0.01
2017(April)	0.00288	0.0349	0.01
2017(Oct.)	0.00791	0.0272	0.01
2018(April)	0.00384	0.00849	0.01
2019(May)	<0.00200	0.0273	0.01
2019 (Oct.)	<0.002	0.0227	0.01
2020 (April)	<0.002	0.0108	0.01
2020 (Nov.)	0.00235	0.0181	0.01
Total Metals Arsenic Sampling started 2021			
2021 (April)	<0.002	0.00347	0.01
2022 (April)	<0.002	0.0143	0.01
2022 (Oct)	<0.002	0.0231	0.01
2023 (April)	0.00206	0.0145	0.01
2023 (Nov)	0.00252	0.0105	0.01
2024 (July)	0.00326	0.0150	0.01
2024 (Oct)	<0.00200	0.0208	0.01

Bolded: Value at or above the MCL.

Table 2: Recent leachate elevations in P2 and P3

Well I.D.	TOC Elev (Feet, NGVD)	Leachate Elev. (Feet, NGVD) 10/30/12	Leachate Elev. (Feet, NGVD) 11/21/13	Leachate Elev. (Feet, NGVD) 11/5/14	Leachate Elev. (Feet, NGVD) 10/19/15	Leachate Elev. (Feet, NGVD) 10/25/16	Leachate Elev. (Feet, NGVD) 11/1/17	Leachate Elev. (Feet, NGVD) 4/25/18	Leachate Elev. (Feet, NGVD) 5/02/19	Leachate Elev. (Feet, NGVD) 10/29/19
P2	621.06	609.40	609.54	609.33	609.56	609.53	612.53	609.50	609.72	609.70
P3	624.13	617.92	615.01	615.75	618.63	Dry at 617.20	Dry at 617.20	615.23	618.08	614.91

Well I.D.	TOC Elev (Feet, NGVD)	Leachate Elev. (Feet, NGVD) 4/28/20	Leachate Elev. (Feet, NGVD) 11/03/20	Leachate Elev. (Feet, NGVD) 04/29/21	Leachate Elev. (Feet, NGVD) 04/25/22	Leachate Elev. (Feet, NGVD) 10/26/22	Leachate Elev. (Feet, NGVD) 04/27/23	Leachate Elev. (Feet, NGVD) 11/07/23	Leachate Elev. (Feet, NGVD) 07/18/24	Leachate Elev. (Feet, NGVD) 10/30/24
P2	624.68	610.16	613.54	615.09	613.12	613.17	613.65	613.45	612.88	612.97
P3	622.94	617.07	613.76	615.46	616.54	615.26	615.09	614.99	613.63	614.84

*Ground surface and TOC resurveyed in Oct. 2019

The site's access lane is chained and locked, but no fencing prevents unauthorized access from the public highway. There was no evidence of unwanted vehicles in the area. There is a fence that defines the south property line, the no Trespassing sign was replaced on the southwest corner of the property.

5.0 Summary

The Keokuk Landfill was inspected on October 30, 2024. The inspection was performed to observe for:

- Integrity of the landfill soil cover;
- Integrity of vegetation;
- Condition of the landfill slopes;
- Storm water appurtenances; and
- Condition of groundwater monitoring wells.

Items noted:

- Areas of the slope below the landfill cap where previous tree falls exposed bare soil are re-vegetating without the formation of large gullies.
- Arsenic concentrations were below the MCL in MW-2. MW-4 arsenic concentrations decreased and were slightly above target levels but remained within its historical range.
- MW4 indicated 1% LEL Methane.
- The previously eroded gully in the southwest corner of the property was filled in with rip rap to stop erosion.

SEMIANNUAL INSPECTION CHECKLIST

Landfill Roquette America - Keokuk, IADate 10/30/24

<u>Item</u>	<u>Observation</u>	<u>Remedial Activity/Date</u>
Gate	Closed and Signed	10/30/24
Sign Posted	Visible, slightly weathered	10/30/24
Access Road Maintenance	accessible	10/30/24
Fence line intact	erect and sturdy	10/30/24
Vegetation	abundant	10/30/24
Erosion Gullies	moderate past rip rap	10/30/24
Drainageways	free and clear	10/30/24
Seeps	none observed	10/30/24
Wells	all in good condition	10/30/24

Comments: Site well maintained

Inspector:

William Sudek



Photo 1: Close up view of Monitoring Well (P3)



Photo 2: South of MW2 downgradient view



Photo 3: View of the gully with intact rip rap upgradient of MW4

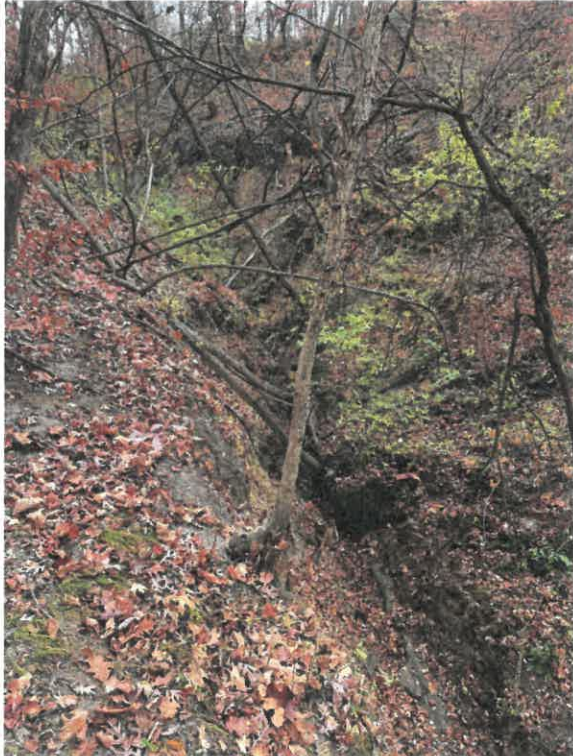


Photo 4: View of the erosion gully south end of property west of MW2



Photo 5: View of Pizometer 2.



Photo 6: View of fixed berm west of Pizometer 2



Photo 7: View of “Private Property” sign south of the property.



Photo 8: View of berm west of P1

Leachate Depths

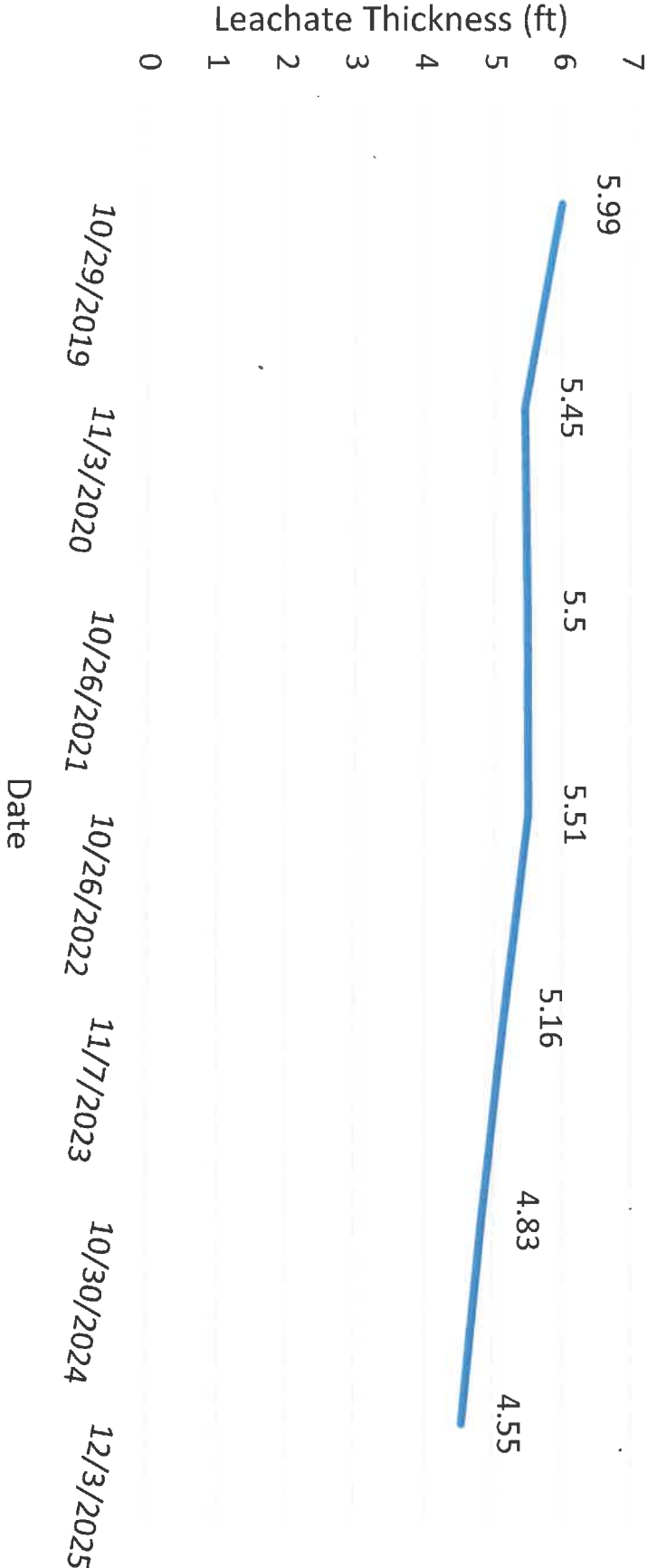
Keokuk Landfill

	P1	P1	P1	P1	P1	P1	P1	P1
10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024	12/3/2025	
Depth to leachate (ft.)	596.47	596.6	597.14	597.09	597.08	597.43	597.76	598.04
Total Depth (ft.)	602.59	602.59	602.59	602.59	602.59	602.59	602.59	602.59
Leachate Thickness (ft.)	6.12	5.99	5.45	5.5	5.51	5.16	4.83	4.55

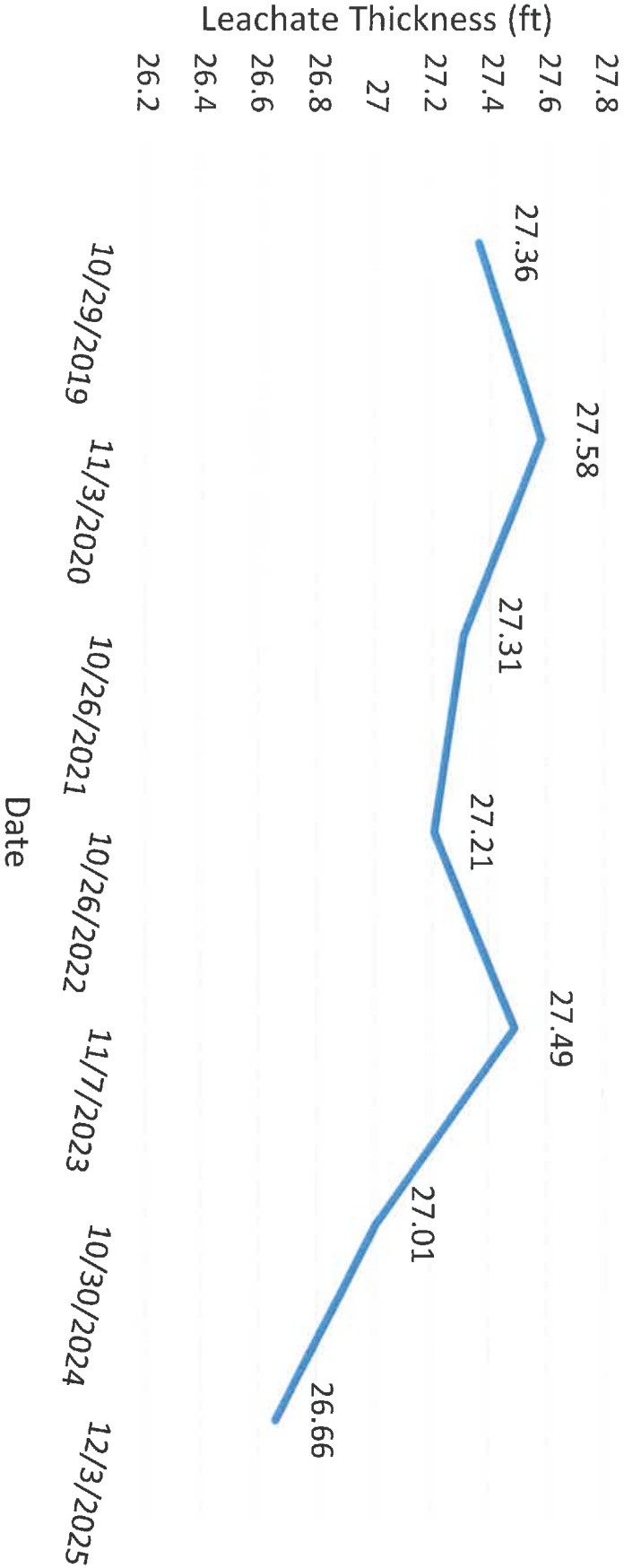
	P2	P2	P2	P2	P2	P2	P2	P2
10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024	12/3/2025	
Depth to leachate (ft.)	558.34	558.6	558.38	558.65	558.75	558.47	558.95	559.30
Total Depth (ft.)	585.96	585.96	585.96	585.96	585.96	585.96	585.96	585.96
Leachate Thickness (ft.)	27.62	27.36	27.58	27.31	27.21	27.49	27.01	26.66

	P3	P3	P3	P3	P3	P3	P3	P3
10/30/2018	10/29/2019	11/3/2020	10/26/2021	10/26/2022	11/7/2023	10/30/2024	12/3/2025	
Depth to leachate (ft.)	601.02	600.49	601.64	601.3	602.14	602.41	602.56	602.72
Total Depth (ft.)	608.7	608.7	608.7	608.7	608.7	608.7	608.7	608.7
Leachate Thickness (ft.)	7.68	8.21	7.06	7.4	6.56	6.29	6.14	5.98

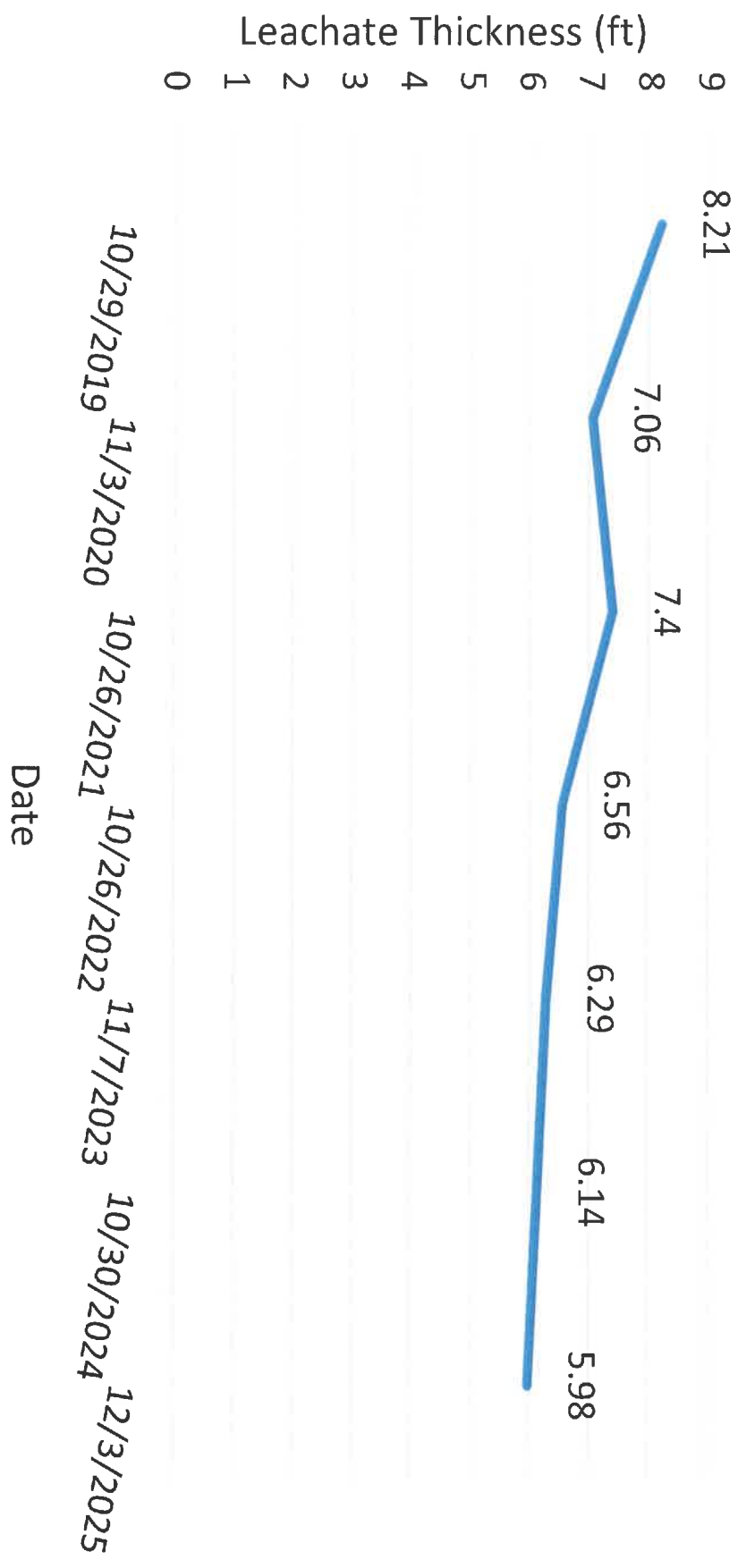
P1 Leachate Thickness

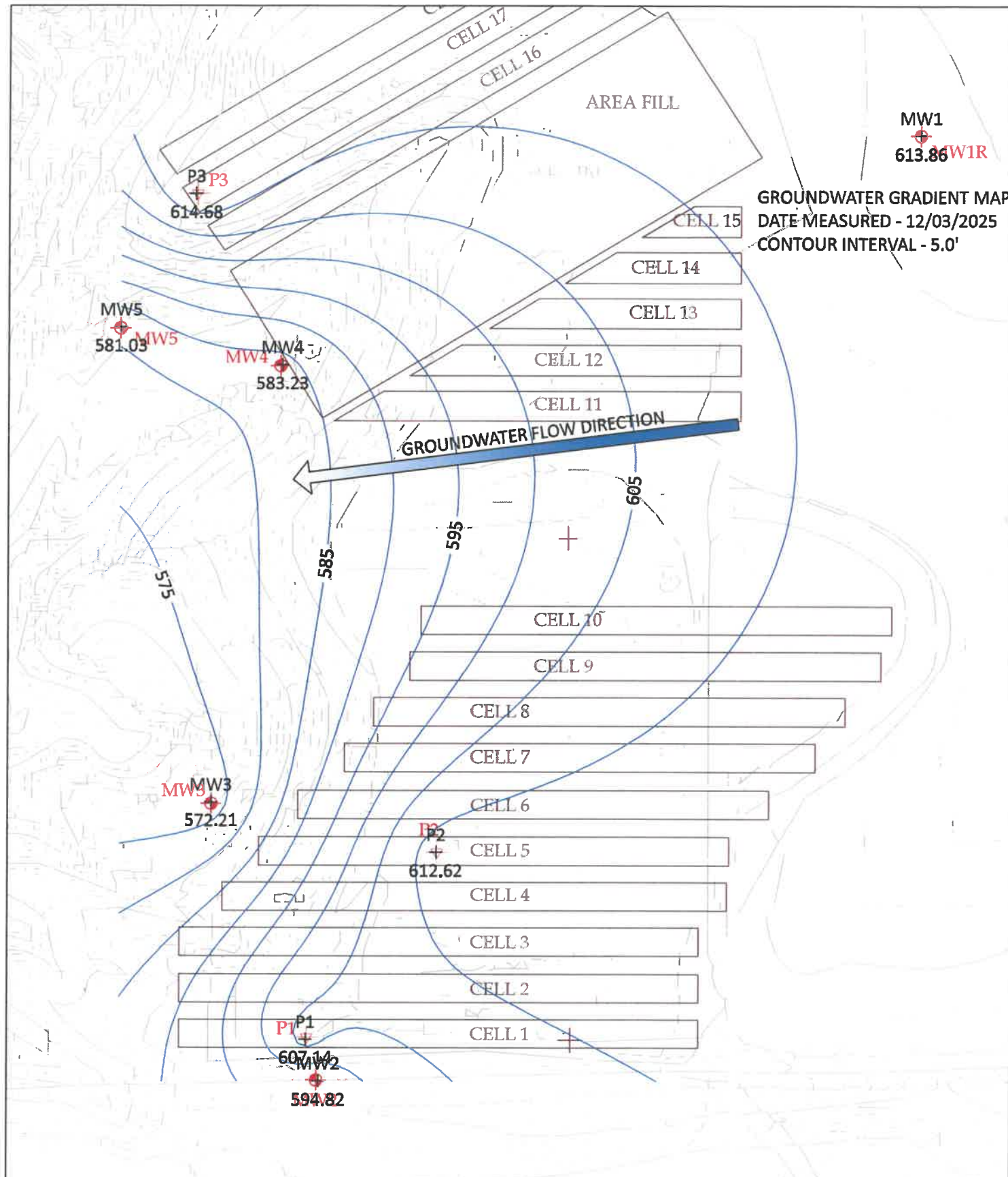


P2 Leachate Thickness



P3 Leachate Thickness





- ◆ MONITORING WELL
- ◆ SURFACE WATER MONITORING POINT
- ↓ LEACHATE WELL



FILE NAME:
ROSE BROTHERS

PROJECT NO:
6247600

SITE: ROSE BROTHER'S LANDFILL
 ROQUETTE AMERICA
 KEOKUK, IOWA
 GW FLOW MAP



Seneca
 Companies
 Environmental Services

REVISED:
11/24/03

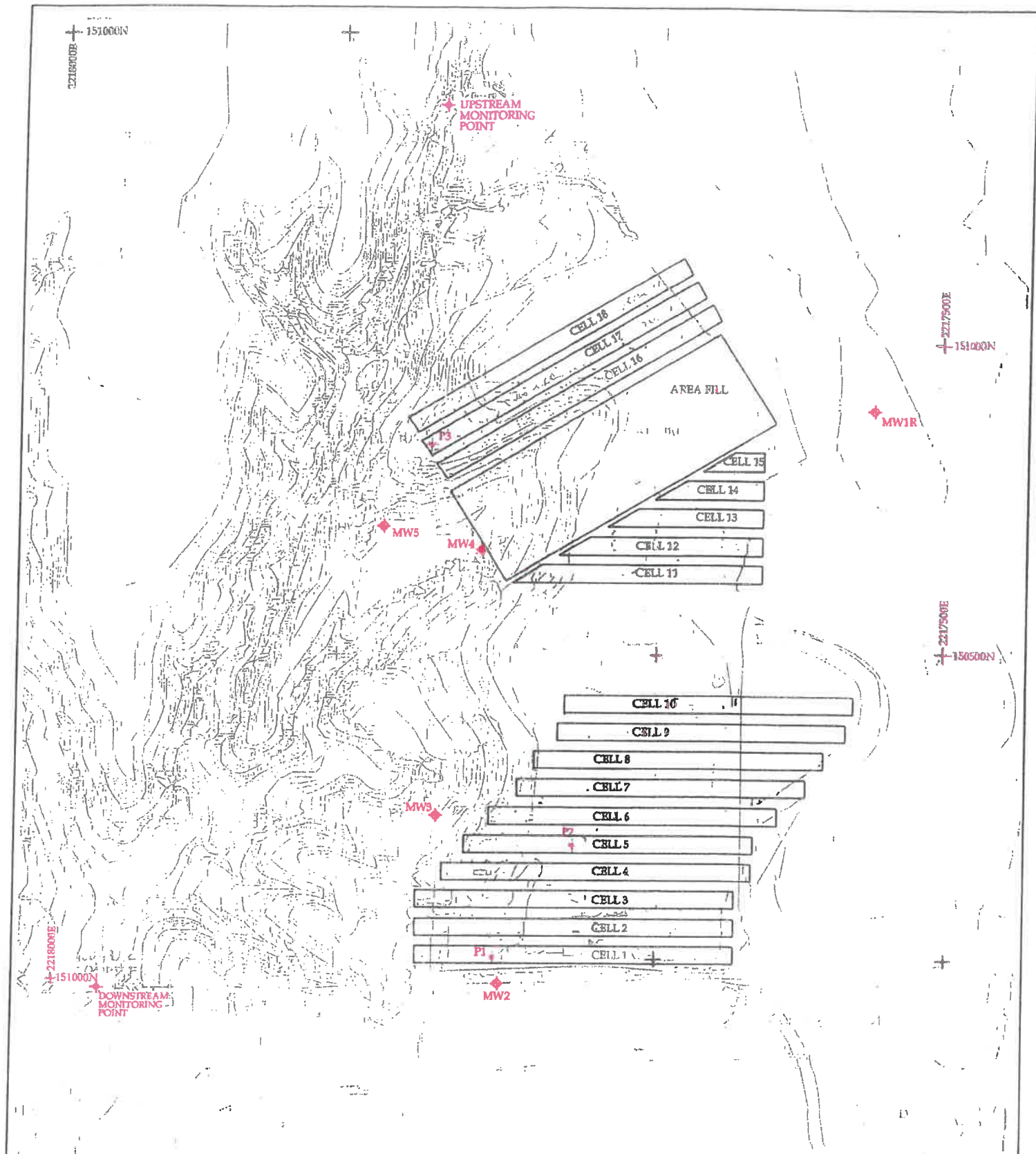
DATE:
11/04/03

REVIEWED BY:
SK

DRAWN BY:
RLH

LUST #:
N/A

SCALE:
1" = 30'



- ◆ MONITORING WELL
- ◆ SURFACE WATER MONITORING POINT
- ◆ TOGRAPHIC WPT



FILE NAME:
ROSE BROTHERS
PROJECT NO:
6247600



Seneca
Companies
Environmental Services

REVISED:
11/24/03
DATE:
11/04/03

SITE: ROSE BROTHER'S LANDFILL
ROQUETTE AMERICA
KBOKUK, IOWA
SITE PLAN MAP

LUST #:
N/A
SCALE:
1" = 200'

REVIEWED BY:
SK
DRAWN BY:
RLH