

West Des Moines, IA

PROJECT: Louisa Co, FY25 Env Comp & On-Call, IA 27223216.25      DATE: 12/31/2024

SUBJECT: Louisa County Sanitary Landfill - 58-SDP-01-74C - 2024 Annual Water Quality Report      TRANSMITTAL ID: 00001

PURPOSE: For your approval      VIA: Info Exchange

FROM

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Sean Marczewski West Des Moines, IA	SCS Engineers	SMarczewski@scsengineers.com	+1-515-631-6152

TO

NAME	COMPANY	EMAIL	PHONE
Brad Davidson		brad.davison@dnr.iowa.gov	

REMARKS: Brad -

Please find for your download the Louisa County Sanitary Landfill 2024 Annual Water Quality Report. Let us know if you have any questions or comments.

Thanks,

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DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	12/31/2024	Louisa County Sanitary Landfill - 58-SDP-01-74C - 2024 Annual Water Quality Report 12.31.2024.pdf	

COPIES:

Becky Jolly  
Brad Quigley  
Joellen Schantz

(Louisa County Regional Solid Waste Agency)  
(Louisa County Regional Solid Waste Agency)

# Transmittal

DATE: 12/31/2024  
TRANSMITTAL ID: 00001

Tim Buelow  
Sean Marczewski  
ashutt@louisacountyia.gov

(SCS Engineers)  
(SCS Engineers)

December 31, 2024  
File No. 27223216.25

Mr. Brad Davidson  
Iowa Department of Natural Resources  
Land Quality Bureau  
6200 Park Avenue  
Des Moines, Iowa 50321

Subject: 2024 Annual Water Quality Report  
Louisa County Sanitary Landfill (Closed)  
Permit No. 58-SDP-01-74C

Dear Brad:

SCS Engineers (SCS), on behalf of the Louisa County Regional Solid Waste Agency, has completed the Annual Water Quality Report for the Louisa County Sanitary Landfill for the year 2024, as described in Permit Amendment No. 17 dated December 27, 2022 (Doc #105379). Our services were performed in general accordance with the requirements of the 1989 Iowa Administrative Code (IAC) 567-103(455B), 113.10(2)"f", the current requirements for implementation of the Hydrologic Monitoring System Plan (HMSP), and the Permit Amendment mentioned above. Please find enclosed a copy of the 2024 Annual Water Quality Report for the Louisa County Sanitary Landfill.

If you have any questions regarding this report, please contact us at (515) 631-6160.

Sincerely,



Sean Marczewski  
Project Professional  
SCS Engineers



Timothy C. Buelow, P.E.  
Senior Project Advisor  
SCS Engineers

SAM/TCB

Copies: Mr. Brad Quigley, Louisa County Solid Waste Agency  
Mr. Adam Shutt, Louisa County Engineer



# 2024 Annual Water Quality Report

Louisa County Sanitary Landfill  
Cairo, Iowa  
Permit No. 58-SDP-01-74C

Prepared for:

Louisa County Regional Solid Waste Agency

**SCS ENGINEERS**

27223216.25 | December 31, 2024

1690 All-State Court, Suite 100  
West Des Moines, IA 50265  
515-631-6160

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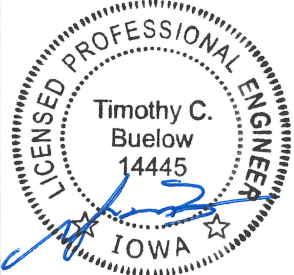
# CERTIFICATION

Prepared by: Sean Marczewski Date: 12/31/2024

Typed: Sean Marczewski

Reviewed by: [Signature] Date: 12/31/2024

Typed: Timothy C. Buelow, P.E.

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p><u>[Signature]</u> Date: <u>12/31/2024</u></p> <p>Timothy C. Buelow, P.E.</p> <p>License No. 14445</p> <p>My license renewal date is December 31, 2025.</p> <p>Pages or sheets covered by this seal: All except Appendix B-1.</p> <p>_____</p> <p>_____</p>
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## 1.0 INTRODUCTION

### 1.1 PURPOSE

SCS Engineers (SCS), on behalf of the Louisa County Regional Solid Waste Agency, has completed the required groundwater sampling at the closed Louisa County Sanitary Landfill (Landfill). This report was prepared in accordance with the requirements of the 1989 Iowa Administrative Code (IAC) 567-103(455B), Permit No. 58-SDP-01-74C, and applicable permit amendments. This report summarizes the 2024 site groundwater monitoring program as described in Permit Amendment #17 dated December 27, 2022 (Doc #105379).

### 1.2 REPORT PRIORITY

The following summarizes report priorities associated with groundwater compliance at the Louisa County Sanitary Landfill (Landfill):

- **Department review urgency:** Discontinuing sampling for cadmium, selenium, and zinc in monitoring well MW-18 and reducing the reporting frequency to biennially are requested. See Section 4.3 for justification.
- **Department review impact on rules schedule:** None.
- **Action or activities on hold pending Department review or comment:** None.
- **Actions and/or permit amendments needed:** None.

### 1.3 RESPONSE TO DNR COMMENTS

The Iowa Department of Natural Resources (DNR) documented their review of the 2023 AWQR (Doc #108361) in DNR correspondence dated June 21, 2024 (Doc #110298). No response was required.

### 1.4 SITE LOCATION

The Landfill is depicted on **Figure 1**, Approved Monitoring Network. The Landfill is located approximately seven miles west of Wapello, Iowa and one-half mile north of Cairo, Iowa. The Landfill is in the SW  $\frac{1}{4}$ , SW  $\frac{1}{4}$ , Section 21, T74N, R4W in Louisa County, Iowa.

### 1.5 BACKGROUND

According to the document entitled *Hydrogeological Investigation and Leachate Assessment Report for the Louisa County Landfill*, dated August 1990 and prepared by James M. Montgomery Consulting Engineers, Inc. (1990 HIR), the Landfill is a 40-acre site that was closed on or about February 1, 1995, although waste was no longer accepted prior to October 1994. According to current maps, the Landfill is located on a 16.2-acre property and the solid waste disposal area covers approximately 8.2 acres.

### 1.6 SAMPLING SUMMARY

**Table 1-1** summarizes the HMSP monitoring points and sampling conducted during the November 2024 biennial sampling event.



Table 1-1. 2024 AWQR Reporting Period Monitoring Summary

Monitoring Well	November 2024
MW-18 (u)	Reduced Metals List, TSS
MW-13	Reduced Metals List, TSS
MW-14	Sample Not Required This Period
MW-15	Reduced Metals List, TSS
MW-19	Sample Not Required This Period
SW-2*	Appendix I

TSS: Total Suspended Solids

Reduced Metals List Includes: Arsenic, Barium, Cadmium, Cobalt, Lead, Nickel, Selenium, and Zinc.

\*A sample was collected from monitoring point SW-2 during the 2024 sampling event. A sample will be attempted next during the 2027 biennial sampling event.

A surface water sample from monitoring point SW-2 was collected during the 2024 reporting period, therefore, in accordance with Permit Amendment #17 (Doc #105379), a sample from monitoring point SW-2 will be attempted next in 2027 and every three years after if a sample is able to be obtained.

The reporting period for this AWQR is the 2024 calendar year and includes the November 2024 sampling event. The field sampling forms and laboratory analytical data sheets for the 2024 sampling event are included in **Appendices A** and **B-1**, respectively. Data validation documentation is included in **Appendix B-2**.

## 2.0 HYDROGEOLOGIC SITE SUMMARY

### 2.1 GEOLOGY OF THE SITE

The following information regarding the geology of the site was obtained from the previously referenced 1990 HIR:

*...the surface soils in the area are derived from windblown loess and glacial till. The surface soils at the site are described as loam to silty clay loam. The Iowa Soil Conservation Survey report for Louisa County, Iowa identifies this soil as part of the Clinton-Lindley Association group of soils.*

*...the upland glacial deposits consist of a loess mantle of clayey silt over a light brown, sandy, silty clay. Underneath the clay, a gray, sandy, silty clay is present. The downslope glacial deposits consist of a light brown, sandy, silty clay overlying a dark gray clay.*

*Boring logs indicate that the uppermost bedrock systems at the landfill are Devonian units consisting of a sequence of dolomites, shales, and limestones. The geologic units comprising this system are (from youngest to oldest in descending order) the Lime Creek Formation, Cedar Valley Limestone, and Wapsipinicon Formation. The Lime Creek Formation, which is part of the upper Devonian Series, is classified as an aquiclude. The Cedar Valley Limestone and Wapsipinicon Formation are part of the Middle Devonian Series, which is classified as an aquifer. According to D.L. Gordon, of the Iowa Geologic Survey, in his report entitled, Groundwater Resources of Louisa County (#80-58WRD), water from this aquifer is highly mineralized, contains extremely high total dissolved solids and elevated concentrations of sulfate. These conditions make the water from this aquifer unfit for human and animal*

consumption in most parts of the county, including the area surrounding the Louisa County Sanitary Landfill.

Based on the IGSB boring log Form #13812, the elevation of the bedrock is approximately 479 feet NGVD. Therefore, the depth to bedrock is approximately 170 feet in the lowlands and approximately 240 feet in the highlands.

## 2.2 HYDROLOGY OF THE SITE

The following hydrological information for the site was obtained from the previously referenced 1990 HIR:

*All of the surface water draining from the site and adjacent area flows to a small stream leaving the northern boundary of the Louisa County Sanitary Landfill. The landfill operation uses a deep ravine as the fill area. Drainage through the ravine has been modified to flow through a 1,380-foot long reinforced concrete pipe in a generally south to north orientation.*

*The water table is found within the surficial deposits at the site.*

According to the geological cross sections in the 1990 HIR, the water table is within the glacial till layer.

## 3.0 MONITORING WELL MAINTENANCE AND PERFORMANCE EVALUATION

A maintenance and performance evaluation of the monitoring wells is required in accordance with IAC 567-113.10(2)"f" and approved in Permit Amendment #9 (Doc #80138). Topics requiring biennial examination are discussed below.

### 3.1 WATER LEVEL MEASUREMENTS

The results of the water level measurements obtained by SCS during the 2024 sampling event are summarized in **Table 3-1**.

Table 3-1. Water Level Evaluation Summary

Monitoring Point	Top of Screen Elevation	Groundwater Elevation
		November 2024
MW-5	629.4	655.99
MW-7	642.9	653.27
MW-13	644.1	653.14
MW-14	686.0	677.07
MW-15	649.0	649.89
MW-17	640.8	654.51
MW-18	695.8	702.31
MW-19	653.7	655.56

All measurements in feet.

■ - Water elevation within the screened interval

Water levels were not observed to be within the screened interval during the 2024 biennial sampling event with the exception of monitoring well MW-14. Water levels during this reporting period

remained generally consistent with previous measurements. Based on the information in **Table 3-1**, the monitoring wells are adequately placed within the appropriate water table and at a vertical location which is more likely to detect a release from the Landfill, should one take place. Additionally, the monitoring wells are appropriately placed horizontally, generally no more than 600 feet from other monitoring wells, or at alternate spacing criteria dependent upon groundwater flow paths.

### 3.2 GROUNDWATER FLOW

Groundwater contours were determined for the Landfill using water elevation data collected by SCS personnel during the November 2024 sampling event. These contours are presented on **Figure 2**. The groundwater contours indicate that the water table flows from the east and west and converges along the approximate south-north alignment of the drainage pipe. The converging groundwater flow appears to generally flow north from the northern waste boundary and south from the southern waste boundary. The southerly flow direction likely reverses at some location south of the Landfill as creek flow indicates a northerly slope to the ravine in which the pipe beneath the Landfill is located.

### 3.3 WELL DEPTH EVALUATION

IAC 567-113.21(2)"c" requires annual measurements of well depths to ensure that wells are physically intact and not filling with sediment. The monitoring well depths measured during this reporting period are included in **Table 3-2**.

Table 3-2. Total Well Depth Evaluation

Monitoring Point	Installed Well Depth (feet)	November 2024	
		Measured Well Depth (feet)	Difference from Installed Depth (feet)
MW-5	36.7	37.08	0.38
MW-7	30.0	30.18	0.18
MW-13	17.1	16.94	0.16
MW-14	22.1	22.09	0.01
MW-15	17.2	17.19	0.01
MW-17	34.0	34.00	0.00
MW-18	38.2	38.21	0.01
MW-19	23.2	23.24	0.04

As shown in **Table 3-2**, the monitoring well depths measured during the 2024 sampling event were within 1.0 foot of the installed depths. The monitoring well total depth measurements are consistent with historical well depth measurements.

The monitoring wells produced sufficient water volumes for sampling during the 2024 sampling event. Based on the depth evaluation and the measured total suspended solids (TSS) concentrations, it is not likely that siltation is occurring to a sufficient extent in the monitoring wells at the Landfill to negatively affect future sampling.

### 3.4 WELL RECHARGE EVALUATION

IAC 567-113.21(2)"f"(4) requires a biennial evaluation of well recharge rates and chemistry to determine if well deterioration is occurring. Well recharge rates will be included in the next AWQR.

### 3.5 SAMPLING POINT OBSERVATIONS

A kink was noted in monitoring well MW-13 during recent sampling events; however, as it has not affected the ability of the monitoring well to produce a sample, no changes are recommended at this time. The monitoring well will continue to be monitored. SCS field staff observed no other problems regarding the integrity of the monitoring wells during the 2024 sampling event.

Sampling of surface water monitoring point SW-2 is required every three years in accordance with Permit Amendment #17 dated December 27, 2022 (Doc #105379). A sample was obtained during the 2024 reporting period; therefore, the next sample will be attempted in 2027.

### 3.6 MONITORING SYSTEM RECOMMENDATIONS

Efforts were made to reduce TSS concentrations prior to the 1<sup>st</sup> 2015 semi-annual sampling event with the installation of low-flow sampling apparatuses in HMSP monitoring wells. Since installation of low-flow sampling apparatuses, site-wide TSS concentrations have continued to decrease and were less than 5 mg/L during this reporting period. SCS recommends low-flow sampling methods continue to be utilized for future sampling events.

## 4.0 EVALUATION OF WATER QUALITY PARAMETERS

The historical analytical results of the groundwater monitoring points and surface water monitoring points for the Landfill are presented in **Appendix C** (Summary of Groundwater Chemistry). The statistical output, which includes time series graphs, Mann-Kendall trend table and graphs, confidence interval table and graphs, and Thiel Sen trend tables and graphs, are included in **Appendix D**.

Groundwater monitoring was performed in accordance with Permit Amendment #17 issued December 27, 2022 (Doc #105379), which required annual sampling of a reduced metals list and TSS for monitoring well MW-18 as well as biennial sampling of a reduced metals list and TSS for monitoring wells MW-13 and MW-15, during the 2024 reporting period. Surface water sampling at location SW-2 was required in 2024 and during every third year following an obtainable sample. As a sample was obtained during the 2024 reporting period, sampling will be attempted again during the 2027 reporting period. Sampling results are summarized in **Table 4-1**.

Table 4-1. 2024 Constituent Concentration Summary

Constituent	GWPS	MW-18 (u)	MW-13	MW-14*	MW-15	MW-19*	SW-2
Arsenic (mg/L)	0.01	0.00378					
Barium (mg/L)	2.0	0.157	0.0834		0.102		0.0249
Cadmium (mg/L)	0.005						
Cobalt (mg/L)	0.0021	0.000722	0.00118		0.00108		
Lead (mg/L)	0.015						
Nickel (mg/L)	0.1		0.0113		0.00929		

Selenium (mg/L)	0.05						
Zinc (mg/L)	2.0						
Total Suspended Solids (mg/L)	NA		3.50				

J flag concentrations not included in the table.

NA: Not Applicable; An established groundwater protection standard does not exist.

(u): Upgradient monitoring well.

\*: Downgradient monitoring wells were permitted to be sampled in alternate years beginning with the 2023 reporting period. Monitoring wells MW-14 and MW-19 will be sampled next in 2025.

The measured concentrations were compared to current Iowa Statewide Standards for protected groundwater sources (GWPS). There were no VOC detections above the reporting limit in the monitoring wells that were sampled at the Landfill during the 2024 reporting period.

**Figure 3** shows the range of measured concentrations by monitoring point for the sampled HMSP monitoring wells.

### Trends

Mann-Kendall trend analysis was conducted for the most recent eight samples including the 2024 sampling event. Mann-Kendall trend table and graphs are included in the Statistical Output in **Appendix D**. There was one statistically significantly increasing trend, which was for barium in monitoring well MW-13 during this reporting period.

### Confidence Intervals

As part of this AWQR, confidence intervals were calculated on detected monitoring well-constituent pairs with five or more data points. Of the monitoring well-constituent pairs evaluated, lower confidence limits remained below the GWPS for all monitoring well-constituent pairs. A confidence interval summary table and graphs are included as part of the Statistical Output in **Appendix D**.

## **4.1 POTENTIAL RECEPTORS**

Pursuant to guidance from the DNR, if maximum contaminant levels (MCLs) are exceeded at any groundwater monitoring point, information is to be provided regarding potential receptors. There were no MCL exceedances during this reporting period.

## **4.2 QA/QC INFORMATION**

The quality assurance/quality control (QA/QC) program for the Landfill follows similar protocols as included in the HMSP. Data validation procedures were performed on analytical results for laboratory quality control samples and a quality assurance assessment of the data was conducted as the data were generated. The QA review procedure provides documentation of the accuracy and precision of the analytical data and confirms that the analyses were sufficiently sensitive to detect constituents at levels below regulatory standards, where such standards exist. SCS then conducted QA/QC data validation of the produced data, which included review of sample handling, analytical sensitivity and blanks, accuracy, and precision.

Based on the QA review, no samples were rejected as unusable due to QC failures. In general, the quality of the analytical data for this reporting period does not appear to have been compromised by

analytical irregularities and results affected by QC anomalies are qualified with the appropriate data flags, which are listed in the laboratory reports in **Appendix B-1**. A data validation checklist is provided in **Appendix B-2**.

### 4.3 CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE MONITORING

The following changes are recommended to the monitoring program:

1. Discontinue sampling for cadmium in monitoring well MW-18. Cadmium has not been detected above the laboratory reporting limit for the last six sampling events.
2. Discontinue sampling for selenium in monitoring well MW-18. Selenium has not been detected above the laboratory reporting limit in the last ten sampling events. During the last ten sampling events, the only indication of selenium was a j-flag concentration in the 2023 sampling event.
3. Discontinue sampling for zinc in monitoring well MW-18. Zinc has not been detected above the laboratory reporting limit in the last eleven sampling events. During the last eleven sampling events, the only indication of zinc was a j-flag concentration in the 2019 sampling event.
4. Since down-gradient monitoring wells are sampled on a biennial basis, it is recommended that the reporting frequency be reduced to biennial to coincide with a reporting period includes one sample from each of the down-gradient monitoring wells specified in Permit Amendment #17 dated December 27, 2022 (Doc #105379). If approved, a Biennial Water Quality Report would next be submitted in 2026.

No other proposed changes to the monitoring plan are recommended at this time. The 2025 and 2026 groundwater sample parameters shown in **Table 4-2** do not reflect these requested changes. If approved, the parameter list shown in **Table 4-2** will be adjusted to reflect the approved changes.

Table 4-2. 2025 & 2026 AWQR Reporting Period Sampling Schedule

Monitoring Point	2025 Biennial	2026 Biennial
MW-18 (u)	Reduced Metals List, TSS	Reduced Metals List, TSS
MW-13	NS	Reduced Metals List, TSS
MW-14	Reduced Metals List, Appendix I VOCs, TSS	NS
MW-15	NS	Reduced Metals List, TSS
MW-19	Reduced Metals List, Appendix I VOCs, TSS	NS
SW-2*	NS	NS

NS: No Sample, Downgradient monitoring wells are sampled in alternate years.

Reduced Metals List Includes: Arsenic, Barium, Cadmium, Cobalt, Lead, Nickel, Selenium, and Zinc.

\* SW-2 is required to be sampled every three years. A sample was obtained during the 2024 reporting period. The next sample will be attempted during the 2027 sampling event.

## 5.0 GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from the samples collected at the indicated locations and from any other information discussed in this report. This report does not reflect any variation in subsurface stratigraphy, hydrogeology, or chemical concentrations that may occur between sampling locations or across the site. Actual subsurface conditions may vary and may not become evident without further exploration.

SCS has prepared this report for the exclusive use of our client for the specific application to the project discussed. No warranty is expressly stated or implied in this report with regard to the condition of substrate and groundwater below the surface of the facility. SCS has relied upon information furnished by others as noted in the report, and SCS accepts no responsibility for any deficiency, misstatements, or inaccuracy in this report as a result of misstatements, omissions, misrepresentations, fraudulent, or inaccurate information or data provided by others.

## 6.0 REFERENCES

1. James M. Montgomery Consulting Engineers, Inc. *Hydrogeological Investigation and Leachate Assessment Report for the Louisa County Sanitary Landfill*, prepared for the Louisa County Regional Solid Waste Agency, Wapello, Iowa, August 1990.
2. James M. Montgomery Consulting Engineers. *Hydrologic Investigation Report, Louisa County Sanitary Landfill*, August 1992.
3. Iowa Department of Natural Resources. *Annual Report 1997, Registry of Hazardous Waste or Hazardous Substance Disposal Sites and Hazardous Waste Remedial Fund*, January 1998.
4. SCS Engineers. *2023 Annual Water Quality Report, Louisa County Sanitary Landfill (Closed)*, November 2023.

## Figures

- 1 Approved Monitoring Network
- 2 Groundwater Contours
- 3 Reporting Period Detection Summary



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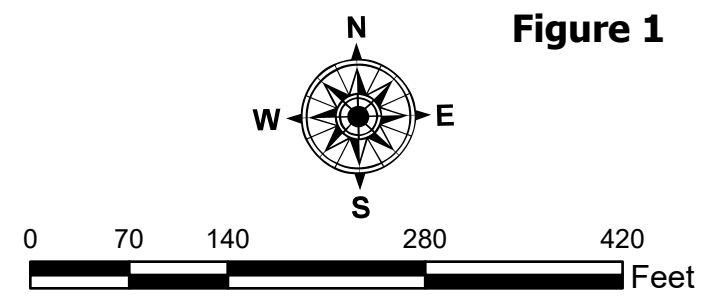


Monitoring Well	Monitoring Program
MW-13	Routine
MW-14	Background
MW-15	Routine
MW-18	Background
MW-19	Routine
SW-2	Routine

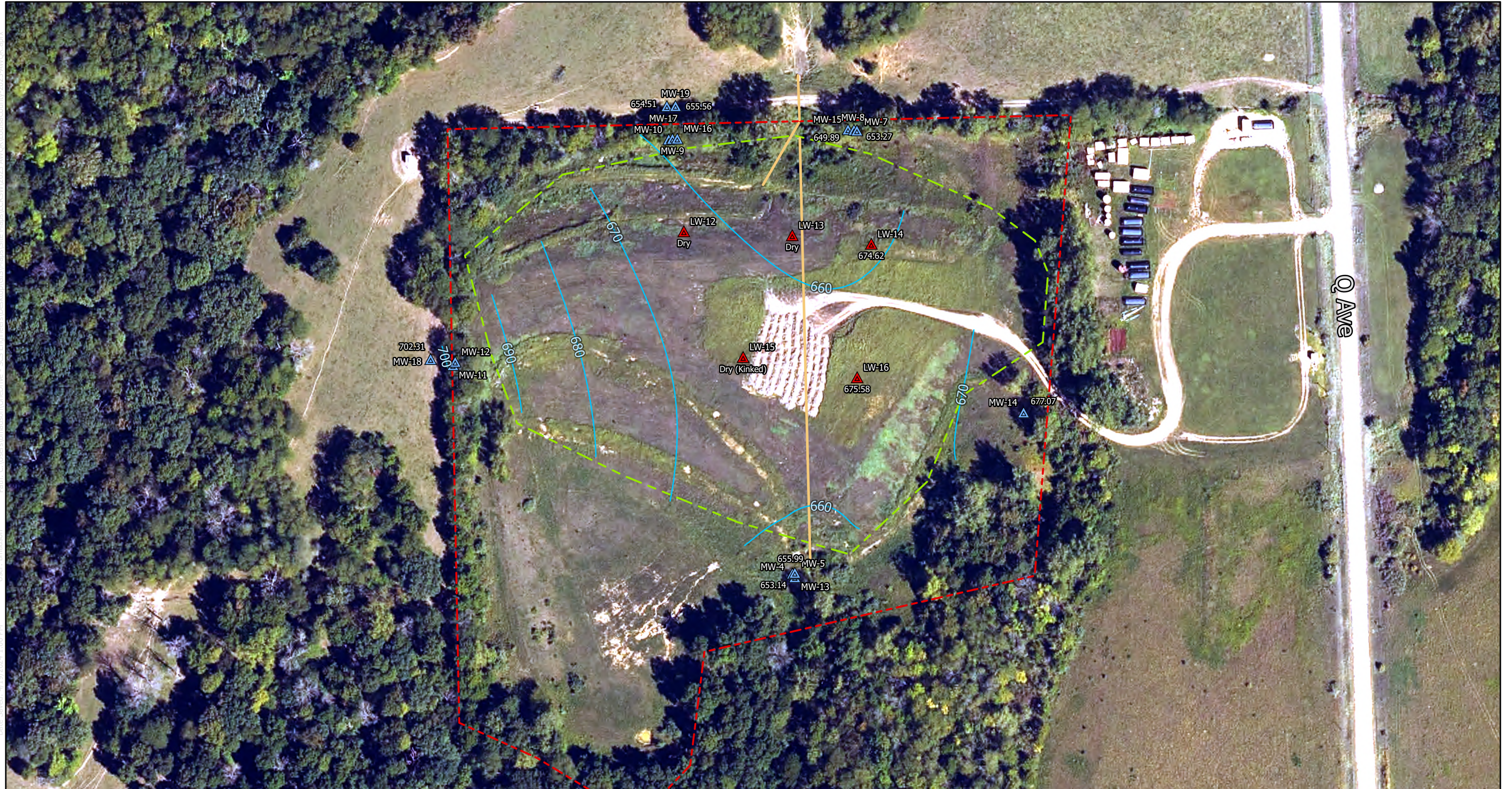
## Approved Monitoring Network

Legend			
	Surface Water Monitoring Point		Culvert
	Monitoring Well		Approximate Property Boundary
	HMSP Monitoring Well		Located Waste Boundary
	Methane Monitoring Point		Leachate Monitoring Point

Louisa County Sanitary  
 Landfill  
 Cairo, Iowa  
 Project No: 27223216.25  
 Drawing Date: December  
 2024



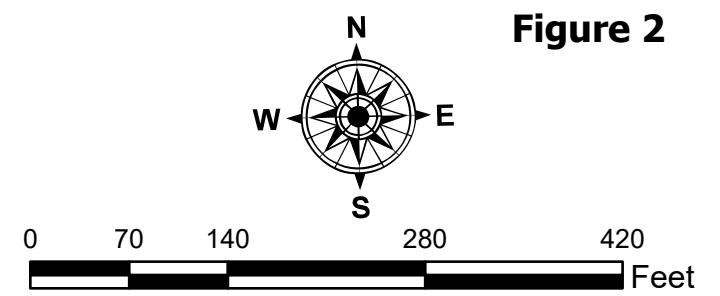
**Figure 1**



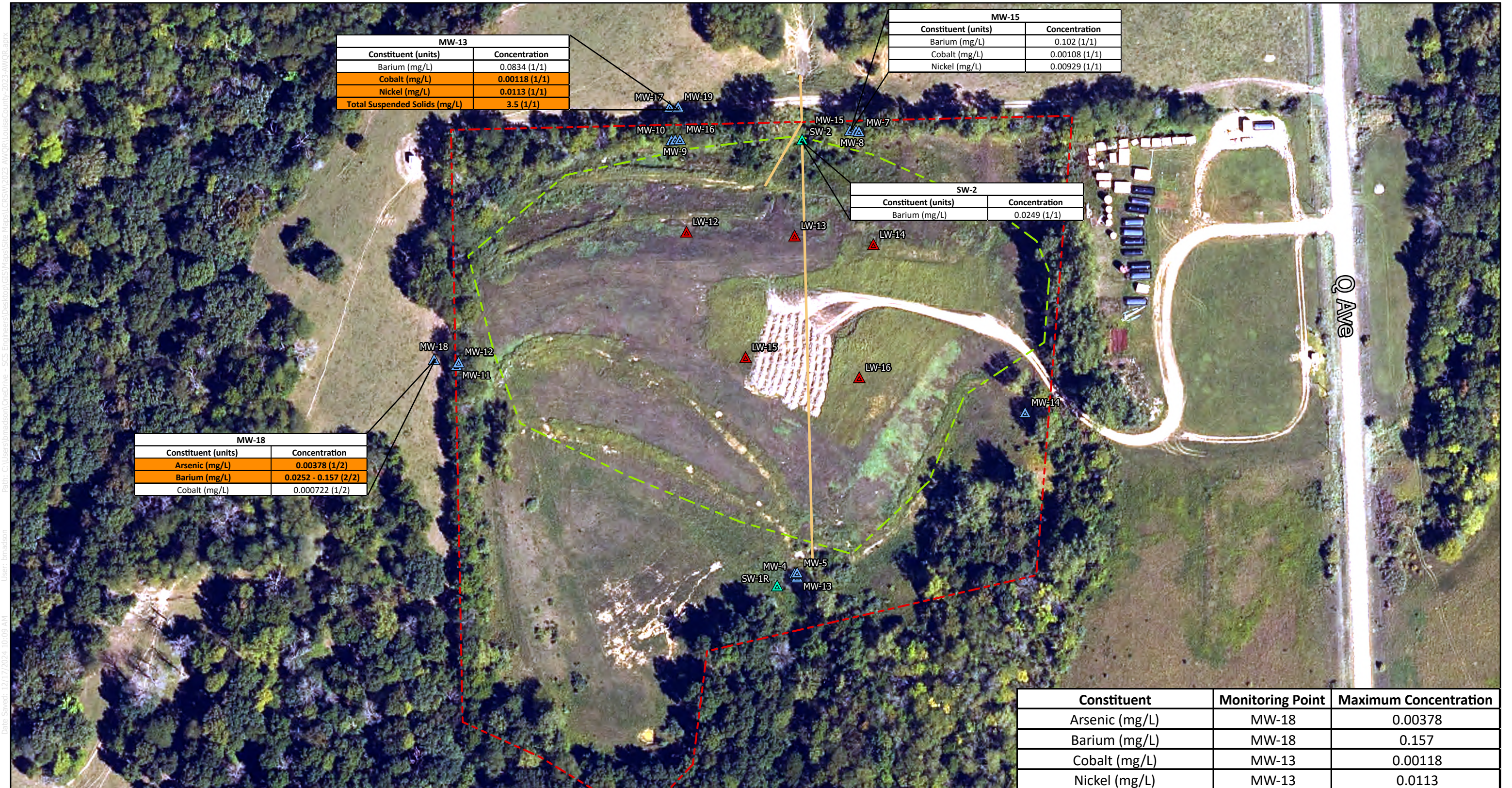
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## Groundwater Contours

<b>Legend</b>		Louisa County Sanitary Landfill Cairo, Iowa Project No: 27223216.25 Drawing Date: December 2024
<p>Approximate Groundwater Contours Based on Field Measurements Taken November 18, 2024</p> <p>Monitoring Well</p>	<p>Leachate Monitoring Point</p> <p>Culvert</p> <p>Located Waste Boundary</p> <p>Approximate Property Boundary</p>	



**Figure 2**

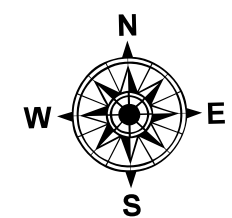


## Reporting Period Detection Summary


### Legend

- ▲ Monitoring Well
- ▲ Surface Water Monitoring Point
- ▲ Leachate Monitoring Point
- Culvert
- Located Waste Boundary
- Approximate Property Boundary

Louisa County Sanitary  
Landfill  
Cairo, Iowa  
Project No: 27223216.25  
Drawing Date: December  
2024



**Figure 3**



Appendix A  
Field Sampling Forms

## FORM FOR GROUNDWATER SAMPLING

Project:	<b>Louisa County Sanitary Landfill</b>		
Monitoring Well/Piezometer ID:	<b>MW-13</b>	Date:	<b>11/21/2024</b>
Gradient:	Down	Sampler:	Michael Morgan

### A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes	
Litter/Standing Water?	No	

### B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	16.9
Initial Static Water Level (feet):	3.01
Initial Groundwater Elevation (ft-amsl):	653.14
Equipment Used:	Dedicated Tubing – Peristaltic Pump

### C. WELL PURGING

#### FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:26 AM	Purging start time.						
11:29 AM	11.6	2.7	1651.3	7.14	85.2	5.6	
11:32 AM	11.6	1.4	1642.2	7.11	76.9	6.5	
11:35 AM	11.4	1.0	1639.0	7.10	64.6	6.7	
11:38 AM	11.6	0.7	1638.0	7.10	51.5	7.0	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

### D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	

Additional Comments:	Color: clear    Odor: none
----------------------	----------------------------

### FORM FOR GROUNDWATER SAMPLING

Project: **Louisa County Sanitary Landfill**  
 Monitoring Well/Piezometer ID: **MW-15** Date: **11/21/2024**  
 Gradient: **Down** Sampler: **Michael Morgan**

**A. MW/PIEZOMETER CONDITIONS**

Well/Piezometer Capped? **Yes**  
 Litter/Standing Water? **No**

**B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)**

Measured Well Total Depth (feet): **17.2**  
 Initial Static Water Level (feet): **11.33**  
 Initial Groundwater Elevation (ft-amsl): **649.89**  
 Equipment Used: **Dedicated Tubing – Peristaltic Pump**

**C. WELL PURGING**

**FIELD PARAMETERS** [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)
1:14 PM	Purging start time.					
1:17 PM	13.1	2.7	2444.9	6.61	17.2	2.8
1:20 PM	13.4	1.4	2279.3	6.55	22.2	2.2
1:23 PM	13.5	1.6	2124.1	6.58	18.4	2.2
1:26 PM	13.7	2.6	2073.4	6.62	14.3	2.2
Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters): **2.0**  
 Was well pumped/bailed dry? **No**  
 Total Amount of Time Purged (minutes:seconds): **12:00**  
 Average Purge Rate (mL/min): **166.67**

**D. WELL MAINTENANCE**

Does the well require any future maintenance? **Yes** | Lock needed  
 If yes, explain: **New lock needed.**

Additional Comments: **Color: clear Odor: slight sulfur smell**

## FORM FOR GROUNDWATER SAMPLING

Project:	<b>Louisa County Sanitary Landfill</b>		
Monitoring Well/Piezometer ID:	<b>MW-18</b>	Date:	<b>11/21/2024</b>
Gradient:	Up	Sampler:	Michael Morgan

A. MW/PIEZOMETER CONDITIONS			
Well/Piezometer Capped?	Yes		
Litter/Standing Water?	No		


B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	38.2
Initial Static Water Level (feet):	21.32
Initial Groundwater Elevation (ft-amsl):	702.31
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:52 PM	Purging start time.						
2:55 PM	11.7	2.9	1325.2	7.05	74.3	2.7	
2:58 PM	11.6	1.5	1328.0	6.93	72.9	2.6	
3:01 PM	11.7	0.9	1326.4	6.89	69.1	2.6	
3:04 PM	11.6	0.7	1329.4	6.86	65.1	2.9	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	125.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	Yes
If yes, explain:	Well inner casing need to be cut down 1-2 inches.

Additional Comments:	Color: clear    Odor: none
----------------------	----------------------------



Appendix B-1  
Laboratory Analytical Data





# ANALYTICAL REPORT

## PREPARED FOR

Attn: Ben Madson  
SCS Engineers  
1690 All State Court  
Suite 100  
West Des Moines, Iowa 50265

Generated 12/2/2024 9:11:30 PM

## JOB DESCRIPTION

2024 Annual Groundwater Sampling  
Louisa County Sanitary Landfill

## JOB NUMBER

310-295914-1

# Eurofins Cedar Falls

## Job Notes

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

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

## Authorization



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12/2/2024 9:11:30 PM

Authorized for release by  
Samuel Miller, Project Management Assistant I  
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# Case Narrative

Client: SCS Engineers  
Project: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1

**Job ID: 310-295914-1**

**Eurofins Cedar Falls**

## Job Narrative 310-295914-1

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 11/22/2024 4:30 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C.

### GC/MS VOA

Method 8260D: The preservative used in the sample containers provided is not compatible with one of the Method 8260 analytes requested. The following sample(s) was received preserved with hydrochloric acid. Vial preservation was pH <2 rather than pH 4-5. : SW-2 (310-295914-4) and Trip Blank (310-295914-6). The requested target analyte list includes Acrylonitrile, an acid-labile compound that degrades in an acidic medium.

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

### Metals

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

### General Chemistry

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

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# Sample Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-295914-1	MW-13	Water	11/21/24 11:38	11/22/24 16:30
310-295914-2	MW-15	Water	11/21/24 13:26	11/22/24 16:30
310-295914-3	MW-18	Water	11/21/24 15:04	11/22/24 16:30
310-295914-4	SW-2	Water	11/21/24 14:15	11/22/24 16:30
310-295914-5	MW-D	Water	11/21/24 15:04	11/22/24 16:30
310-295914-6	Trip Blank	Water	11/21/24 00:00	11/22/24 16:30

- 1
- 2
- 3
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- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

# Detection Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

## Client Sample ID: MW-13

Lab Sample ID: 310-295914-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0834		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00118	B	0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0113		0.00500	0.00210	mg/L	1		6020B	Total/NA
Total Suspended Solids	3.50		1.88	1.39	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-15

Lab Sample ID: 310-295914-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.102		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00108	B	0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00929		0.00500	0.00210	mg/L	1		6020B	Total/NA

## Client Sample ID: MW-18

Lab Sample ID: 310-295914-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00378		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.157		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000722	B	0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00241	J	0.00500	0.00210	mg/L	1		6020B	Total/NA

## Client Sample ID: SW-2

Lab Sample ID: 310-295914-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0249		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000186	J B	0.000500	0.000170	mg/L	1		6020B	Total/NA

## Client Sample ID: MW-D

Lab Sample ID: 310-295914-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0252		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.000237	J B	0.000500	0.000170	mg/L	1		6020B	Total/NA

## Client Sample ID: Trip Blank

Lab Sample ID: 310-295914-6

No Detections.

This Detection Summary does not include radiochemical test results.

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# Quantitation Limit Exceptions Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

The requested project specific reporting limits listed below were less than laboratory standard quantitation limits (PQL) but greater than or equal to the laboratory method detection limits (MDL). It must be noted that results reported below lab standard quantitation limits may result in false positive/false negative values and less accurate quantitation. Routine laboratory procedures do not indicate corrective action for detections below the laboratory's PQL.

Method	Analyte	Matrix	Prep Type	Unit	Client RL	Lab PQL
8260D	1,2-Dibromo-3-Chloropropane	Water	Total/NA	ug/L	1.20	5
8260D	1,2-Dibromoethane (EDB)	Water	Total/NA	ug/L	0.340	1

- 1
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- 9
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- 11
- 12
- 13
- 14
- 15
- 16

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: MW-13**

**Lab Sample ID: 310-295914-1**

Date Collected: 11/21/24 11:38

Matrix: Water

Date Received: 11/22/24 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 21:02	1
<b>Barium</b>	<b>0.0834</b>		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 21:02	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 21:02	1
<b>Cobalt</b>	<b>0.00118</b>	<b>B</b>	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 21:02	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 21:02	1
<b>Nickel</b>	<b>0.0113</b>		0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 21:02	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 21:02	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 21:02	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>3.50</b>		1.88	1.39	mg/L			11/26/24 19:49	1



# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: MW-15**

**Lab Sample ID: 310-295914-2**

Date Collected: 11/21/24 13:26

Matrix: Water

Date Received: 11/22/24 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 21:05	1
<b>Barium</b>	<b>0.102</b>		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 21:05	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 21:05	1
<b>Cobalt</b>	<b>0.00108</b>	<b>B</b>	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 21:05	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 21:05	1
<b>Nickel</b>	<b>0.00929</b>		0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 21:05	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 21:05	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 21:05	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	1.39	mg/L			11/26/24 19:49	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: MW-18**

**Lab Sample ID: 310-295914-3**

Date Collected: 11/21/24 15:04

Matrix: Water

Date Received: 11/22/24 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>0.00378</b>		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 21:08	1
<b>Barium</b>	<b>0.157</b>		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 21:08	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 21:08	1
<b>Cobalt</b>	<b>0.000722</b>	<b>B</b>	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 21:08	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 21:08	1
<b>Nickel</b>	<b>0.00241</b>	<b>J</b>	0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 21:08	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 21:08	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 21:08	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	1.39	mg/L			11/26/24 19:49	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: SW-2**

**Lab Sample ID: 310-295914-4**

Date Collected: 11/21/24 14:15

Matrix: Water

Date Received: 11/22/24 16:30

**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	0.380	ug/L			11/28/24 01:40	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/28/24 01:40	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/28/24 01:40	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/28/24 01:40	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/28/24 01:40	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/28/24 01:40	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/28/24 01:40	1
1,2-Dibromo-3-Chloropropane	<1.20		1.20	1.20	ug/L			11/28/24 01:40	1
1,2-Dibromoethane (EDB)	<0.340		0.340	0.340	ug/L			11/28/24 01:40	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/28/24 01:40	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/28/24 01:40	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/28/24 01:40	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/28/24 01:40	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/28/24 01:40	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/28/24 01:40	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/28/24 01:40	1
Acetone	<10.0		10.0	3.10	ug/L			11/28/24 01:40	1
Acrylonitrile	<10.0		10.0	2.20	ug/L			11/28/24 01:40	1
Benzene	<0.500		0.500	0.220	ug/L			11/28/24 01:40	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/28/24 01:40	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/28/24 01:40	1
Bromoform	<5.00		5.00	0.780	ug/L			11/28/24 01:40	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/28/24 01:40	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/28/24 01:40	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/28/24 01:40	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/28/24 01:40	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/28/24 01:40	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/28/24 01:40	1
Chloroform	<3.00		3.00	1.30	ug/L			11/28/24 01:40	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/28/24 01:40	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/28/24 01:40	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/28/24 01:40	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/28/24 01:40	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/28/24 01:40	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/28/24 01:40	1
Methylene Chloride	<5.00		5.00	1.70	ug/L			11/28/24 01:40	1
Styrene	<1.00		1.00	0.370	ug/L			11/28/24 01:40	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/28/24 01:40	1
Toluene	<1.00		1.00	0.430	ug/L			11/28/24 01:40	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/28/24 01:40	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/28/24 01:40	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/28/24 01:40	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/28/24 01:40	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/28/24 01:40	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/28/24 01:40	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/28/24 01:40	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/28/24 01:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	112		73 - 130		11/28/24 01:40	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: SW-2**

**Lab Sample ID: 310-295914-4**

Date Collected: 11/21/24 14:15

Matrix: Water

Date Received: 11/22/24 16:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		80 - 120		11/28/24 01:40	1
4-Bromofluorobenzene (Surr)	100		80 - 120		11/28/24 01:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		11/27/24 09:00	11/27/24 21:11	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 21:11	1
<b>Barium</b>	<b>0.0249</b>		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 21:11	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/27/24 09:00	11/27/24 21:11	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 21:11	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/27/24 09:00	11/27/24 21:11	1
<b>Cobalt</b>	<b>0.000186</b>	<b>J B</b>	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 21:11	1
Copper	<0.00500		0.00500	0.00180	mg/L		11/27/24 09:00	11/27/24 21:11	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 21:11	1
Nickel	<0.00500		0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 21:11	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 21:11	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/27/24 09:00	11/27/24 21:11	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/27/24 09:00	11/27/24 21:11	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		11/27/24 09:00	11/27/24 21:11	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 21:11	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	3.70	mg/L			11/26/24 19:49	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: MW-D**

**Lab Sample ID: 310-295914-5**

Date Collected: 11/21/24 15:04

Matrix: Water

Date Received: 11/22/24 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 21:14	1
<b>Barium</b>	<b>0.0252</b>		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 21:14	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 21:14	1
<b>Cobalt</b>	<b>0.000237</b>	<b>J B</b>	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 21:14	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 21:14	1
Nickel	<0.00500		0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 21:14	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 21:14	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 21:14	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	1.39	mg/L			11/26/24 19:49	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-295914-6**

Date Collected: 11/21/24 00:00

Matrix: Water

Date Received: 11/22/24 16:30

**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	0.380	ug/L			11/27/24 20:35	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/27/24 20:35	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/27/24 20:35	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/27/24 20:35	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/27/24 20:35	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/27/24 20:35	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/27/24 20:35	1
1,2-Dibromo-3-Chloropropane	<1.20		1.20	1.20	ug/L			11/27/24 20:35	1
1,2-Dibromoethane (EDB)	<0.340		0.340	0.340	ug/L			11/27/24 20:35	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/27/24 20:35	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/27/24 20:35	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/27/24 20:35	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/27/24 20:35	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/27/24 20:35	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/27/24 20:35	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/27/24 20:35	1
Acetone	<10.0		10.0	3.10	ug/L			11/27/24 20:35	1
Acrylonitrile	<10.0		10.0	2.20	ug/L			11/27/24 20:35	1
Benzene	<0.500		0.500	0.220	ug/L			11/27/24 20:35	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/27/24 20:35	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/27/24 20:35	1
Bromoform	<5.00		5.00	0.780	ug/L			11/27/24 20:35	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/27/24 20:35	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/27/24 20:35	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/27/24 20:35	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/27/24 20:35	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/27/24 20:35	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/27/24 20:35	1
Chloroform	<3.00		3.00	1.30	ug/L			11/27/24 20:35	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/27/24 20:35	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/27/24 20:35	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/27/24 20:35	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/27/24 20:35	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/27/24 20:35	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/27/24 20:35	1
Methylene Chloride	<5.00		5.00	1.70	ug/L			11/27/24 20:35	1
Styrene	<1.00		1.00	0.370	ug/L			11/27/24 20:35	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/27/24 20:35	1
Toluene	<1.00		1.00	0.430	ug/L			11/27/24 20:35	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/27/24 20:35	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/27/24 20:35	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/27/24 20:35	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/27/24 20:35	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/27/24 20:35	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/27/24 20:35	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/27/24 20:35	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/27/24 20:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	114		73 - 130		11/27/24 20:35	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-295914-6**

Date Collected: 11/21/24 00:00

Matrix: Water

Date Received: 11/22/24 16:30

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

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Toluene-d8 (Surr)	94		80 - 120		11/27/24 20:35	1
4-Bromofluorobenzene (Surr)	100		80 - 120		11/27/24 20:35	1



# Definitions/Glossary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count



# Surrogate Summary

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

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

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DBFM	TOL	BFB
		(73-130)	(80-120)	(80-120)
310-295914-4	SW-2	112	95	100
310-295914-4 MS	SW-2	101	100	97
310-295914-4 MSD	SW-2	100	100	99
310-295914-6	Trip Blank	114	94	100
LCS 310-441015/6	Lab Control Sample	98	101	98
LCS 310-441015/7	Lab Control Sample	116	96	99
MB 310-441015/5	Method Blank	113	96	102

#### Surrogate Legend

- DBFM = Dibromofluoromethane (Surr)
- TOL = Toluene-d8 (Surr)
- BFB = 4-Bromofluorobenzene (Surr)



# QC Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: MB 310-441015/5**  
**Matrix: Water**  
**Analysis Batch: 441015**

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			11/27/24 19:08	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			11/27/24 19:08	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			11/27/24 19:08	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			11/27/24 19:08	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			11/27/24 19:08	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			11/27/24 19:08	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			11/27/24 19:08	1
1,2-Dibromo-3-Chloropropane	<1.20		1.20	1.20	ug/L			11/27/24 19:08	1
1,2-Dibromoethane (EDB)	<0.340		0.340	0.340	ug/L			11/27/24 19:08	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/27/24 19:08	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			11/27/24 19:08	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			11/27/24 19:08	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			11/27/24 19:08	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			11/27/24 19:08	1
2-Hexanone	<10.0		10.0	2.00	ug/L			11/27/24 19:08	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			11/27/24 19:08	1
Acetone	<10.0		10.0	3.10	ug/L			11/27/24 19:08	1
Acrylonitrile	<10.0		10.0	2.20	ug/L			11/27/24 19:08	1
Benzene	<0.500		0.500	0.220	ug/L			11/27/24 19:08	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			11/27/24 19:08	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/27/24 19:08	1
Bromoform	<5.00		5.00	0.780	ug/L			11/27/24 19:08	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/27/24 19:08	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/27/24 19:08	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/27/24 19:08	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			11/27/24 19:08	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			11/27/24 19:08	1
Chloroethane	<4.00		4.00	0.790	ug/L			11/27/24 19:08	1
Chloroform	<3.00		3.00	1.30	ug/L			11/27/24 19:08	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/27/24 19:08	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			11/27/24 19:08	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			11/27/24 19:08	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/27/24 19:08	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			11/27/24 19:08	1
Iodomethane	<10.0		10.0	7.00	ug/L			11/27/24 19:08	1
Methylene Chloride	<5.00		5.00	1.70	ug/L			11/27/24 19:08	1
Styrene	<1.00		1.00	0.370	ug/L			11/27/24 19:08	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/27/24 19:08	1
Toluene	<1.00		1.00	0.430	ug/L			11/27/24 19:08	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			11/27/24 19:08	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			11/27/24 19:08	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			11/27/24 19:08	1
Trichloroethene	<1.00		1.00	0.430	ug/L			11/27/24 19:08	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			11/27/24 19:08	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			11/27/24 19:08	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			11/27/24 19:08	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			11/27/24 19:08	1

# QC Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: MB 310-441015/5**  
**Matrix: Water**  
**Analysis Batch: 441015**

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	113		73 - 130		11/27/24 19:08	1
Toluene-d8 (Surr)	96		80 - 120		11/27/24 19:08	1
4-Bromofluorobenzene (Surr)	102		80 - 120		11/27/24 19:08	1

**Lab Sample ID: LCS 310-441015/6**  
**Matrix: Water**  
**Analysis Batch: 441015**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	20.55		ug/L		103	73 - 129
1,1,2,2-Tetrachloroethane	20.0	19.39		ug/L		97	68 - 124
1,1,2-Trichloroethane	20.0	20.31		ug/L		102	73 - 123
1,1-Dichloroethane	20.0	20.36		ug/L		102	70 - 127
1,1-Dichloroethane	20.0	19.65		ug/L		98	63 - 132
1,2,3-Trichloropropane	20.0	19.21		ug/L		96	65 - 127
1,2-Dibromo-3-Chloropropane	20.0	20.46		ug/L		102	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.45		ug/L		97	75 - 125
1,2-Dichlorobenzene	20.0	19.85		ug/L		99	74 - 120
1,2-Dichloroethane	20.0	20.20		ug/L		101	71 - 125
1,2-Dichloropropane	20.0	20.73		ug/L		104	73 - 124
1,4-Dichlorobenzene	20.0	19.24		ug/L		96	72 - 120
2-Butanone (MEK)	40.0	34.29		ug/L		86	50 - 150
2-Hexanone	40.0	37.58		ug/L		94	60 - 140
4-Methyl-2-pentanone (MIBK)	40.0	35.42		ug/L		89	60 - 139
Acetone	40.0	39.88		ug/L		100	50 - 150
Acrylonitrile	200	196.7		ug/L		98	50 - 150
Benzene	20.0	19.37		ug/L		97	72 - 124
Bromochloromethane	20.0	20.32		ug/L		102	73 - 130
Bromodichloromethane	20.0	19.85		ug/L		99	74 - 122
Bromoform	20.0	18.25		ug/L		91	61 - 122
Carbon disulfide	20.0	19.44		ug/L		97	59 - 135
Carbon tetrachloride	20.0	20.83		ug/L		104	67 - 132
Chlorobenzene	20.0	19.84		ug/L		99	76 - 120
Chlorodibromomethane	20.0	19.20		ug/L		96	71 - 121
Chloroform	20.0	20.92		ug/L		105	72 - 125
cis-1,2-Dichloroethene	20.0	19.65		ug/L		98	74 - 123
cis-1,3-Dichloropropene	20.0	19.09		ug/L		95	71 - 125
Dibromomethane	20.0	19.89		ug/L		99	74 - 125
Ethylbenzene	20.0	19.87		ug/L		99	74 - 122
Iodomethane	20.0	15.17		ug/L		76	10 - 150
Methylene Chloride	20.0	19.96		ug/L		100	50 - 150
Styrene	20.0	20.29		ug/L		101	74 - 121
Tetrachloroethene	20.0	19.82		ug/L		99	71 - 130
Toluene	20.0	19.83		ug/L		99	74 - 123
trans-1,2-Dichloroethene	20.0	20.21		ug/L		101	70 - 126
trans-1,3-Dichloropropene	20.0	18.68		ug/L		93	69 - 123
trans-1,4-Dichloro-2-butene	20.0	16.91		ug/L		85	50 - 150

# QC Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: LCS 310-441015/6**

**Matrix: Water**

**Analysis Batch: 441015**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Trichloroethene	20.0	19.61		ug/L		98	72 - 126
Vinyl acetate	40.0	31.54		ug/L		79	50 - 150
Xylenes, Total	40.0	39.07		ug/L		98	73 - 123
<b>Surrogate</b>							
		<b>LCS</b>	<b>LCS</b>				
	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
Dibromofluoromethane (Surr)	98		73 - 130				
Toluene-d8 (Surr)	101		80 - 120				
4-Bromofluorobenzene (Surr)	98		80 - 120				

**Lab Sample ID: LCS 310-441015/7**

**Matrix: Water**

**Analysis Batch: 441015**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Bromomethane	20.0	17.57		ug/L		88	23 - 150
Chloroethane	20.0	20.10		ug/L		100	54 - 136
Chloromethane	20.0	19.82		ug/L		99	38 - 150
Trichlorofluoromethane	20.0	19.67		ug/L		98	54 - 149
Vinyl chloride	20.0	19.91		ug/L		100	56 - 140
<b>Surrogate</b>							
		<b>LCS</b>	<b>LCS</b>				
	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
Dibromofluoromethane (Surr)	116		73 - 130				
Toluene-d8 (Surr)	96		80 - 120				
4-Bromofluorobenzene (Surr)	99		80 - 120				

**Lab Sample ID: 310-295914-4 MS**

**Matrix: Water**

**Analysis Batch: 441015**

**Client Sample ID: SW-2**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
				Result	Qualifier				
1,1,1,2-Tetrachloroethane	<1.00		25.0	21.26		ug/L		85	55 - 130
1,1,1-Trichloroethane	<1.00		25.0	20.74		ug/L		83	52 - 130
1,1,2,2-Tetrachloroethane	<1.00		25.0	22.14		ug/L		89	54 - 130
1,1,2-Trichloroethane	<1.00		25.0	22.28		ug/L		89	58 - 130
1,1-Dichloroethane	<1.00		25.0	20.61		ug/L		82	49 - 130
1,1-Dichloroethene	<2.00		25.0	21.25		ug/L		85	37 - 132
1,2,3-Trichloropropane	<1.00		25.0	21.40		ug/L		86	49 - 130
1,2-Dibromo-3-Chloropropane	<1.20		25.0	22.67		ug/L		91	38 - 150
1,2-Dibromoethane (EDB)	<0.340		25.0	21.41		ug/L		86	60 - 130
1,2-Dichlorobenzene	<1.00		25.0	22.02		ug/L		88	59 - 130
1,2-Dichloroethane	<1.00		25.0	21.98		ug/L		88	51 - 130
1,2-Dichloropropane	<1.00		25.0	21.97		ug/L		88	57 - 130
1,4-Dichlorobenzene	<1.00		25.0	21.60		ug/L		86	57 - 130
2-Butanone (MEK)	<10.0		50.0	37.69		ug/L		75	38 - 150
2-Hexanone	<10.0		50.0	43.00		ug/L		86	46 - 140
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	39.01		ug/L		78	47 - 139
Acetone	<10.0		50.0	40.75		ug/L		81	31 - 150
Acrylonitrile	<10.0		250	220.3		ug/L		88	40 - 150

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: 310-295914-4 MS**  
**Matrix: Water**  
**Analysis Batch: 441015**

**Client Sample ID: SW-2**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec
	Result	Qualifier	Added	Result	Qualifier				
Benzene	<0.500		25.0	20.62		ug/L		82	46 - 130
Bromochloromethane	<5.00		25.0	21.48		ug/L		86	57 - 130
Bromodichloromethane	<1.00		25.0	21.47		ug/L		86	57 - 130
Bromoform	<5.00		25.0	20.07		ug/L		80	44 - 130
Carbon disulfide	<1.00		25.0	21.48		ug/L		86	38 - 135
Carbon tetrachloride	<2.00		25.0	21.78		ug/L		87	45 - 132
Chlorobenzene	<1.00		25.0	21.29		ug/L		85	59 - 130
Chlorodibromomethane	<5.00		25.0	21.29		ug/L		85	54 - 130
Chloroform	<3.00		25.0	22.09		ug/L		88	51 - 130
cis-1,2-Dichloroethene	<1.00		25.0	21.42		ug/L		86	45 - 130
cis-1,3-Dichloropropene	<5.00		25.0	19.99		ug/L		80	53 - 130
Dibromomethane	<1.00		25.0	22.13		ug/L		89	59 - 130
Ethylbenzene	<1.00		25.0	21.20		ug/L		85	45 - 130
Iodomethane	<10.0		25.0	14.93		ug/L		60	10 - 150
Methylene Chloride	<5.00		25.0	21.76		ug/L		87	37 - 150
Styrene	<1.00		25.0	21.74		ug/L		87	47 - 130
Tetrachloroethene	<1.00		25.0	21.81		ug/L		87	47 - 130
Toluene	<1.00		25.0	21.64		ug/L		87	51 - 130
trans-1,2-Dichloroethene	<1.00		25.0	20.95		ug/L		84	48 - 130
trans-1,3-Dichloropropene	<5.00		25.0	19.93		ug/L		80	50 - 130
trans-1,4-Dichloro-2-butene	<10.0		25.0	20.50		ug/L		82	26 - 150
Trichloroethene	<1.00		25.0	21.20		ug/L		85	51 - 130
Vinyl acetate	<10.0		50.0	32.82		ug/L		66	29 - 150
Xylenes, Total	<3.00		50.0	40.98		ug/L		82	43 - 130

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	101		73 - 130
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120

**Lab Sample ID: 310-295914-4 MSD**  
**Matrix: Water**  
**Analysis Batch: 441015**

**Client Sample ID: SW-2**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier						
1,1,1,2-Tetrachloroethane	<1.00		25.0	21.07		ug/L		84	55 - 130	1	20
1,1,1-Trichloroethane	<1.00		25.0	20.24		ug/L		81	52 - 130	2	20
1,1,1,2,2-Tetrachloroethane	<1.00		25.0	21.64		ug/L		87	54 - 130	2	20
1,1,2-Trichloroethane	<1.00		25.0	21.39		ug/L		86	58 - 130	4	20
1,1-Dichloroethane	<1.00		25.0	20.57		ug/L		82	49 - 130	0	20
1,1-Dichloroethene	<2.00		25.0	20.51		ug/L		82	37 - 132	4	26
1,2,3-Trichloropropane	<1.00		25.0	21.49		ug/L		86	49 - 130	0	26
1,2-Dibromo-3-Chloropropane	<1.20		25.0	23.15		ug/L		93	38 - 150	2	20
1,2-Dibromoethane (EDB)	<0.340		25.0	21.12		ug/L		84	60 - 130	1	20
1,2-Dichlorobenzene	<1.00		25.0	22.10		ug/L		88	59 - 130	0	20
1,2-Dichloroethane	<1.00		25.0	20.76		ug/L		83	51 - 130	6	20
1,2-Dichloropropane	<1.00		25.0	21.32		ug/L		85	57 - 130	3	20
1,4-Dichlorobenzene	<1.00		25.0	21.96		ug/L		88	57 - 130	2	20

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# QC Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: 310-295914-4 MSD**  
**Matrix: Water**  
**Analysis Batch: 441015**

**Client Sample ID: SW-2**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
2-Butanone (MEK)	<10.0		50.0	36.28		ug/L		73	38 - 150	4	20
2-Hexanone	<10.0		50.0	41.85		ug/L		84	46 - 140	3	20
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	38.62		ug/L		77	47 - 139	1	20
Acetone	<10.0		50.0	39.28		ug/L		79	31 - 150	4	29
Acrylonitrile	<10.0		250	213.6		ug/L		85	40 - 150	3	20
Benzene	<0.500		25.0	19.66		ug/L		79	46 - 130	5	20
Bromochloromethane	<5.00		25.0	21.24		ug/L		85	57 - 130	1	20
Bromodichloromethane	<1.00		25.0	21.27		ug/L		85	57 - 130	1	20
Bromoform	<5.00		25.0	20.19		ug/L		81	44 - 130	1	20
Carbon disulfide	<1.00		25.0	20.03		ug/L		80	38 - 135	7	30
Carbon tetrachloride	<2.00		25.0	21.14		ug/L		85	45 - 132	3	20
Chlorobenzene	<1.00		25.0	21.18		ug/L		85	59 - 130	1	20
Chlorodibromomethane	<5.00		25.0	21.11		ug/L		84	54 - 130	1	20
Chloroform	<3.00		25.0	20.86		ug/L		83	51 - 130	6	20
cis-1,2-Dichloroethene	<1.00		25.0	20.02		ug/L		80	45 - 130	7	20
cis-1,3-Dichloropropene	<5.00		25.0	19.91		ug/L		80	53 - 130	0	20
Dibromomethane	<1.00		25.0	21.68		ug/L		87	59 - 130	2	20
Ethylbenzene	<1.00		25.0	20.71		ug/L		83	45 - 130	2	20
Iodomethane	<10.0		25.0	17.05		ug/L		68	10 - 150	13	35
Methylene Chloride	<5.00		25.0	21.76		ug/L		87	37 - 150	0	24
Styrene	<1.00		25.0	21.68		ug/L		87	47 - 130	0	20
Tetrachloroethene	<1.00		25.0	20.98		ug/L		84	47 - 130	4	20
Toluene	<1.00		25.0	20.79		ug/L		83	51 - 130	4	20
trans-1,2-Dichloroethene	<1.00		25.0	19.40		ug/L		78	48 - 130	8	22
trans-1,3-Dichloropropene	<5.00		25.0	19.41		ug/L		78	50 - 130	3	20
trans-1,4-Dichloro-2-butene	<10.0		25.0	19.92		ug/L		80	26 - 150	3	23
Trichloroethene	<1.00		25.0	19.70		ug/L		79	51 - 130	7	20
Vinyl acetate	<10.0		50.0	31.50		ug/L		63	29 - 150	4	23
Xylenes, Total	<3.00		50.0	40.76		ug/L		82	43 - 130	1	20

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

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

**Lab Sample ID: MB 310-441026/1-A**  
**Matrix: Water**  
**Analysis Batch: 441235**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 441026**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<0.00200		0.00200	0.00100	mg/L		11/27/24 09:00	11/27/24 20:22	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/27/24 09:00	11/27/24 20:22	1
Barium	<0.00200		0.00200	0.000660	mg/L		11/27/24 09:00	11/27/24 20:22	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/27/24 09:00	11/27/24 20:22	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/27/24 09:00	11/27/24 20:22	1
Chromium	<0.00500		0.00500	0.00120	mg/L		11/27/24 09:00	11/27/24 20:22	1
Cobalt	0.0004430	J	0.000500	0.000170	mg/L		11/27/24 09:00	11/27/24 20:22	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

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

**Lab Sample ID: MB 310-441026/1-A**  
**Matrix: Water**  
**Analysis Batch: 441235**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 441026**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Copper	<0.00500		0.00500	0.00180	mg/L		11/27/24 09:00	11/27/24 20:22	1
Lead	<0.000500		0.000500	0.000260	mg/L		11/27/24 09:00	11/27/24 20:22	1
Nickel	<0.00500		0.00500	0.00210	mg/L		11/27/24 09:00	11/27/24 20:22	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/27/24 09:00	11/27/24 20:22	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/27/24 09:00	11/27/24 20:22	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/27/24 09:00	11/27/24 20:22	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		11/27/24 09:00	11/27/24 20:22	1
Zinc	<0.0200		0.0200	0.00970	mg/L		11/27/24 09:00	11/27/24 20:22	1

**Lab Sample ID: LCS 310-441026/2-A**  
**Matrix: Water**  
**Analysis Batch: 441235**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 441026**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2048		mg/L		102	80 - 120
Barium	0.100	0.1031		mg/L		103	80 - 120
Beryllium	0.100	0.09930		mg/L		99	80 - 120
Cadmium	0.100	0.09365		mg/L		94	80 - 120
Chromium	0.100	0.1058		mg/L		106	80 - 120
Cobalt	0.100	0.1080		mg/L		108	80 - 120
Copper	0.200	0.2142		mg/L		107	80 - 120
Lead	0.200	0.2116		mg/L		106	80 - 120
Nickel	0.200	0.2128		mg/L		106	80 - 120
Selenium	0.400	0.3926		mg/L		98	80 - 120
Silver	0.100	0.1082		mg/L		108	80 - 120
Thallium	0.100	0.1084		mg/L		108	80 - 120
Vanadium	0.100	0.1041		mg/L		104	80 - 120
Zinc	0.200	0.1759		mg/L		88	80 - 120

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

**Lab Sample ID: MB 310-441056/1**  
**Matrix: Water**  
**Analysis Batch: 441056**

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Suspended Solids	<5.00		5.00	3.70	mg/L			11/26/24 19:49	1

**Lab Sample ID: LCS 310-441056/2**  
**Matrix: Water**  
**Analysis Batch: 441056**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

# QC Sample Results

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

Lab Sample ID: 310-295914-4 DU  
Matrix: Water  
Analysis Batch: 441056

Client Sample ID: SW-2  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	<5.00		<5.00		mg/L		NC	35

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16



# QC Association Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

## GC/MS VOA

### Analysis Batch: 441015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295914-4	SW-2	Total/NA	Water	8260D	
310-295914-6	Trip Blank	Total/NA	Water	8260D	
MB 310-441015/5	Method Blank	Total/NA	Water	8260D	
LCS 310-441015/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-441015/7	Lab Control Sample	Total/NA	Water	8260D	
310-295914-4 MS	SW-2	Total/NA	Water	8260D	
310-295914-4 MSD	SW-2	Total/NA	Water	8260D	

## Metals

### Prep Batch: 441026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295914-1	MW-13	Total/NA	Water	3005A	
310-295914-2	MW-15	Total/NA	Water	3005A	
310-295914-3	MW-18	Total/NA	Water	3005A	
310-295914-4	SW-2	Total/NA	Water	3005A	
310-295914-5	MW-D	Total/NA	Water	3005A	
MB 310-441026/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-441026/2-A	Lab Control Sample	Total/NA	Water	3005A	

### Analysis Batch: 441235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295914-1	MW-13	Total/NA	Water	6020B	441026
310-295914-2	MW-15	Total/NA	Water	6020B	441026
310-295914-3	MW-18	Total/NA	Water	6020B	441026
310-295914-4	SW-2	Total/NA	Water	6020B	441026
310-295914-5	MW-D	Total/NA	Water	6020B	441026
MB 310-441026/1-A	Method Blank	Total/NA	Water	6020B	441026
LCS 310-441026/2-A	Lab Control Sample	Total/NA	Water	6020B	441026

## General Chemistry

### Analysis Batch: 441056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-295914-1	MW-13	Total/NA	Water	I-3765-85	
310-295914-2	MW-15	Total/NA	Water	I-3765-85	
310-295914-3	MW-18	Total/NA	Water	I-3765-85	
310-295914-4	SW-2	Total/NA	Water	I-3765-85	
310-295914-5	MW-D	Total/NA	Water	I-3765-85	
MB 310-441056/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-441056/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-295914-4 DU	SW-2	Total/NA	Water	I-3765-85	

# Lab Chronicle

Client: SCS Engineers  
 Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
 SDG: Louisa County Sanitary Landfill

**Client Sample ID: MW-13**

**Lab Sample ID: 310-295914-1**

Date Collected: 11/21/24 11:38

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			441026	F5MW	EET CF	11/27/24 09:00
Total/NA	Analysis	6020B		1	441235	NFT2	EET CF	11/27/24 21:02
Total/NA	Analysis	I-3765-85		1	441056	MDU9	EET CF	11/26/24 19:49

**Client Sample ID: MW-15**

**Lab Sample ID: 310-295914-2**

Date Collected: 11/21/24 13:26

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			441026	F5MW	EET CF	11/27/24 09:00
Total/NA	Analysis	6020B		1	441235	NFT2	EET CF	11/27/24 21:05
Total/NA	Analysis	I-3765-85		1	441056	MDU9	EET CF	11/26/24 19:49

**Client Sample ID: MW-18**

**Lab Sample ID: 310-295914-3**

Date Collected: 11/21/24 15:04

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			441026	F5MW	EET CF	11/27/24 09:00
Total/NA	Analysis	6020B		1	441235	NFT2	EET CF	11/27/24 21:08
Total/NA	Analysis	I-3765-85		1	441056	MDU9	EET CF	11/26/24 19:49

**Client Sample ID: SW-2**

**Lab Sample ID: 310-295914-4**

Date Collected: 11/21/24 14:15

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	441015	WSE8	EET CF	11/28/24 01:40
Total/NA	Prep	3005A			441026	F5MW	EET CF	11/27/24 09:00
Total/NA	Analysis	6020B		1	441235	NFT2	EET CF	11/27/24 21:11
Total/NA	Analysis	I-3765-85		1	441056	MDU9	EET CF	11/26/24 19:49

**Client Sample ID: MW-D**

**Lab Sample ID: 310-295914-5**

Date Collected: 11/21/24 15:04

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			441026	F5MW	EET CF	11/27/24 09:00
Total/NA	Analysis	6020B		1	441235	NFT2	EET CF	11/27/24 21:14
Total/NA	Analysis	I-3765-85		1	441056	MDU9	EET CF	11/26/24 19:49

# Lab Chronicle

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-295914-6**

Date Collected: 11/21/24 00:00

Matrix: Water

Date Received: 11/22/24 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	441015	WSE8	EET CF	11/27/24 20:35

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
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- 14
- 15
- 16

# Accreditation/Certification Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

## Laboratory: Eurofins Cedar Falls

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

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

- 1
- 2
- 3
- 4
- 5
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- 16

# Method Summary

Client: SCS Engineers  
Project/Site: 2024 Annual Groundwater Sampling

Job ID: 310-295914-1  
SDG: Louisa County Sanitary Landfill

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

**Protocol References:**

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

**Laboratory References:**

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





Environment Testing  
America



310-295914 Chain of Custody

**Cooler/Sample Receipt and Temperature Log Form**

<b>Client Information</b>			
Client: <u>SLS</u>			
City/State:	CITY	STATE	Project:
<b>Receipt Information</b>			
Date/Time Received:	DATE <u>11/22/24</u>	TIME <u>1630</u>	Received By: <u>XB</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
<b>Condition of Cooler/Containers</b>			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____	
Cooler Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
<u>all</u>			
<b>Temperature Record</b>			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>2</u>	Correction Factor (°C):	<u>0</u>
• <b>Temp Blank Temperature</b> – 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>
• <b>Sample Container Temperature</b>			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
<b>Exceptions Noted</b>			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
<b>Additional Comments</b>			



**Eurofins TestAmerica, Cedar Falls**  
 3019 Venture Way  
 Cedar Falls, IA 50613-6907  
 phone 319 277 2401 fax 319 277 2425

**Chain of Custody Record**



TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program:  DW  NPDES  RCRA  Other

<b>Client Contact</b> SCS Engineers 1690 All-State Court, Suite 100 West Des Moines IA 50265 515-631-6160		<b>Project Manager: Ben Madson</b> Email bmadson@scsengineers.com Cell 515-776-9255		<b>Site Contact: Ben Madson</b> Lab Contact: Mary Yang		<b>Date:</b> _____ <b>Carrier:</b> _____		<b>COC No</b> _____ of _____ COCs			
<b>Analysis Turnaround Time</b> <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS Other: <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		<b>Sample Date</b> 12/24 12/24 12/24 12/24 12/24		<b>Sample Time</b> 5:00 3:46 5:04 4:00 5:04		<b>Sample Type (C=Comp, G=Grab)</b> G G G G G		<b>Matrix</b> GW GW GW GW GW		<b># of Cont.</b>     	
<b>Sample Identification</b> MW-13 MW-15 MW-18 SW-2 MW-D  Trip Blank		<input checked="" type="checkbox"/> Filtered Sample (Y/N) <input type="checkbox"/> Perform MS/MSD (Y/N) <input type="checkbox"/> Appendix I <input type="checkbox"/> Reduced Metals List* <input type="checkbox"/> TSS		<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months		<input type="checkbox"/> Trip Blank <input checked="" type="checkbox"/> Include trip blanks in every cooler containing VOC sample containers.		<b>Sample Specific Notes:</b> Reduced Metals List: Arsenic, Barium, Cadmium, Cobalt, Lead, Nickel, Selenium and Zinc.			
<b>Preservation Used:</b> 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other <b>Possible Hazard Identification:</b> Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown											
<b>Special Instructions/QC Requirements &amp; Comments:</b> *Reduced Metals List: Arsenic, Barium, Cadmium, Cobalt, Lead, Nickel, Selenium and Zinc.											
<b>Custody Seals Intact:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Custody Seal No</b> Company: _____ Company: _____ Company: _____		<b>Cooler Temp (°C) Obs'd</b> _____ <b>Cont'd</b> _____		<b>Received by:</b> Received by: _____ Received in Laboratory by: _____		<b>Therm ID No</b> _____ Date/Time: _____ Date/Time: _____ Date/Time: _____			



<b>Client Information</b>		Lab PM Yang, Mary E		Carrier Tracking No(s): 310-95656-26362.1	
Client Contact: Ben Madison		E-Mail Mary Yang@ET EurofinsUS.com		State of Origin:	
Company SCS Engineers		PWSID:		Job #:	
Address: 1690 All State Court Suite 100		Due Date Requested:		Preservation Codes: D - HNO3 N - None A - HCL	
City: West Des Moines		TAT Requested (days):		Other	
State, Zip: IA, 50265		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Total Number of Containers	
Phone: 515-776-9255(Tel)		PO #: 27223216 25		620B - Appendix 1	
Email: bmadson@scsengineers.com		WO #:		620B - As, Ba, Cd, Co, Pb, Ni, Se, Zn	
Project Name: 2024 Annual Groundwater Sampling		Project #: 31005089		Perform MS/MSD (Yes or No)	
Site: Louisa County Sanitary Landfill		SSOW#:		Field Filtered Sample (Yes or No)	
<b>Sample Identification</b>		Sample Date		Sample Time	
Sample Type (C=Comp, G=grab)		Sample Matrix (Water, Solid, Organic, Inorganic, A-Al)		Preservation Code:	
MW-13	G	Water			
MW-15	G	Water			
MW-18	G	Water			
MW-D	G	Water			
SW-2	G	Water			
Trip Blank	G	Water			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Date		Sample Time	
Deliverable Requested I, II, III, IV, Other (specify)		Date		Time	
Empty Kit Relinquished by		Date/Time:		Company	
Relinquished by		Date/Time:		Company	
Relinquished by		Date/Time:		Company	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks:	
Special Instructions/Note:		Special Instructions/QC Requirements:		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	





## Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-295914-1  
SDG Number: Louisa County Sanitary Landfill

**Login Number: 295914**


**List Number: 1**

**Creator: Bunker, Xavier M**

**List Source: Eurofins Cedar Falls**

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






Appendix B-2  
Data Validation Documentation

QA/QC Completed by: Sean Marczewski  
 Sample Date: 11/21/2024  
 Site Name: Louisa County Sanitary Landfill  
 Sample Delivery Group: N/A  
 Project Type: Louisa County Sanitary Landfill - Annual 2024 Semi-Annual Groundwater Sampling Event  
 Laboratory: Eurofins TestAmerica, Cedar Falls  
 Lab Job ID: 310-295914-1  
 Lab Report Date: 12/2/2024

	OK	NO	N/A	NOTES
<b>Sample Collection and Sample Holding</b>				
Chain of Custody	X			
Temperature	X			
Preservation		X		Method 8260D: The preservative used in the sample containers provided is not compatible with one of the Method 8260 analytes requested. The following sample(s) was received preserved with hydrochloric acid. Vial preservation was pH <2 rather than pH 4-5. : SW-2 (310-295914-4) and Trip Blank (310-295914-6). The requested target analyte list includes Acrylonitrile, an acid-labile compound that degrades in an acidic medium.
Condition	X			
Correct Constituents Analyzed	X			
Case Narrative	X			
Holding Times	X			
<b>Analytical Sensitivity and Blanks</b>				
Method Blank Detections	X			
Trip Blank Detections	X			
<b>Accuracy</b>				
ICV/CCV	X			
LCS/LCSD	X			
MS/MSD	X			
Surrogates (organics only)	X			
<b>Precision</b>				
QA/QC Sample RPDs	X			
Field Duplicates		X		A field duplicate sample was collected at MW-18. RPD for analyzed parameters was <50% with the exception of arsenic and barium.



Appendix C  
Summary of Groundwater Chemistry

# SCS ENGINEERS

## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
<b>Total Metals Constituents</b>										
<b>Antimony, mg/L (CAS NO - 7440-36-0)</b>										
	5/28/2014	N/A	< 0.006	< 0.006	< 0.006	N/A	< 0.006	N/A	N/A	N/A
	7/23/2015	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	11/19/2015	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	10/25/2016	0.00046*	N/A	< 0.001	< 0.001	< 0.001	< 0.001	0.00031*	< 0.001	N/A
	3/24/2017	0.000487*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/20/2017	0.000357*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	3/22/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/11/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.003
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002
<b>Arsenic, mg/L (CAS NO - 7440-38-2)</b>										
	5/28/2014	N/A	< 0.001	0.000682*	< 0.001	N/A	< 0.001	N/A	N/A	N/A
	7/23/2015	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	11/19/2015	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	4/7/2016	N/A	N/A	0.00107*	< 0.002	< 0.002	< 0.002	N/A	N/A	N/A
	10/25/2016	0.00407	N/A	0.00426	0.00326	0.00378	0.00297	0.0072	0.00316	N/A
	3/24/2017	0.00118*	< 0.002	0.00139*	< 0.002	< 0.002	< 0.002	0.0221	< 0.002	N/A
	7/20/2017	< 0.002	< 0.002	0.000553*	< 0.002	< 0.002	< 0.002	0.00164*	< 0.002	N/A
	3/22/2018	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.00411	< 0.002	N/A
	7/11/2018	< 0.002	< 0.002	0.000596*	< 0.002	0.000727*	< 0.002	0.00689	< 0.002	N/A
	5/29/2019	0.000603*	0.000344*	0.00277	0.000505*	0.000783*	0.000638*	0.00608	0.000663*	0.00243
	9/2/2020	< 0.002	< 0.002	< 0.002	< 0.002	0.00146*	< 0.002	0.000889*	< 0.002	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	0.000964*	N/A	N/A
	3/3/2021	< 0.002	< 0.002	< 0.002	0.00247	< 0.002	< 0.002	< 0.002	< 0.002	N/A
	3/3/2021	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	N/A
	6/15/2022	< 0.002	< 0.002	0.000771*	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A
	5/24/2023	0.00119*	N/A	N/A	N/A	< 0.002	N/A	N/A	< 0.002	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A
	11/21/2024	0.00378	N/A	N/A	< 0.002	N/A	< 0.002	N/A	N/A	< 0.002
	11/21/2024	< 0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Barium, mg/L (CAS NO - 7440-39-3)</b>										
	5/28/2014	N/A	0.275	0.284	0.0745	N/A	0.118	N/A	N/A	N/A
	7/23/2015	N/A	0.316	0.16	0.0417	0.0292	0.0706	N/A	N/A	N/A
	11/19/2015	N/A	0.315	0.157	0.0357	0.0251	0.0757	N/A	N/A	N/A
	4/7/2016	N/A	N/A	0.173	0.0467	0.015	0.0531	N/A	N/A	N/A
	10/25/2016	0.0561	N/A	0.119	0.0394	0.0242	0.0501	0.0334	0.0271	N/A
	3/24/2017	0.0594	0.312	0.229	0.0326	0.0252	0.0886	0.025	0.0214	N/A
	7/20/2017	0.037	0.29	0.145	0.0249	0.023	0.0772	0.0162	0.0219	N/A
	3/22/2018	0.0384	0.31	0.144	0.0366	0.0369	0.0564	0.0179	0.0171	N/A
	7/11/2018	0.0348	0.238	0.141	0.0423	0.0224	0.0642	0.0175	0.0227	N/A
	5/29/2019	0.0268	0.274	0.31	0.0396	0.0218	0.0558	0.0177	0.0252	0.144
	9/2/2020	0.0258	0.328	0.141	0.0606	0.0354	0.0874	0.018	0.0223	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	0.0185	N/A	N/A
	3/3/2021	0.0261	0.317	0.142	0.0405	0.0197	0.0632	0.0159	0.0205	N/A
	3/3/2021	N/A	N/A	N/A	0.0405	N/A	N/A	N/A	N/A	N/A
	6/15/2022	0.0244	0.296	0.144	0.07	0.0303	0.0696	0.0189	0.0224	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0225	N/A
	5/24/2023	0.0252	N/A	N/A	N/A	0.0222	N/A	N/A	0.0225	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0239	N/A
	11/21/2024	0.157	N/A	N/A	0.0834	N/A	0.102	N/A	N/A	0.0249
	11/21/2024	0.0252	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Beryllium, mg/L (CAS NO - 7440-41-7)</b>										
	5/28/2014	N/A	< 0.001	0.000745*	0.000268*	N/A	0.000275*	N/A	N/A	N/A
	7/23/2015	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	11/19/2015	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	10/25/2016	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	3/24/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/20/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	3/22/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/11/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
<b>Cadmium, mg/L (CAS NO - 7440-43-9)</b>										
	5/28/2014	N/A	0.00262	0.00327	0.0145	N/A	0.000904	N/A	N/A	N/A
	7/23/2015	N/A	0.000475*	< 0.0005	0.00169	0.000656	< 0.0005	N/A	N/A	N/A
	11/19/2015	N/A	0.000575	< 0.0005	< 0.0005	0.000478*	< 0.0005	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.0005	0.000654	0.000156*	< 0.0005	N/A	N/A	N/A
	10/25/2016	0.000117*	N/A	< 0.0005	< 0.0005	0.000255*	0.000075*	0.000043*	0.000245*	N/A
	3/24/2017	0.000075*	0.000135*	< 0.0005	0.000099*	0.000319*	0.000074*	< 0.0005	0.000192*	N/A
	7/20/2017	0.000197*	< 0.0005	< 0.0005	< 0.0005	0.00021*	0.000061*	< 0.0005	0.00017*	N/A
	3/22/2018	0.000084*	< 0.0005	< 0.0005	< 0.0005	0.000401*	< 0.0005	< 0.0005	0.000104*	N/A
	7/11/2018	0.000113*	< 0.0005	0.000082*	0.00008*	< 0.0005	0.000066*	< 0.0005	0.000177*	N/A
	5/29/2019	< 0.0005	< 0.0005	< 0.0005	0.000201*	0.000404*	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	9/2/2020	< 0.0001	0.000182	< 0.0001	0.000055*	0.00015	0.000053*	< 0.0001	0.000167	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0001	N/A	N/A
	3/3/2021	< 0.0001	< 0.0001	< 0.0001	0.000503	0.000206	< 0.0001	< 0.0001	0.000143	N/A
	3/3/2021	N/A	N/A	N/A	< 0.0001	N/A	N/A	N/A	N/A	N/A

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Summary of Groundwater Chemistry  
 Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG	
<b>Total Metals Constituents</b>											
Cadmium, mg/L (CAS NO - 7440-43-9)	6/15/2022	< 0.0001	0.000183	< 0.0001	< 0.0001	0.000161	< 0.0001	< 0.0001	0.000096*	N/A	
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000113	N/A	
	5/24/2023	< 0.0002	N/A	N/A	N/A	0.000856	N/A	N/A	< 0.0002	N/A	
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000102*	N/A	
	11/21/2024	< 0.0002	N/A	N/A	< 0.0002	N/A	< 0.0002	N/A	N/A	< 0.0002	
	11/21/2024	< 0.0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Chromium, mg/L (CAS NO - 7440-47-3)	5/28/2014	N/A	< 0.02	< 0.02	< 0.02	N/A	< 0.02	N/A	N/A	N/A	
	7/23/2015	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	
	11/19/2015	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	
	4/7/2016	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A	
	10/25/2016	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	3/24/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	7/20/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	3/22/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	7/11/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00248*	
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	
	Cobalt, mg/L (CAS NO - 7440-48-4)	5/28/2014	N/A	< 0.00241	< 0.00241	0.00755	N/A	0.0392	N/A	N/A	N/A
		7/23/2015	N/A	0.00159	0.000146*	0.00232	0.00223	0.00104	N/A	N/A	N/A
		11/19/2015	N/A	0.00144	0.000135*	0.000826	0.00214	0.000838	N/A	N/A	N/A
4/7/2016		N/A	N/A	0.000127*	0.00116	0.000195*	0.000377*	N/A	N/A	N/A	
10/25/2016		0.00724	N/A	0.000332*	0.00124	0.00106	0.00104	0.0061	0.0017	N/A	
3/24/2017		0.00256	0.0013	0.000149*	0.00045*	0.000833	0.000677	0.00301	0.00126	N/A	
7/20/2017		0.000447*	0.00119	0.000102*	0.00276	0.0036	0.000699	0.0024	0.00105	N/A	
3/22/2018		0.000611	0.000644	0.000149*	0.00338	0.00545	< 0.0005	0.00302	0.000935	N/A	
7/11/2018		0.000924	0.00168	0.000132*	0.00461	0.0169	0.000283*	0.00276	0.00144	N/A	
5/29/2019		< 0.001	0.00123	0.000442*	0.000527*	0.000899*	0.000481*	0.00297	0.00358	0.00115	
9/2/2020		0.000111*	0.00148	0.000126*	0.00028*	0.039	0.0032	0.00243	0.00111	N/A	
9/2/2020		N/A	N/A	N/A	N/A	N/A	N/A	0.00254	N/A	N/A	
3/3/2021		0.000188*	0.00119	0.000125*	0.0012	0.00489	< 0.0005	0.00159	0.001	N/A	
3/3/2021		N/A	N/A	N/A	0.000507	N/A	N/A	N/A	N/A	N/A	
6/15/2022		< 0.0005	0.00116	0.000199*	0.0037	0.00412	0.000216*	0.00501	0.00125	N/A	
6/15/2022		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00137	N/A	
5/24/2023		0.000734	N/A	N/A	N/A	0.000413*	N/A	N/A	0.00097	N/A	
5/24/2023		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00118	N/A	
11/21/2024		0.000237*	N/A	N/A	0.00118	N/A	0.00108	N/A	N/A	0.000186*	
11/21/2024		0.000722	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Copper, mg/L (CAS NO - 7440-50-8)		5/28/2014	N/A	< 0.02	0.0184*	< 0.02	N/A	0.0133*	N/A	N/A	N/A
		7/23/2015	N/A	0.000642*	< 0.002	< 0.002	0.00199*	0.000744*	N/A	N/A	N/A
		11/19/2015	N/A	0.00095*	< 0.002	0.000496*	0.00108*	0.00067*	N/A	N/A	N/A
		4/7/2016	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
		10/25/2016	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
		3/24/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	7/20/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	3/22/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	7/11/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00339	
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	
	Lead, mg/L (CAS NO - 7439-92-1)	5/28/2014	N/A	< 0.004	< 0.004	0.0052	N/A	0.00591	N/A	N/A	N/A
		7/23/2015	N/A	0.000157*	< 0.0005	0.00017*	0.000373*	0.000203*	N/A	N/A	N/A
		11/19/2015	N/A	0.000161*	< 0.0005	< 0.0005	0.000131*	< 0.0005	N/A	N/A	N/A
4/7/2016		N/A	N/A	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	N/A	N/A	
10/25/2016		< 0.0005	N/A	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000287*	< 0.0005	N/A	
3/24/2017		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000508	< 0.0005	N/A	
7/20/2017		0.00308	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	
3/22/2018		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000251*	< 0.0005	N/A	
7/11/2018		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	
5/29/2019		< 0.0005	< 0.0005	0.000423*	< 0.0005	< 0.0005	< 0.0005	0.000188*	< 0.0005	0.00159	
9/2/2020		< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000571	< 0.0005	< 0.0005	< 0.0005	N/A	
9/2/2020		N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	
3/3/2021		< 0.0005	< 0.0005	< 0.0005	0.00124	0.00021*	< 0.0005	< 0.0005	< 0.0005	N/A	
3/3/2021		N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	
6/15/2022		< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000718	< 0.0005	< 0.0005	< 0.0005	N/A	
6/15/2022		N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	
5/24/2023		0.00182	N/A	N/A	N/A	0.000415*	N/A	N/A	0.00038*	N/A	
5/24/2023		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000709	N/A	
11/21/2024		< 0.0005	N/A	N/A	< 0.0005	N/A	< 0.0005	N/A	N/A	< 0.0005	
11/21/2024		< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Nickel, mg/L (CAS NO - 7440-02-0)		5/28/2014	N/A	< 0.05	< 0.05	0.0346*	N/A	0.0394*	N/A	N/A	N/A
		7/23/2015	N/A	0.0037*	< 0.005	0.0162	0.00467*	0.00733	N/A	N/A	N/A
		11/19/2015	N/A	0.00321*	< 0.005	0.0141	0.00533	0.00942	N/A	N/A	N/A
		4/7/2016	N/A	N/A	< 0.005	0.0274	0.00172*	0.00688	N/A	N/A	N/A
		10/25/2016	0.0104	N/A	< 0.005	0.0066	0.00406*	0.00726	0.00994	0.00451*	N/A
		3/24/2017	0.0106	0.00275*	< 0.005	0.0113	0.00412*	0.0121	0.00358*	0.00304*	N/A
	7/20/2017	0.00501	0.00229*	< 0.005	0.0135	0.00333*	0.00979	0.00263*	0.00243*	N/A	
	3/22/2018	0.00589	0.0029*	< 0.005	0.0265	0.0189	0.00667	0.00316*	0.00244*	N/A	
	7/11/2018	0.00765	0.00346*	0.00578	0.0109	0.0127	0.0133	0.0045*	0.00345*	N/A	

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Summary of Groundwater Chemistry  
 Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
<b>Total Metals Constituents</b>										
Nickel, mg/L (CAS NO - 7440-02-0)	5/29/2019	0.00222	0.00265	0.000649*	0.00701	0.00532	0.00608	0.00321	0.00265	0.00381
	9/2/2020	< 0.005	0.00277*	< 0.005	0.00725	0.00978	0.0104	0.00243*	0.00298*	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	0.00258*	N/A	N/A
	3/3/2021	< 0.005	< 0.005	< 0.005	0.0134	0.00432*	0.00678	< 0.005	0.00195*	N/A
	3/3/2021	N/A	N/A	N/A	0.0119	N/A	N/A	N/A	N/A	N/A
	6/15/2022	< 0.005	0.00257*	< 0.005	0.01	0.00567	0.00753	0.00245*	0.00272*	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00267*	N/A
	5/24/2023	0.00193*	N/A	N/A	N/A	0.00594	N/A	N/A	0.00297*	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00356*	N/A
	11/21/2024	< 0.005	N/A	N/A	0.0113	N/A	0.00929	N/A	N/A	< 0.005
	11/21/2024	0.00241*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium, mg/L (CAS NO - 7782-49-2)	5/28/2014	N/A	< 0.005	< 0.005	< 0.005	N/A	0.00058*	N/A	N/A	N/A
	7/23/2015	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	11/19/2015	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.005	< 0.005	< 0.005	< 0.005	N/A	N/A	N/A
	10/25/2016	0.00551	N/A	0.00405*	0.00422*	0.00643	0.00338*	0.00483*	0.0044*	N/A
	3/24/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	7/20/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	3/22/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00664	< 0.005	< 0.005	N/A
	7/11/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	5/29/2019	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.00169*
	9/2/2020	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A
	3/3/2021	< 0.005	< 0.005	< 0.005	0.00424*	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	3/3/2021	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	N/A	N/A
	6/15/2022	< 0.005	< 0.005	0.00132*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A
	5/24/2023	0.00457*	N/A	N/A	N/A	< 0.005	N/A	N/A	0.00348*	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00311*	N/A
	11/21/2024	< 0.005	N/A	N/A	< 0.005	N/A	< 0.005	N/A	N/A	< 0.005
	11/21/2024	< 0.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver, mg/L (CAS NO - 7440-22-4)	5/28/2014	N/A	< 0.02	< 0.02	< 0.02	N/A	< 0.02	N/A	N/A	N/A
	7/23/2015	N/A	< 0.001	0.000064*	0.000058*	< 0.001	< 0.001	N/A	N/A	N/A
	11/19/2015	N/A	0.000076*	0.000085*	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	10/25/2016	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	3/24/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/20/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000172*	< 0.001	< 0.001	N/A
	3/22/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/11/2018	0.000356*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
Thallium, mg/L (CAS NO - 7440-28-0)	5/28/2014	N/A	< 0.002	< 0.002	< 0.002	N/A	< 0.002	N/A	N/A	N/A
	7/23/2015	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	N/A	N/A
	11/19/2015	N/A	0.000036*	< 0.001	< 0.001	0.000065*	< 0.001	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.001	< 0.001	0.000036*	< 0.001	N/A	N/A	N/A
	10/25/2016	0.000028*	N/A	< 0.001	< 0.001	0.000054*	< 0.001	< 0.001	0.000382*	N/A
	3/24/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000267*	N/A
	7/20/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000284*	N/A
	3/22/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	7/11/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
Vanadium, mg/L (CAS NO - 7440-62-2)	5/28/2014	N/A	< 0.05	0.0105*	0.00543*	N/A	0.00546*	N/A	N/A	N/A
	7/23/2015	N/A	0.000857*	0.000574*	0.00048*	0.000819*	0.000474*	N/A	N/A	N/A
	11/19/2015	N/A	0.000795*	< 0.005	0.000744*	0.000652*	< 0.005	N/A	N/A	N/A
	4/7/2016	N/A	N/A	0.000634*	0.000919*	0.000332*	< 0.005	N/A	N/A	N/A
	10/25/2016	< 0.005	N/A	< 0.005	< 0.005	0.000397*	0.000382*	< 0.005	< 0.005	N/A
	3/24/2017	< 0.005	< 0.005	0.000994*	< 0.005	0.00084*	< 0.005	0.00173*	< 0.005	N/A
	7/20/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	3/22/2018	0.00123*	0.00123*	0.00155*	0.00145*	0.00146*	0.0012*	0.00166*	0.00105*	N/A
	7/11/2018	< 0.005	< 0.005	0.000536*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A
	5/29/2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00764
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
Zinc, mg/L (CAS NO - 7440-66-6)	5/28/2014	N/A	< 0.02	< 0.02	< 0.02	N/A	< 0.02	N/A	N/A	N/A
	7/23/2015	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	N/A	N/A	N/A
	11/19/2015	N/A	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.01	0.0187	0.013	< 0.01	N/A	N/A	N/A
	10/25/2016	< 0.01	N/A	< 0.01	< 0.01	< 0.01	< 0.01	0.00885*	0.0089*	N/A
	3/24/2017	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	7/20/2017	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	3/22/2018	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	7/11/2018	< 0.02	< 0.02	0.0222	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	5/29/2019	0.00759*	< 0.02	0.0075*	0.0073*	0.00752*	0.0239	0.00747*	0.00735*	0.0393
	9/2/2020	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	< 0.02	N/A

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
<b>Total Metals Constituents</b>										
Zinc, mg/L (CAS NO - 7440-66-6)	3/3/2021	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
	3/3/2021	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	N/A	N/A
	6/15/2022	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A
	5/24/2023	< 0.02	N/A	N/A	N/A	< 0.02	N/A	N/A	0.00868*	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0074*	N/A
	11/21/2024	< 0.02	N/A	N/A	< 0.02	N/A	< 0.02	N/A	N/A	< 0.02
	11/21/2024	< 0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Suspended Solids, mg/L (CAS NO - TSS)</b>										
	5/28/2014	N/A	53	930	525	N/A	396	N/A	N/A	N/A
	7/23/2015	N/A	17.8	45.6	15.3	11.6	10.5	N/A	N/A	N/A
	11/19/2015	N/A	19.1	24.3	5.63	3.25	3.5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	52	24.5	< 1.88	< 1.88	N/A	N/A	N/A
	10/25/2016	5.25	N/A	31.6	1*	0.875*	2.25	33.4	0.75*	N/A
	3/24/2017	1.13*	3.5	57.9	7.88	2.13	2.25	77.6	2.63	N/A
	7/20/2017	6.75	0.625*	27	< 1.88	1.25*	1.5*	2.38	1.38*	N/A
	3/22/2018	0.875*	3.75	N/A	6.12	2.25	< 1.88	14.5	0.75*	N/A
	7/11/2018	< 1.88	1.25*	41	3.87	2.75	1.88	19.3	3.13	N/A
	5/29/2019	< 1.88	2.13	102	3.38	< 1.88	< 1.88	18.3	4.5	57.6
	9/2/2020	< 1.88	6.88	24	3.5	6.4	117	5.8	2.38	N/A
	9/2/2020	N/A	N/A	N/A	N/A	N/A	N/A	6.4	N/A	N/A
	3/3/2021	1.25*	< 1.88	21.6	2.13	2.25	< 1.88	2.25	1.13*	N/A
	3/3/2021	N/A	N/A	N/A	2.88	N/A	N/A	N/A	N/A	N/A
	6/15/2022	< 1.88	1.63*	32	4.5	4.5	< 1.88	10.3	1*	N/A
	6/15/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.13*	N/A
	5/24/2023	2.5	N/A	N/A	N/A	1*	N/A	N/A	2.38	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.63	N/A
	11/21/2024	< 1.88	N/A	N/A	3.5	N/A	< 1.88	N/A	N/A	< 5
	11/21/2024	< 1.88	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: \* indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.

Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.



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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
1,1,1,2-Tetrachloroethane, ug/L (CAS NO - 630-20-6)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
1,1,1-Trichloroethane, ug/L (CAS NO - 71-55-6)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
1,1,2,2-Tetrachloroethane, ug/L (CAS NO - 79-34-5)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
1,1-Dichloroethene, ug/L (CAS NO - 75-35-4)	5/28/2014	N/A	<2	<2	<2	N/A	<2	N/A	N/A	N/A
	7/23/2015	N/A	<2	<2	<2	<2	<2	N/A	N/A	N/A
	11/19/2015	N/A	<2	<2	<2	<2	<2	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<2	<2	<2	<2	N/A	N/A	N/A
	10/25/2016	<2	N/A	<2	<2	<2	<2	<2	<2	N/A
	3/24/2017	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	7/20/2017	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	3/22/2018	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	7/11/2018	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	<2
	9/2/2020	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2
1,2,3-Trichloropropane, ug/L (CAS NO - 96-18-4)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	5/28/2014	N/A	<0.12	<0.12	<0.12	N/A	<0.12	N/A	N/A	N/A
	7/23/2015	N/A	<0.5	<0.5	<0.5	<0.5	<0.5	N/A	N/A	N/A
	11/19/2015	N/A	<0.5	<0.5	<0.5	<0.5	<0.5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<0.5	<0.5	<0.5	<0.5	N/A	N/A	N/A
	10/25/2016	<0.5	N/A	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N/A
	3/24/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N/A
	7/20/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N/A
	3/22/2018	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N/A
	7/11/2018	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1.2	N/A	N/A	<1.2	<1.2
	9/2/2020	N/A	N/A	N/A	N/A	<1.2	N/A	N/A	<1.2	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1.2	N/A	N/A	<1.2	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1.2	N/A	N/A	<1.2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1.2	N/A	N/A	<1.2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1.2	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1.2

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
1,2-Dibromoethane [EDB], ug/L (CAS NO - 106-93-4)	5/28/2014	N/A	< 0.13	< 0.13	< 0.13	N/A	< 0.13	N/A	N/A	N/A
	7/23/2015	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	11/19/2015	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.13	< 0.13	< 0.13	< 0.13	N/A	N/A	N/A
	10/25/2016	< 0.13	N/A	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A
	3/24/2017	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A
	7/20/2017	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A
	3/22/2018	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A
	7/11/2018	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	< 0.34	< 0.34
	9/2/2020	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	< 0.34	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	< 0.34	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	< 0.34	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 0.34	N/A	N/A	< 0.34	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.34	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.34	
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	
1,2-Dichloroethane, ug/L (CAS NO - 107-06-2)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.13	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	
1,2-Dichloropropane, ug/L (CAS NO - 78-87-5)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
1,4-Dichlorobenzene, ug/L (CAS NO - 106-46-7)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
2-Butanone, ug/L (CAS NO - 78-93-3)	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	1.53*	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
2-Hexanone, ug/L (CAS NO - 591-78-6)	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
4-Methyl-2-Pentanone, ug/L (CAS NO - 108-10-1)	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
<b>Appendix I VOC Constituents</b>										
<b>Acetone, ug/L (CAS NO - 67-64-1)</b>										
	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	2.08*	< 10	4.54*	1.99*	N/A	N/A	N/A
	4/7/2016	N/A	N/A	6.13*	5.3*	2.53*	1.84*	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	5.52*	< 10	N/A
	3/24/2017	2.24*	2.53*	< 10	2.27*	< 10	< 10	1.96*	< 10	N/A
	7/20/2017	3.12*	2.62*	5.78*	4.84*	3.34*	5.07*	2.37*	4.97*	N/A
	3/22/2018	< 10	2.82*	< 10	2.02*	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
<b>Acrylonitrile, ug/L (CAS NO - 107-13-1)</b>										
	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
<b>Benzene, ug/L (CAS NO - 71-43-2)</b>										
	1/1/1993	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	4/1/1993	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	7/1/1993	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	10/1/1993	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	N/A
	5/28/2014	N/A	< 0.5	< 0.5	< 0.5	N/A	< 0.5	N/A	N/A	N/A
	7/23/2015	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	11/19/2015	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 0.5	0.225*	0.167*	0.164*	N/A	N/A	N/A
	10/25/2016	< 0.5	N/A	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A
	3/24/2017	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A
	7/20/2017	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A
	3/22/2018	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A
	7/11/2018	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	< 0.5	< 0.5
	9/2/2020	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	< 0.5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	< 0.5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	< 0.5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 0.5	N/A	N/A	< 0.5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.5
<b>Bromochloromethane, ug/L (CAS NO - 74-97-5)</b>										
	5/28/2014	N/A	< 5	< 5	< 5	N/A	< 5	N/A	N/A	N/A
	7/23/2015	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	11/19/2015	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/25/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	3/24/2017	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/20/2017	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	3/22/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/11/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	< 5
	9/2/2020	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Bromodichloromethane, ug/L (CAS NO - 75-27-4)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	
Bromoform, ug/L (CAS NO - 75-25-2)	5/28/2014	N/A	<5	<5	<5	N/A	<5	N/A	N/A	N/A
	7/23/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	11/19/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<5	<5	<5	<5	N/A	N/A	N/A
	10/25/2016	<5	N/A	<5	<5	<5	<5	<5	<5	N/A
	3/24/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/20/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	3/22/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/11/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	<5
	9/2/2020	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5	
Bromomethane, ug/L (CAS NO - 74-83-9)	5/28/2014	N/A	<4	<4	<4	N/A	<4	N/A	N/A	N/A
	7/23/2015	N/A	<4	<4	<4	<4	<4	N/A	N/A	N/A
	11/19/2015	N/A	0.409*	0.279*	0.343*	<4	<4	N/A	N/A	N/A
	4/7/2016	N/A	N/A	0.374*	0.246*	0.264*	0.329*	N/A	N/A	N/A
	10/25/2016	<4	N/A	<4	<4	<4	<4	<4	<4	N/A
	3/24/2017	0.277*	<4	<4	0.273*	<4	<4	<4	<4	N/A
	7/20/2017	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	3/22/2018	<4	<4	<4	<4	<4	<4	<4	0.232*	N/A
	7/11/2018	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	<4
	9/2/2020	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<4	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<4	
Carbon Disulfide, ug/L (CAS NO - 75-15-0)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	0.165*	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	1.14	<1	<1	0.783*	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)	5/28/2014	N/A	<2	<2	<2	N/A	<2	N/A	N/A	N/A
	7/23/2015	N/A	<2	<2	<2	<2	<2	N/A	N/A	N/A
	11/19/2015	N/A	<2	<2	<2	<2	<2	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<2	<2	<2	<2	N/A	N/A	N/A
	10/25/2016	<2	N/A	<2	<2	<2	<2	<2	<2	N/A
	3/24/2017	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	7/20/2017	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	3/22/2018	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	7/11/2018	<2	<2	<2	<2	<2	<2	<2	<2	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	<2
	9/2/2020	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<2	N/A	N/A	<2	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2
Chlorobenzene, ug/L (CAS NO - 108-90-7)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
Chlorodibromomethane, ug/L (CAS NO - 124-48-1)	5/28/2014	N/A	<5	<5	<5	N/A	<5	N/A	N/A	N/A
	7/23/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	11/19/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<5	<5	<5	<5	N/A	N/A	N/A
	10/25/2016	<5	N/A	<5	<5	<5	<5	<5	<5	N/A
	3/24/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/20/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	3/22/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/11/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	<5
	9/2/2020	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5
Chloroethane, ug/L (CAS NO - 75-00-3)	5/28/2014	N/A	<4	<4	<4	N/A	<4	N/A	N/A	N/A
	7/23/2015	N/A	<4	<4	<4	<4	<4	N/A	N/A	N/A
	11/19/2015	N/A	<4	<4	<4	<4	<4	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<4	<4	<4	<4	N/A	N/A	N/A
	10/25/2016	<4	N/A	<4	<4	<4	<4	<4	<4	N/A
	3/24/2017	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	7/20/2017	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	3/22/2018	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	7/11/2018	<4	<4	<4	<4	<4	<4	<4	<4	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	<4
	9/2/2020	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<4	N/A	N/A	<4	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<4	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<4

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Chloroform, ug/L (CAS NO - 67-66-3)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<3	<3	<3	<3	<3	<3	<3	<3	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	<3
	9/2/2020	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<3	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<3
Chloromethane, ug/L (CAS NO - 74-87-3)	5/28/2014	N/A	<3	<3	<3	N/A	<3	N/A	N/A	N/A
	7/23/2015	N/A	<3	<3	<3	<3	<3	N/A	N/A	N/A
	11/19/2015	N/A	<3	<3	<3	<3	<3	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<3	<3	<3	<3	N/A	N/A	N/A
	10/25/2016	<3	N/A	<3	<3	<3	<3	<3	<3	N/A
	3/24/2017	<3	<3	<3	<3	<3	<3	<3	<3	N/A
	7/20/2017	<3	<3	<3	<3	<3	<3	<3	<3	N/A
	3/22/2018	<3	<3	<3	<3	<3	<3	<3	<3	N/A
	7/11/2018	<3	<3	<3	<3	<3	<3	<3	<3	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	<3
	9/2/2020	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<3	N/A	N/A	<3	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<3	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<3
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	5/28/2014	N/A	<5	<5	<5	N/A	<5	N/A	N/A	N/A
	7/23/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	11/19/2015	N/A	<5	<5	<5	<5	<5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<5	<5	<5	<5	N/A	N/A	N/A
	10/25/2016	<5	N/A	<5	<5	<5	<5	<5	<5	N/A
	3/24/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/20/2017	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	3/22/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	7/11/2018	<5	<5	<5	<5	<5	<5	<5	<5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	<5
	9/2/2020	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<5	N/A	N/A	<5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5



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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Ethylbenzene, ug/L (CAS NO - 100-41-4)	5/28/2014	N/A	0.219*	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	
Iodomethane, ug/L (CAS NO - 74-88-4)	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	
Methylene Bromide, ug/L (CAS NO - 74-95-3)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1	
Methylene Chloride, ug/L (CAS NO - 75-09-2)	5/28/2014	N/A	< 5	< 5	< 5	N/A	< 5	N/A	N/A	N/A
	7/23/2015	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	11/19/2015	N/A	< 5	0.695*	< 5	0.561*	0.309*	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 5	0.617*	0.378*	< 5	N/A	N/A	N/A
	10/25/2016	0.328*	N/A	0.208*	< 5	0.265*	< 5	< 5	0.252*	N/A
	3/24/2017	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/20/2017	0.18*	< 5	< 5	< 5	0.294*	0.207*	< 5	0.232*	N/A
	3/22/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/11/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	< 5
	9/2/2020	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 5	N/A	N/A	< 5	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Styrene, ug/L (CAS NO - 100-42-5)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	
Toluene, ug/L (CAS NO - 108-88-3)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	0.454*	<1	0.4*	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	0.192*	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	5/28/2014	N/A	<1	<1	<1	N/A	<1	N/A	N/A	N/A
	7/23/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	11/19/2015	N/A	<1	<1	<1	<1	<1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	<1	<1	<1	<1	N/A	N/A	N/A
	10/25/2016	<1	N/A	<1	<1	<1	<1	<1	<1	N/A
	3/24/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/20/2017	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	3/22/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	7/11/2018	<1	<1	<1	<1	<1	<1	<1	<1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	<1
	9/2/2020	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	<1	N/A	N/A	<1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	N/A
11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	

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## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C

Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
trans-1,3-Dichloropropene, ug/L (CAS NO - 10061-02-6)	5/28/2014	N/A	< 5	< 5	< 5	N/A	< 5	N/A	N/A	N/A
	7/23/2015	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	11/19/2015	N/A	< 5	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 5	< 5	< 5	< 5	N/A	N/A	N/A
	10/25/2016	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	3/24/2017	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/20/2017	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	3/22/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	7/11/2018	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	9/2/2020	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	3/3/2021	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	6/15/2022	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	5/24/2023	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	< 5
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	5/28/2014	N/A	< 10	< 10	< 10	N/A	< 10	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichloroethene, ug/L (CAS NO - 79-01-6)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	N/A	< 1
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichlorofluoromethane, ug/L (CAS NO - 75-69-4)	5/28/2014	N/A	< 4	< 4	< 4	N/A	< 4	N/A	N/A	N/A
	7/23/2015	N/A	< 4	< 4	< 4	1.32*	< 4	N/A	N/A	N/A
	11/19/2015	N/A	< 4	< 4	< 4	1.07*	< 4	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 4	< 4	5.17	< 4	N/A	N/A	N/A
	10/25/2016	< 4	N/A	< 4	< 4	4.52	< 4	< 4	< 4	N/A
	3/24/2017	< 4	< 4	< 4	< 4	2.13*	< 4	< 4	< 4	N/A
	7/20/2017	< 4	< 4	< 4	< 4	1.81*	< 4	< 4	< 4	N/A
	3/22/2018	< 4	< 4	< 4	< 4	2.21*	< 4	< 4	< 4	N/A
	7/11/2018	< 4	< 4	< 4	< 4	1.49*	< 4	< 4	< 4	N/A
	5/29/2019	N/A	N/A	N/A	N/A	6.07	N/A	N/A	N/A	< 4
	9/2/2020	N/A	N/A	N/A	N/A	3.95*	N/A	N/A	N/A	< 4
	3/3/2021	N/A	N/A	N/A	N/A	3.34*	N/A	N/A	N/A	< 4
	6/15/2022	N/A	N/A	N/A	N/A	8.08	N/A	N/A	N/A	< 4
	5/24/2023	N/A	N/A	N/A	N/A	3.71*	N/A	N/A	N/A	< 4
	5/24/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 4
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

# SCS ENGINEERS

## Summary of Groundwater Chemistry

Louisa County Sanitary Landfill (Closed) - 58-SDP-01-74C


Appendix I VOC Constituents	Sample Date	MW-18 UPG	MW-5 DNG	MW-7 DNG	MW-13 DNG	MW-14 DNG	MW-15 DNG	MW-17 DNG	MW-19 DNG	SW-2 DNG
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	5/28/2014	N/A	< 2	< 2	< 2	N/A	< 2	N/A	N/A	N/A
	7/23/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	11/19/2015	N/A	< 10	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 10	< 10	< 10	< 10	N/A	N/A	N/A
	10/25/2016	< 10	N/A	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/24/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/20/2017	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	3/22/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	7/11/2018	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 10	N/A	N/A	N/A	< 10
	9/2/2020	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 10	N/A	N/A	< 10	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	5/28/2014	N/A	< 1	< 1	< 1	N/A	< 1	N/A	N/A	N/A
	7/23/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	11/19/2015	N/A	< 1	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 1	< 1	< 1	< 1	N/A	N/A	N/A
	10/25/2016	< 1	N/A	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/24/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/20/2017	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	3/22/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	7/11/2018	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	< 1
	9/2/2020	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 1	N/A	N/A	< 1	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1
Xylenes, total, ug/L (CAS NO - 1330-20-7)	5/28/2014	N/A	< 3	< 3	< 3	N/A	< 3	N/A	N/A	N/A
	7/23/2015	N/A	0.351*	< 3	0.393*	< 3	< 3	N/A	N/A	N/A
	11/19/2015	N/A	< 3	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	4/7/2016	N/A	N/A	< 3	< 3	< 3	< 3	N/A	N/A	N/A
	10/25/2016	< 3	N/A	< 3	< 3	< 3	< 3	< 3	< 3	N/A
	3/24/2017	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A
	7/20/2017	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A
	3/22/2018	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A
	7/11/2018	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	N/A
	5/29/2019	N/A	N/A	N/A	N/A	< 3	N/A	N/A	< 3	< 3
	9/2/2020	N/A	N/A	N/A	N/A	< 3	N/A	N/A	< 3	N/A
	3/3/2021	N/A	N/A	N/A	N/A	< 3	N/A	N/A	< 3	N/A
	6/15/2022	N/A	N/A	N/A	N/A	< 3	N/A	N/A	< 3	N/A
	5/24/2023	N/A	N/A	N/A	N/A	< 3	N/A	N/A	< 3	N/A
	11/21/2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 3

Note: \* indicates 'J flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.

Denotes Confirmed Outlier. Statistically Excluded.

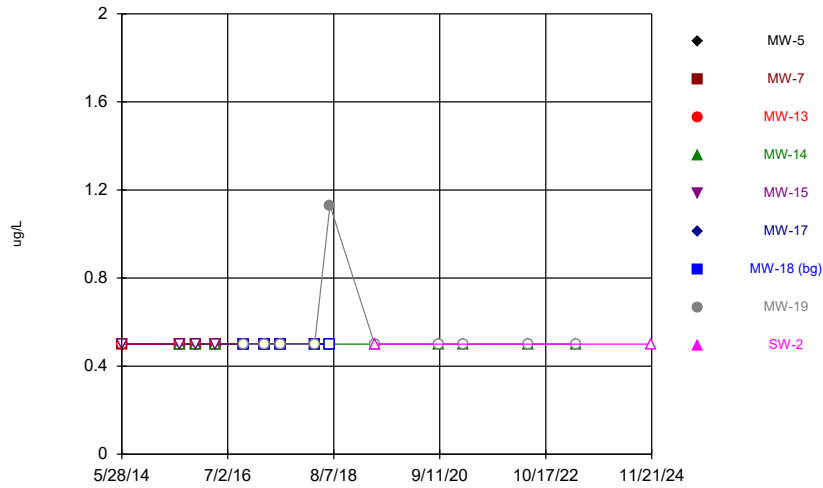
Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.



Appendix D  
Statistical Output

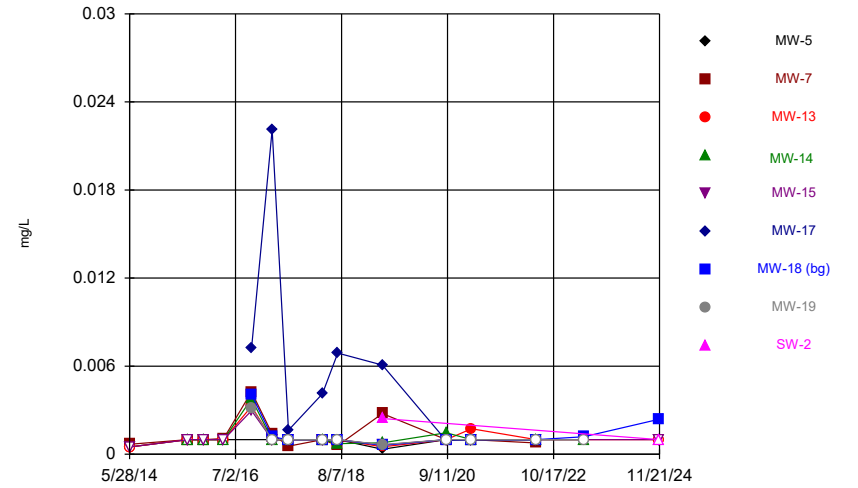
## Time Series Plots

Time Series



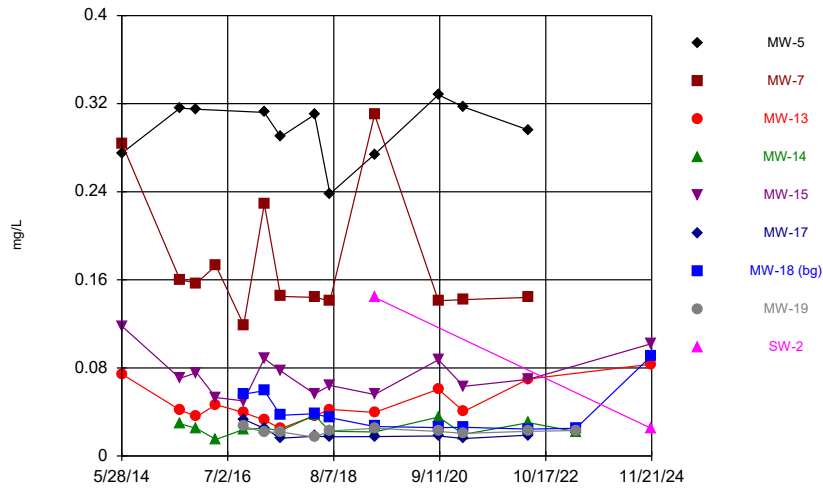
Constituent: 1,2-Dichloroethane Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



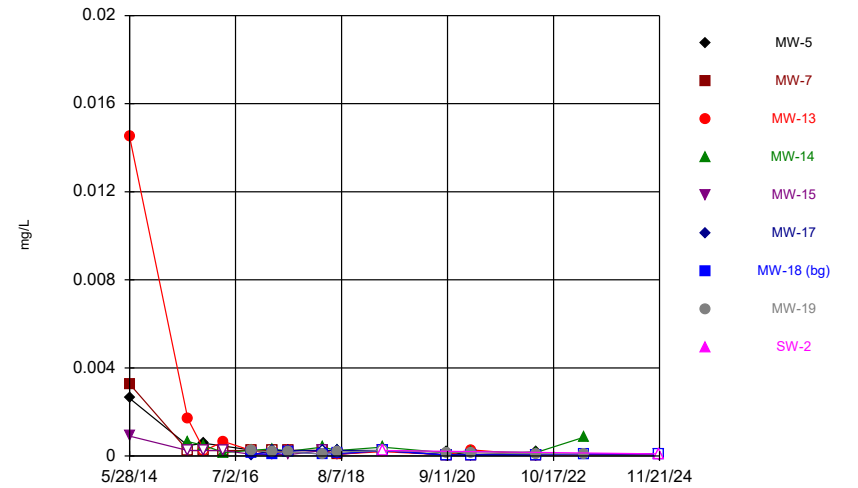
Constituent: Arsenic Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



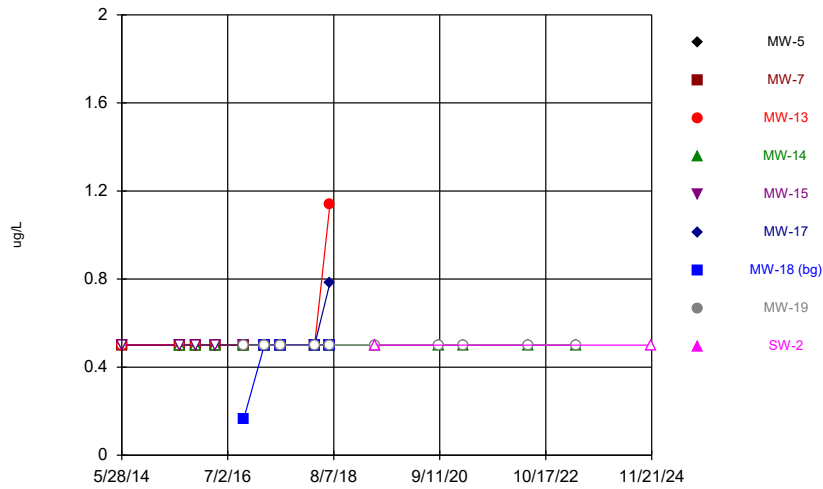
Constituent: Barium Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



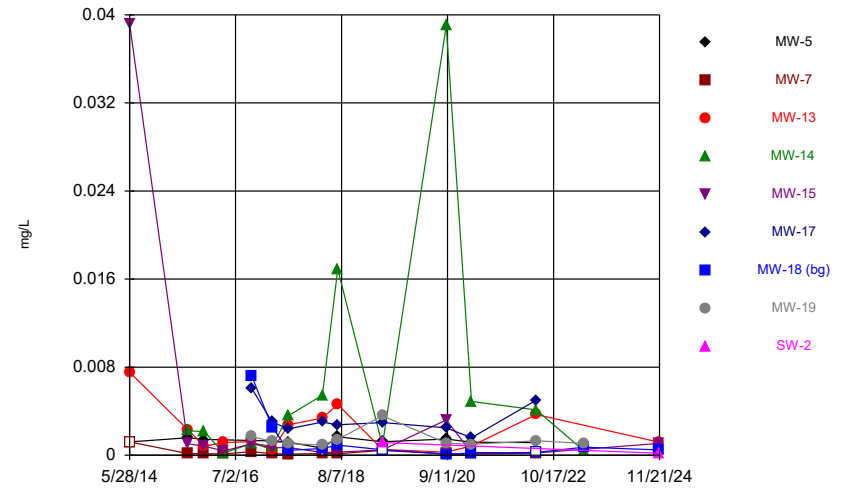
Constituent: Cadmium Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



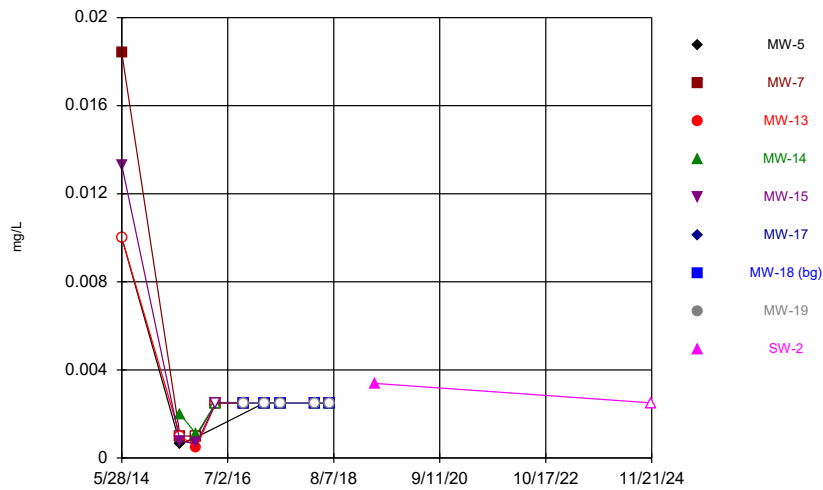
Constituent: Carbon Disulfide Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



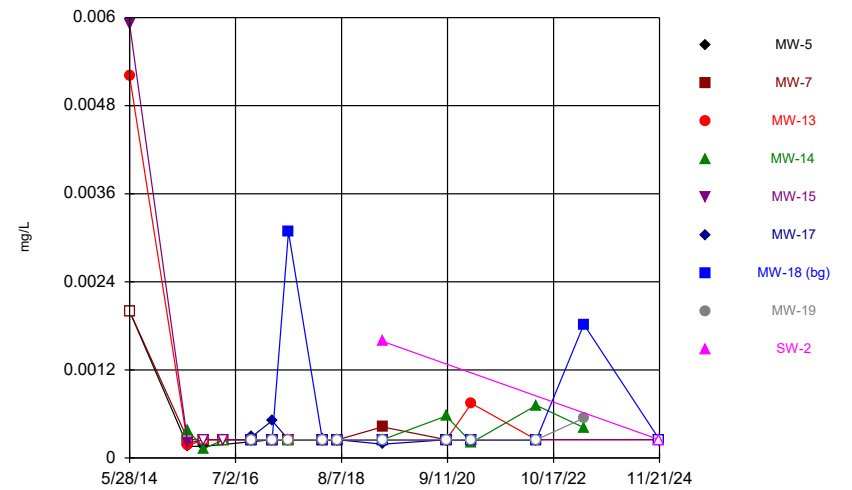
Constituent: Cobalt Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



Constituent: Copper Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

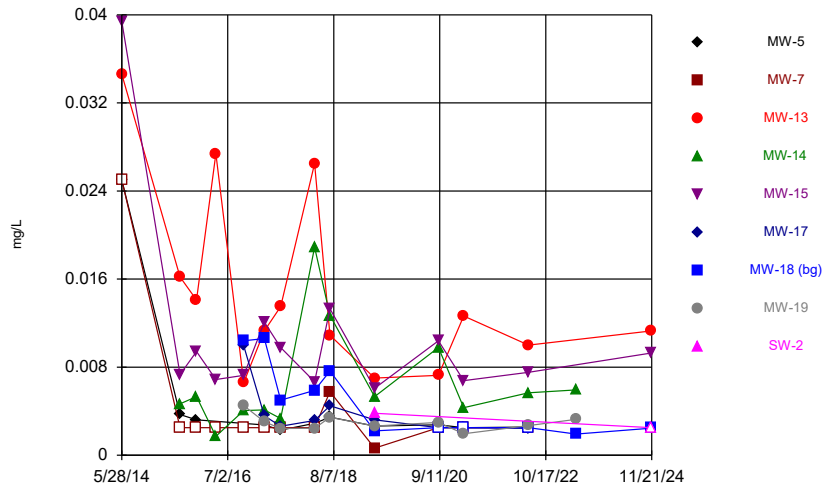
Time Series



Constituent: Lead Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

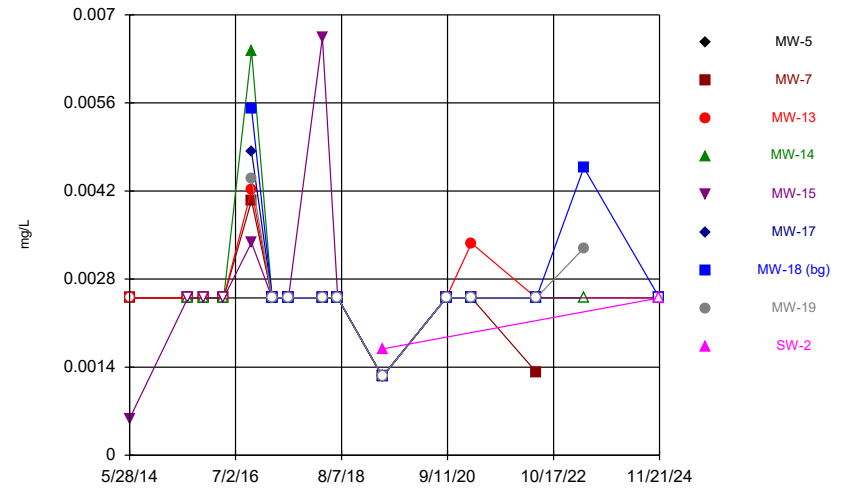


Time Series



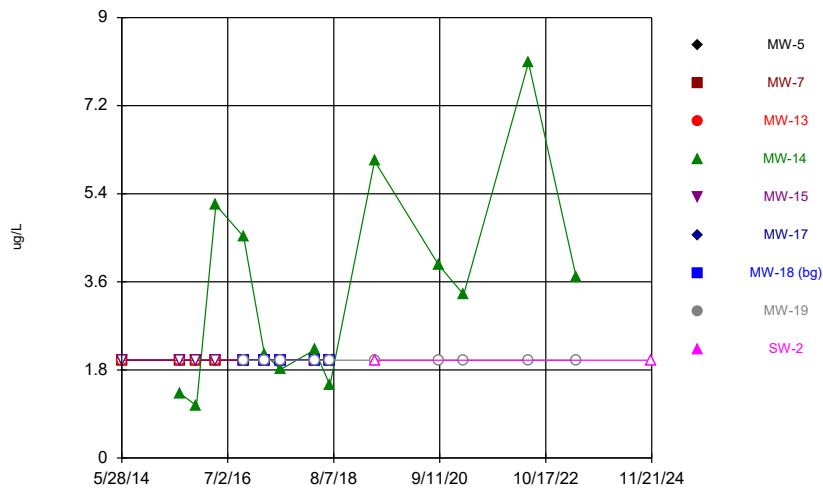
Constituent: Nickel Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



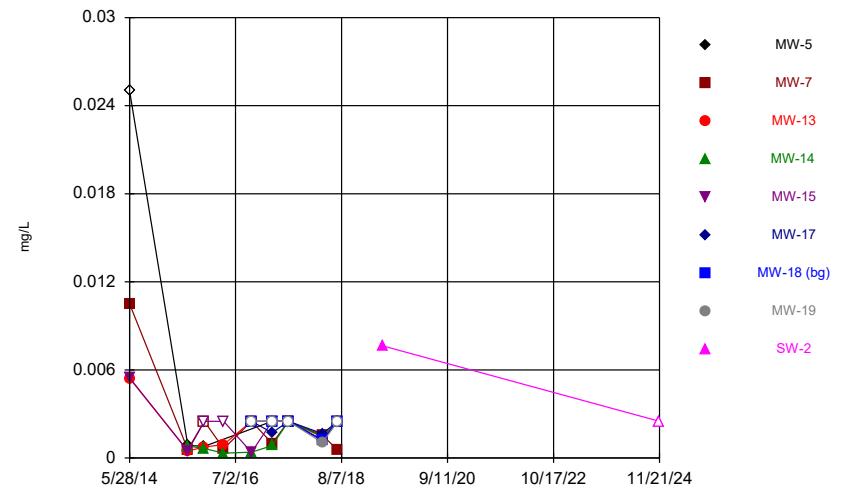
Constituent: Selenium Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



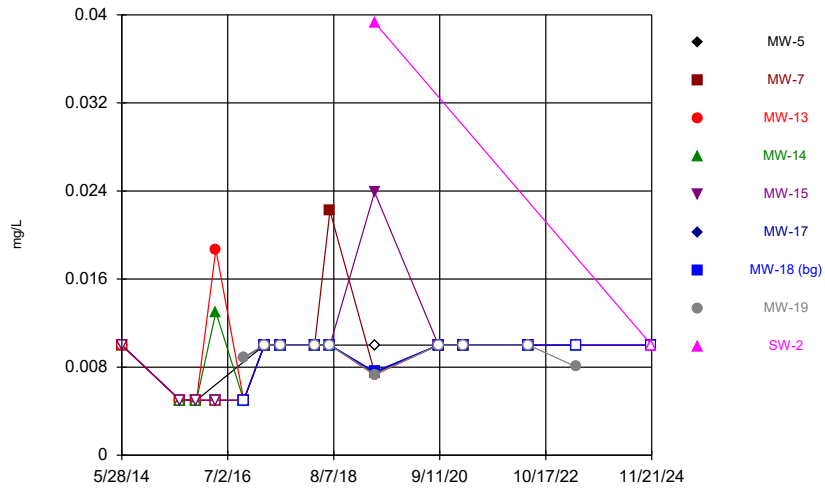
Constituent: Trichlorofluoromethane Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

Time Series



Constituent: Vanadium Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisa County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

### Time Series



Constituent: Zinc Analysis Run 12/18/2024 11:00 AM View: 2024 AWQR Timeseries  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: LCRSW Sanitas

## Mann-Kendall Trend Table and Graphs

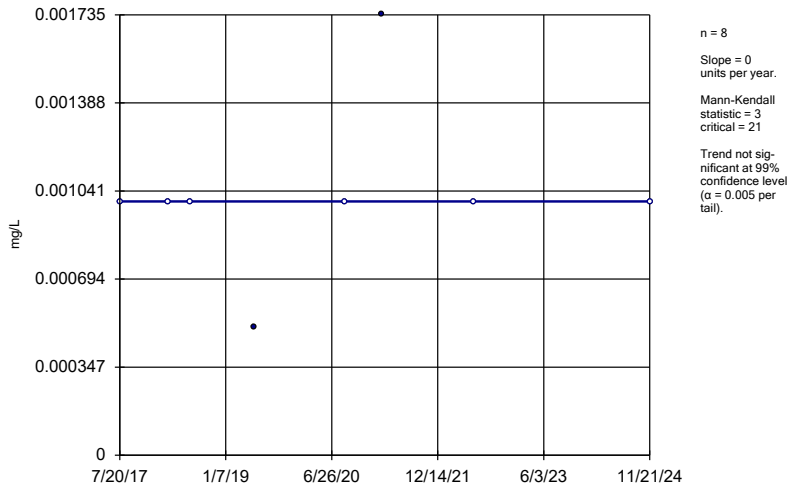
# Trend Test

Louisa County Sanitary Landfill    Client: SCS Engineers    Data: Louisa-2024-AWQR-MasterAM-edit    Printed 12/16/2024, 2:24 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-13	0	3	21	No	8	75	0.01	NP
Arsenic (mg/L)	MW-18 (bg)	0.00005439	14	21	No	8	62.5	0.01	NP
<b>Barium (mg/L)</b>	<b>MW-13</b>	<b>0.0079</b>	<b>22</b>	<b>21</b>	<b>Yes</b>	<b>8</b>	<b>0</b>	<b>0.01</b>	<b>NP</b>
Barium (mg/L)	MW-15	0.003321	8	21	No	8	0	0.01	NP
Barium (mg/L)	MW-18 (bg)	-0.000786	-10	-21	No	8	0	0.01	NP
Cadmium (mg/L)	MW-13	-0.00001941	-9	-21	No	8	50	0.01	NP
Carbon Disulfide (ug/L)	MW-13	0	7	21	No	8	87.5	0.01	NP
Cobalt (mg/L)	MW-13	-0.0002051	-2	-21	No	8	0	0.01	NP
Cobalt (mg/L)	MW-15	-0.000004014	-1	-21	No	8	25	0.01	NP
Cobalt (mg/L)	MW-18 (bg)	-0.00002935	-4	-21	No	8	25	0.01	NP
Lead (mg/L)	MW-13	0	3	21	No	8	87.5	0.01	NP
Lead (mg/L)	MW-18 (bg)	0	5	21	No	8	87.5	0.01	NP
Nickel (mg/L)	MW-13	-0.000331	-6	-21	No	8	0	0.01	NP
Nickel (mg/L)	MW-15	-0.0000154	0	21	No	8	0	0.01	NP
Nickel (mg/L)	MW-18 (bg)	-0.0002328	-13	-21	No	8	37.5	0.01	NP
Selenium (mg/L)	MW-15	0	-3	-21	No	8	87.5	0.01	NP
Zinc (mg/L)	MW-15	0	-1	-21	No	8	87.5	0.01	NP

### Sen's Slope Estimator

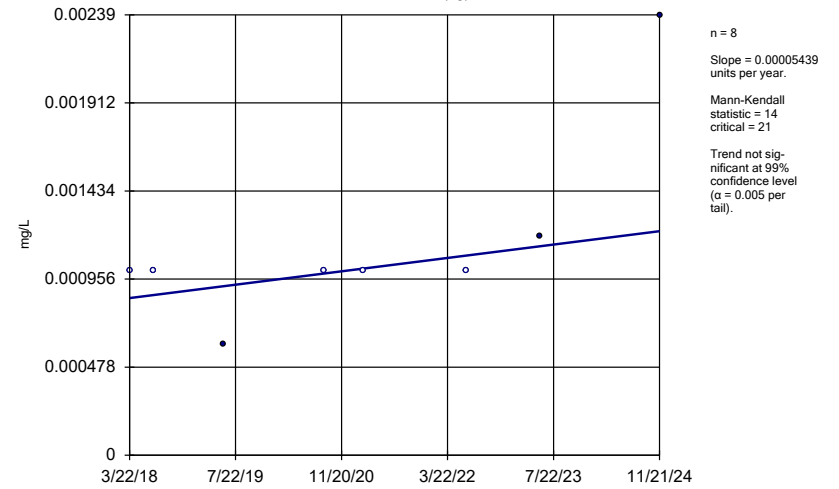
MW-13



Constituent: Arsenic Analysis Run 12/16/2024 2:22 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

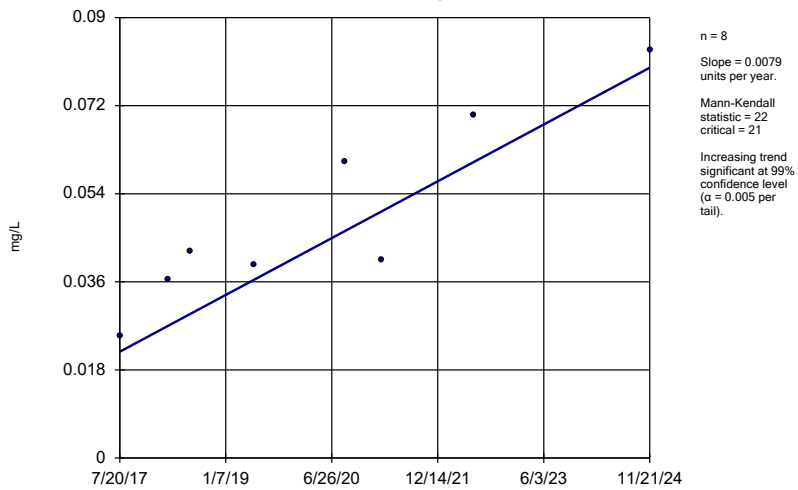
MW-18 (bg)



Constituent: Arsenic Analysis Run 12/16/2024 2:22 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

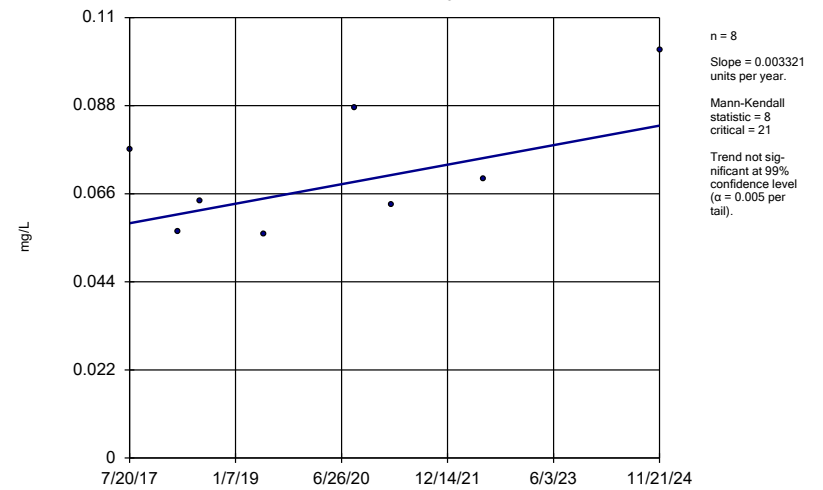
MW-13



Constituent: Barium Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

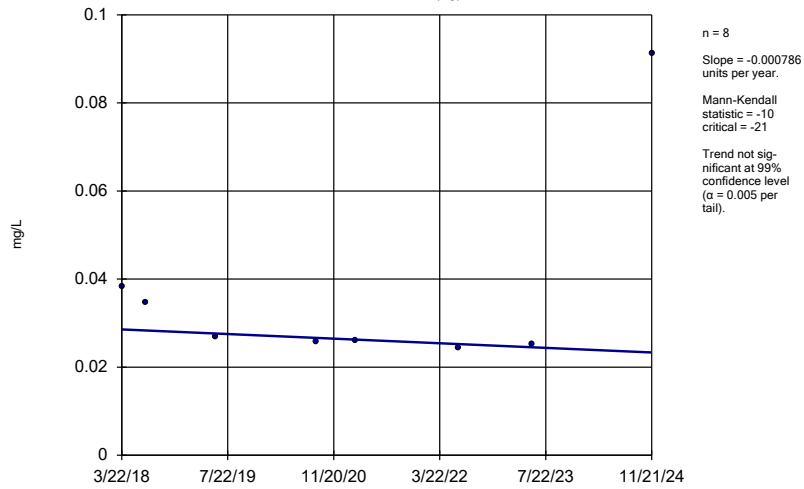
MW-15



Constituent: Barium Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

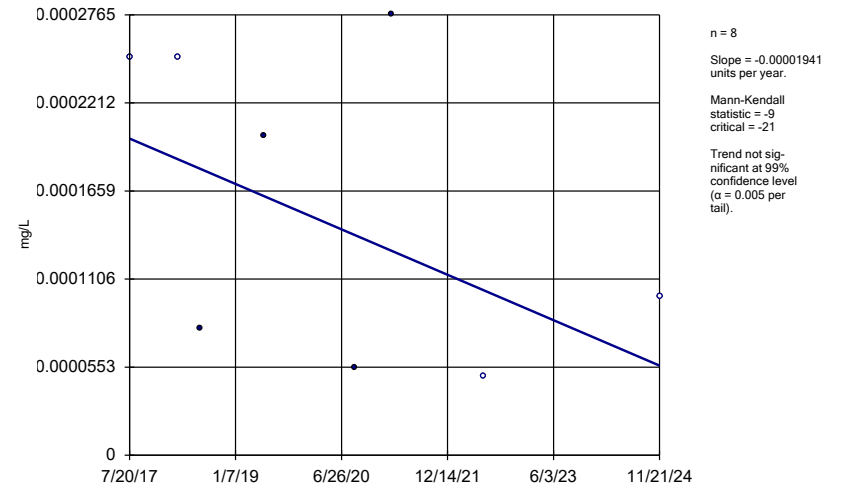
MW-18 (bg)



Constituent: Barium Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

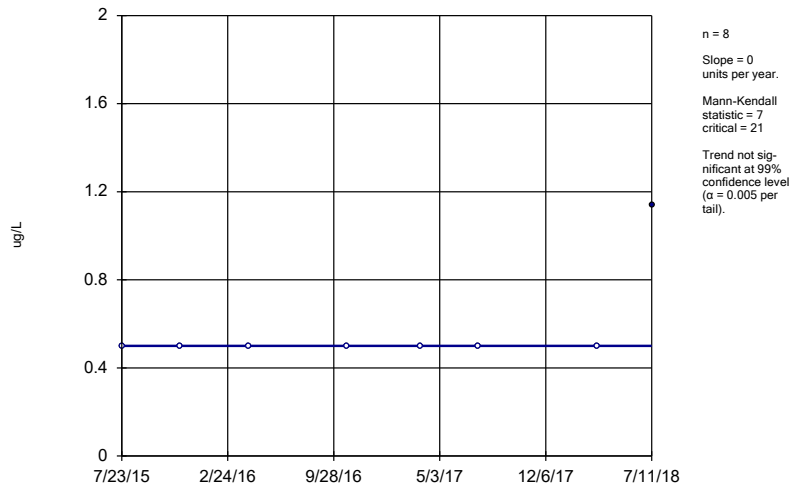
MW-13



Constituent: Cadmium Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

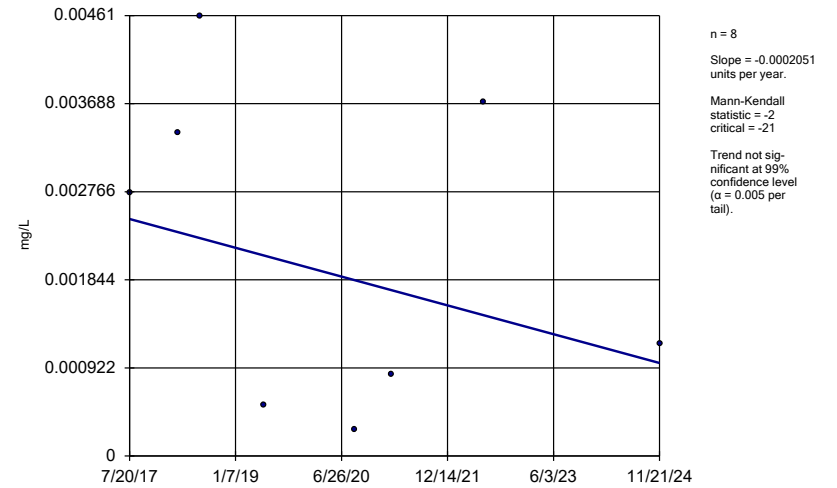
MW-13



Constituent: Carbon Disulfide Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

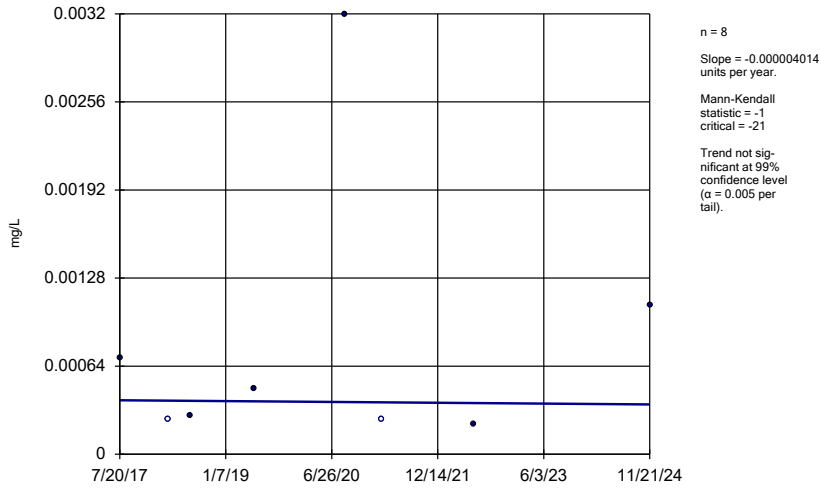
MW-13



Constituent: Cobalt Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

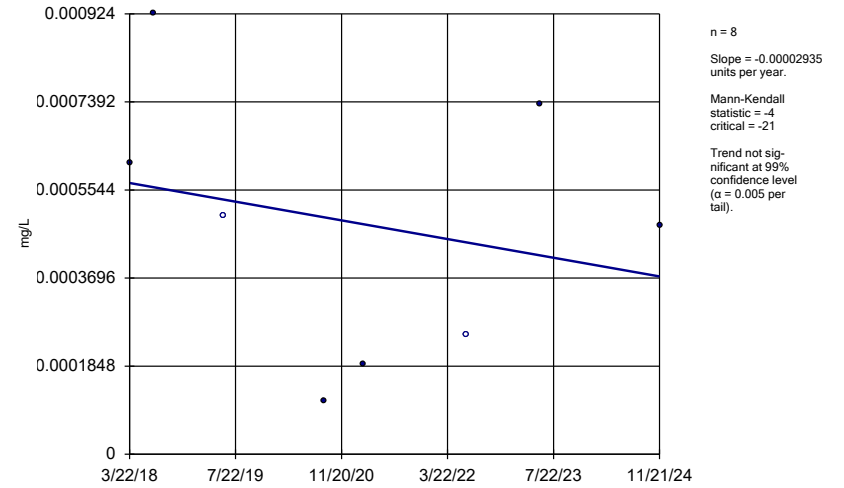
MW-15



Constituent: Cobalt Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

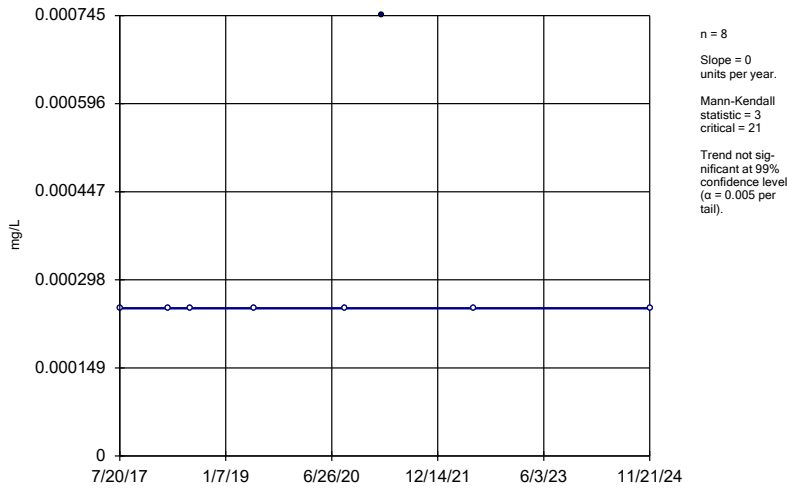
MW-18 (bg)



Constituent: Cobalt Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

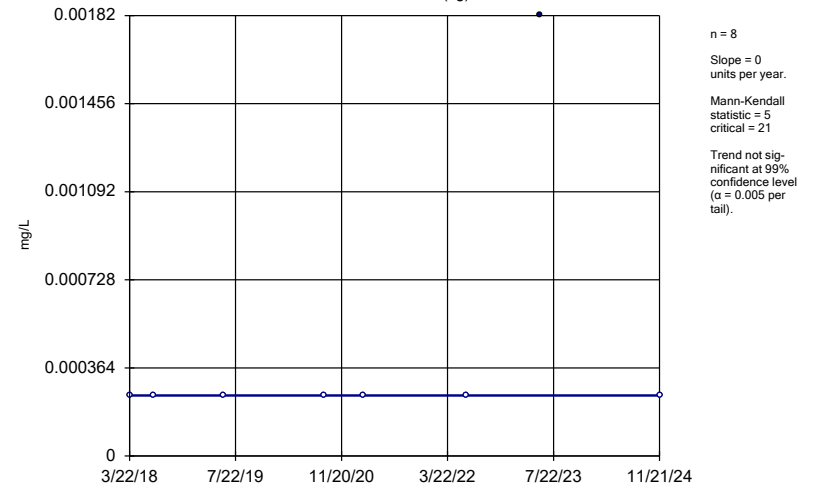
MW-13



Constituent: Lead Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

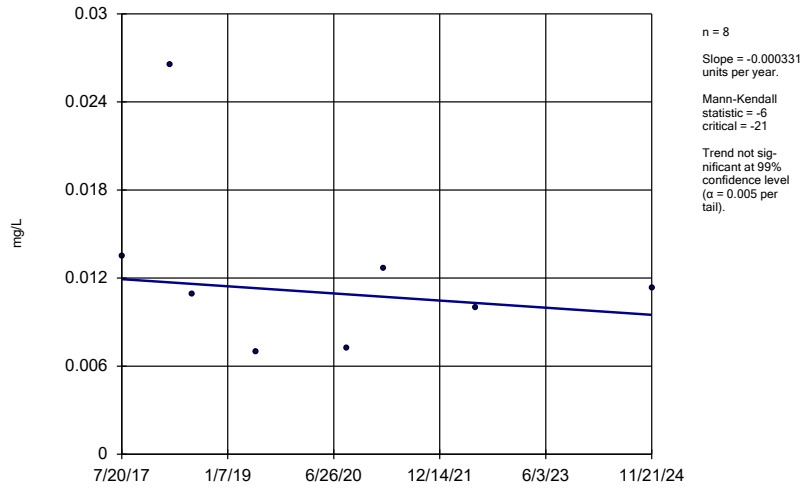
MW-18 (bg)



Constituent: Lead Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

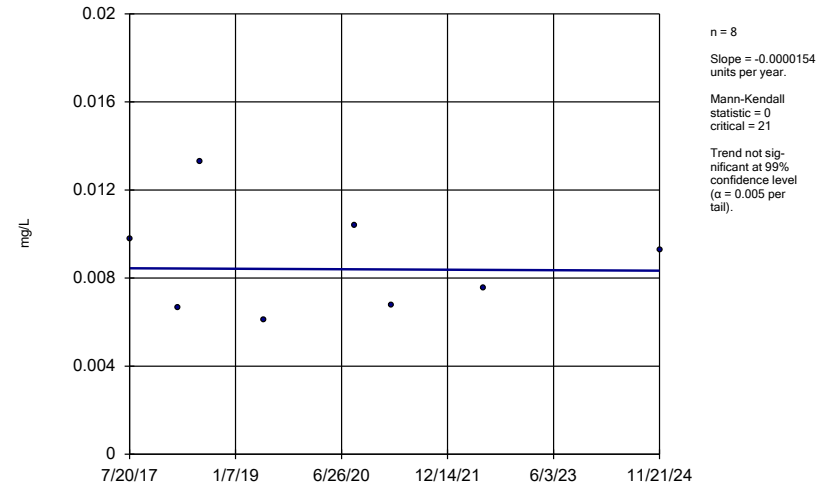
MW-13



Constituent: Nickel Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

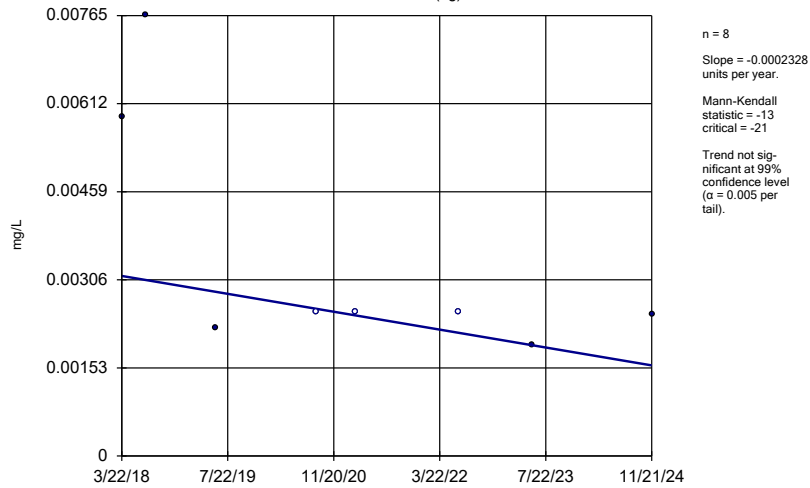
MW-15



Constituent: Nickel Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

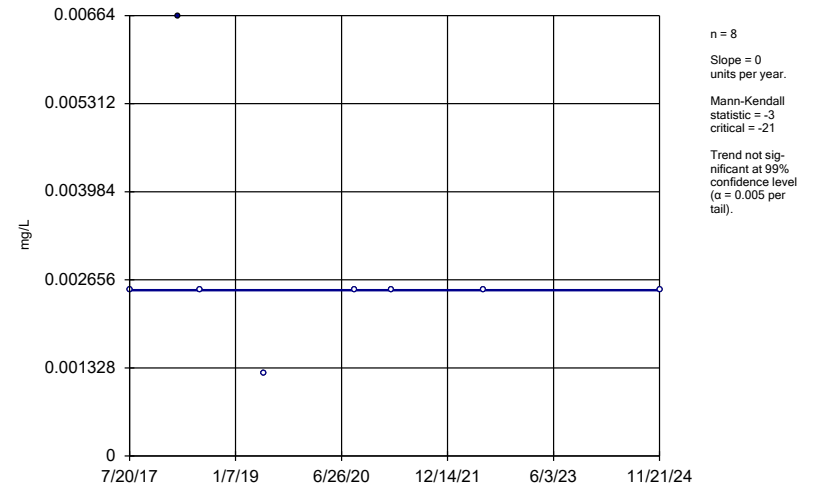
MW-18 (bg)



Constituent: Nickel Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Sen's Slope Estimator

MW-15

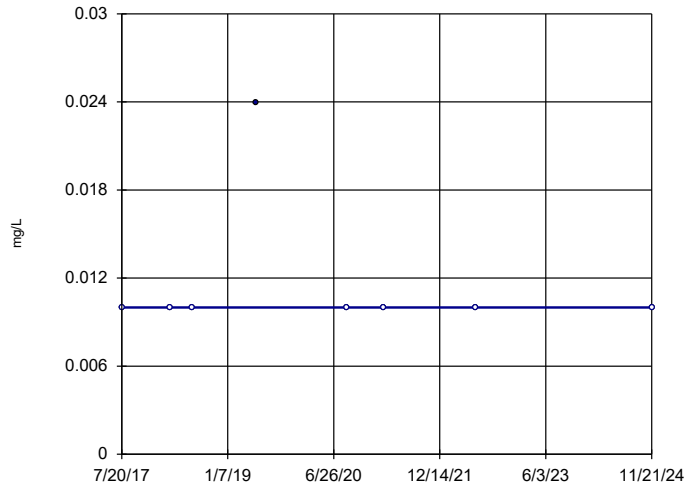


Constituent: Selenium Analysis Run 12/16/2024 2:23 PM View: 2024 AWQR iMK  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit



### Sen's Slope Estimator

MW-15



n = 8  
Slope = 0  
units per year.  
Mann-Kendall  
statistic = -1  
critical = -21  
Trend not sig-  
nificant at 99%  
confidence level  
( $\alpha = 0.005$  per  
tail).

## Confidence Intervals Table and Graphs

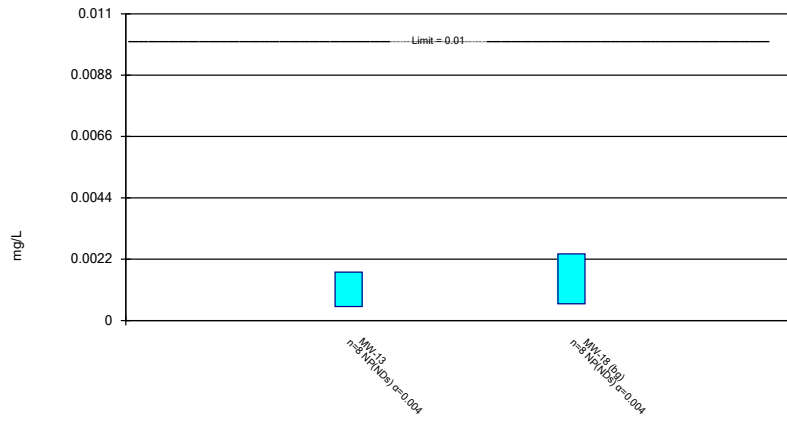
# Confidence Interval

Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit Printed 12/16/2024, 2:40 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-13	0.001735	0.000505	0.01	No	8	75	No	0.004	NP (NDs)
Arsenic (mg/L)	MW-18 (bg)	0.00239	0.000603	0.01	No	8	62.5	No	0.004	NP (NDs)
Barium (mg/L)	MW-15	0.08904	0.05491	2	No	8	0	No	0.01	Param.
Barium (mg/L)	MW-18 (bg)	0.0911	0.0244	2	No	8	0	No	0.004	NP (normality)
Cadmium (mg/L)	MW-13	0.0002139	0.0000353	0.005	No	8	50	No	0.01	Param.
Carbon Disulfide (ug/L)	MW-13	1.14	0.5	700	No	8	87.5	No	0.004	NP (NDs)
Cobalt (mg/L)	MW-13	0.003912	0.0004109	0.0021	No	8	0	No	0.01	Param.
Cobalt (mg/L)	MW-15	0.0032	0.000216	0.0021	No	8	25	No	0.004	NP (normality)
Cobalt (mg/L)	MW-18 (bg)	0.0007759	0.000169	0.0021	No	8	25	No	0.01	Param.
Lead (mg/L)	MW-13	0.000745	0.00025	0.015	No	8	87.5	No	0.004	NP (NDs)
Lead (mg/L)	MW-18 (bg)	0.00182	0.00025	0.015	No	8	87.5	No	0.004	NP (NDs)
Nickel (mg/L)	MW-13	0.01891	0.005869	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-15	0.01131	0.006145	0.1	No	8	0	No	0.01	Param.
Nickel (mg/L)	MW-18 (bg)	0.00765	0.00193	0.1	No	8	37.5	No	0.004	NP (normality)
Selenium (mg/L)	MW-15	0.00664	0.00125	0.05	No	8	87.5	No	0.004	NP (NDs)
Zinc (mg/L)	MW-15	0.0239	0.01	2	No	8	87.5	No	0.004	NP (NDs)

### Non-Parametric Confidence Interval

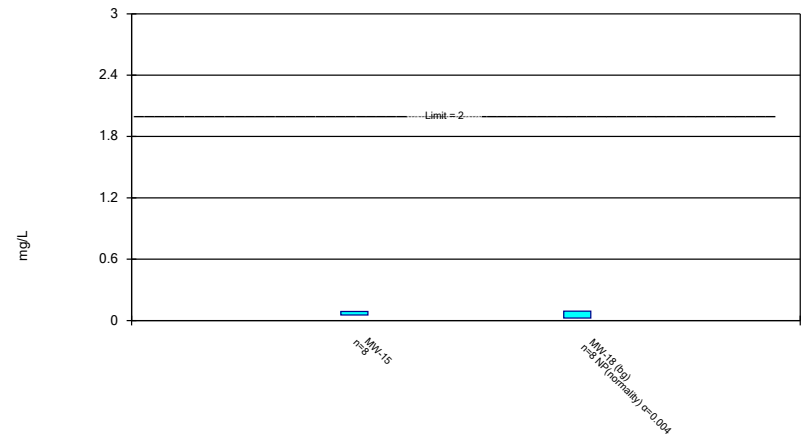
Compliance Limit is not exceeded.



Constituent: Arsenic Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Parametric and Non-Parametric (NP) Confidence Interval

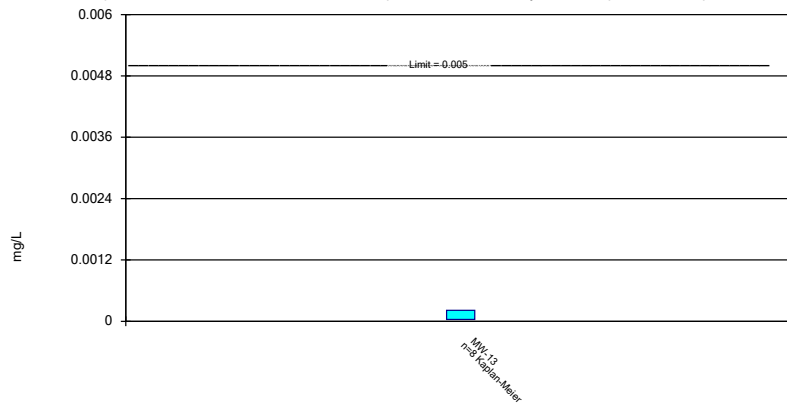
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Barium Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Parametric Confidence Interval

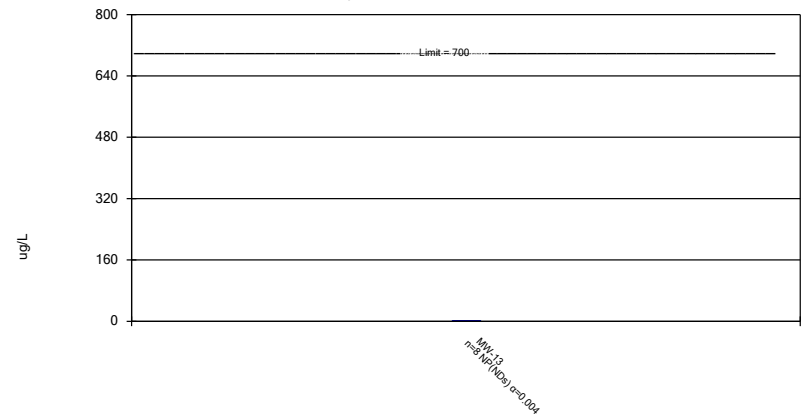
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cadmium Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Non-Parametric Confidence Interval

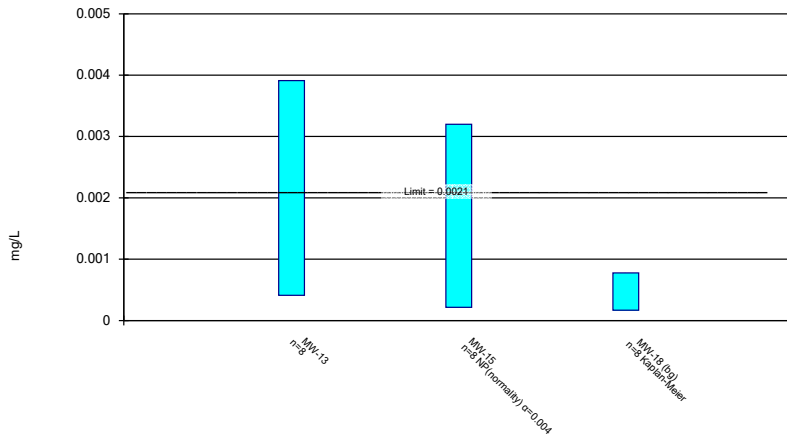
Compliance Limit is not exceeded.



Constituent: Carbon Disulfide Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
Louisiana County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Parametric and Non-Parametric (NP) Confidence Interval

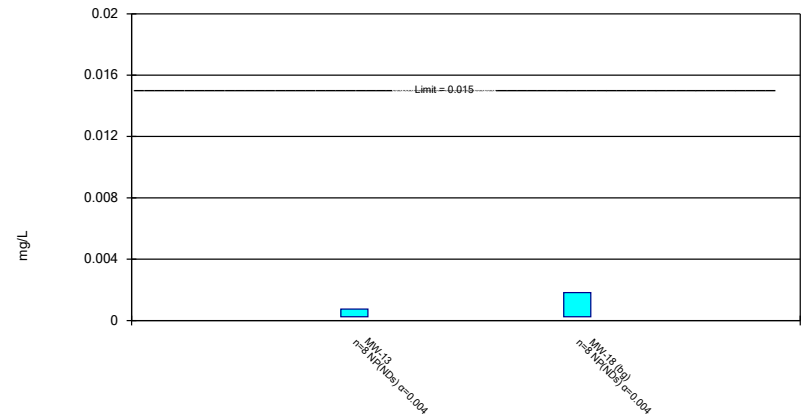
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Non-Parametric Confidence Interval

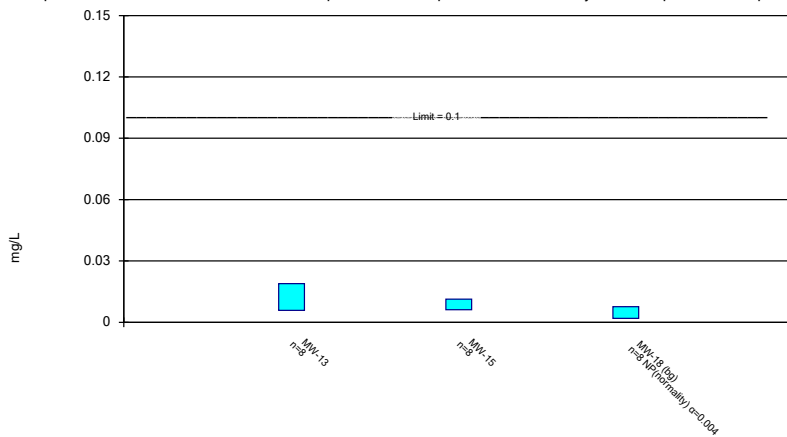
Compliance Limit is not exceeded.



Constituent: Lead Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Parametric and Non-Parametric (NP) Confidence Interval

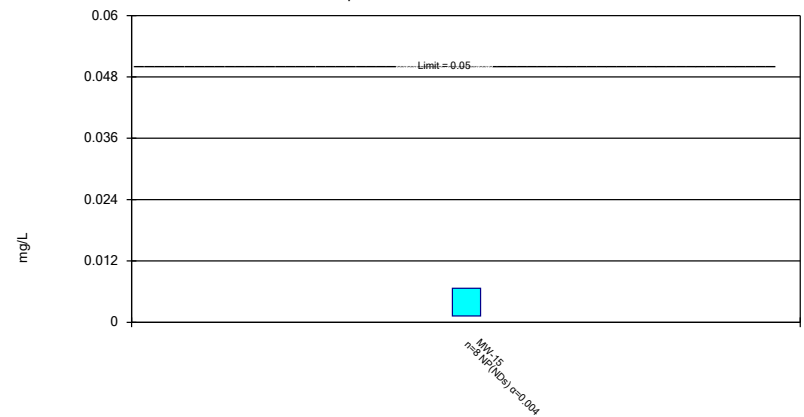
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Nickel Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Non-Parametric Confidence Interval

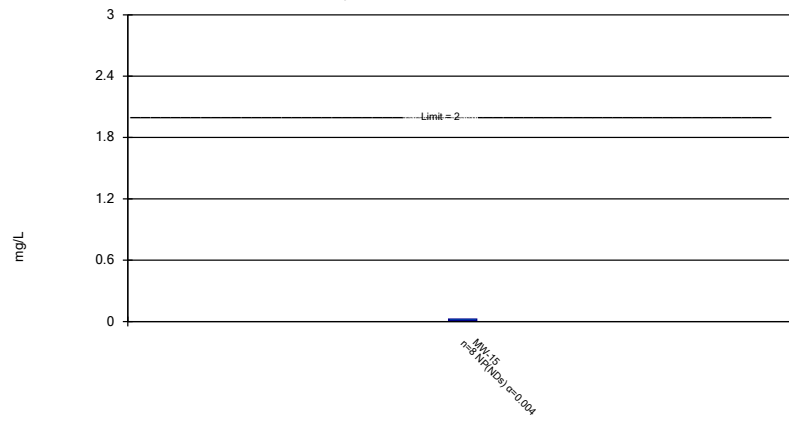
Compliance Limit is not exceeded.



Constituent: Selenium Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
 Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

### Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Zinc Analysis Run 12/16/2024 2:39 PM View: 2024 AWQR Confidence Interval  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit

## Theil-Sen Table and Graph

# Trend Test

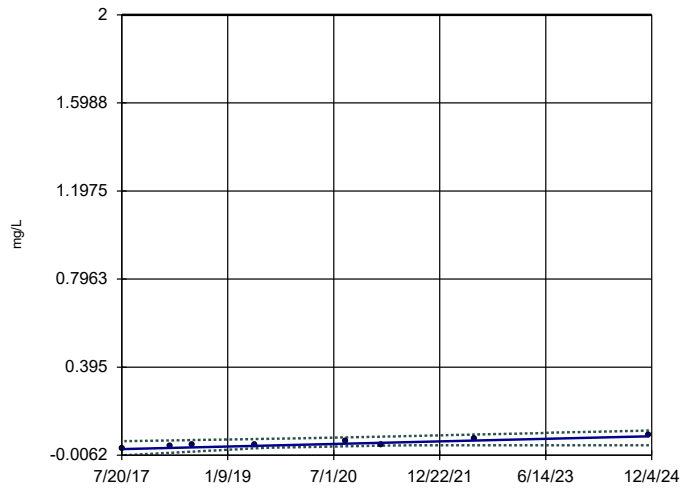
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit Printed 12/16/2024, 3:00 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
<b>Barium (mg/L)</b>	<b>MW-13</b>	<b>0.0079</b>	<b>22</b>	<b>21</b>	<b>Yes</b>	<b>8</b>	<b>0</b>	<b>0.01</b>	<b>NP</b>



### Sen's Slope and 99% Confidence Band

MW-13



n = 8  
Slope = 0.0079  
units per year.  
Mann-Kendall  
statistic = 22  
critical = 21  
Increasing trend  
significant at 99%  
confidence level  
( $\alpha = 0.005$  per  
tail).  
Confidence band is  
below GWPS mg/L (2).

Constituent: Barium Analysis Run 12/16/2024 2:59 PM View: 2024 AWQR Theil Sen  
Louisa County Sanitary Landfill Client: SCS Engineers Data: Louisa-2024-AWQR-MasterAM-edit