

West Des Moines, IA

PROJECT: GRRWA,FY26 Env Comp,IA 27224317.26      DATE: 3/5/2026

SUBJECT: 2026-03-05\_GRRWA Sanitary Landfill, Phase 2 MSWLF Unit-56-SDP-07-80P-2025 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report      TRANSMITTAL ID: 00001

PURPOSE: For your approval      VIA: Info Exchange

FROM

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TO

NAME	COMPANY	EMAIL	PHONE
Mike Smith 502 East 9th Street Des Moines IA 50319-0034 United States	Iowa, State of	mike.smith@dnr.iowa.gov	515-725-8200

REMARKS: Good morning Mike-

SCS Engineers, on behalf of the Great River Regional Waste Authority, is submitting the 2025 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report for the Phase 2 unit of the Great River Regional Waste Authority Sanitary Landfill. If you have any questions or comments regarding these reports, please contact me at the number below. Thank you.

Nathan Ohrt  
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# Transmittal

DATE: 3/5/2026  
TRANSMITTAL ID: 00001

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QTY	DATED	TITLE	NOTES
1	3/5/2026	2026-03-05_GRRWA Sanitary Landfill, Phase 2 MSWLF Unit-56-SDP-07-80P-2025 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report.pdf	

## COPIES:

Trenton Burgess (Great River Regional Waste Authority, IA)  
Austin Banks (Great River Regional Waste Authority, IA)  
Tim Buelow (SCS Engineers)  
Nathan Ohrt (SCS Engineers)  
Becky Jolly

March 5, 2026  
File No. 27224317.26

Mr. Mike Smith, P.E.  
Iowa Department of Natural Resources  
Land Quality Bureau  
6200 Park Avenue  
Des Moines, Iowa 50321

Subject           2025 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, and Landfill Gas Annual Report  
Great River Regional Waste Authority Sanitary Landfill  
Phase 2 MSWLF Unit  
Permit No. 56-SDP-07-80P

Dear Mike:

SCS Engineers, on behalf of the Great River Regional Waste Authority (GRRWA), has completed the required groundwater monitoring and statistical evaluation for the Phase 2 municipal solid waste landfill (MSWLF) unit at the GRRWA Sanitary Landfill for the year 2025. Services were performed in general accordance with Iowa Administrative Code (IAC) 567-113.10 and the current requirements for implementation of the Hydrologic Monitoring System Plan for the Phase 2 MSWLF unit. Please find enclosed a copy of the 2025 Annual Water Quality Report.

Additionally, an evaluation of the leachate control system and gas monitoring results for the Phase 2 MSWLF unit is included in accordance with IAC 567-113.7(5)"b"(14) and 113.9(2)"d," respectively. The 2025 Leachate Control System Performance Evaluation Report and the 2025 Landfill Gas Annual Report are included as appendices to the Annual Water Quality Report.

If you have any questions regarding these reports, please contact Nathan Ohrt at (319) 331-9613.

Sincerely,



Nathan Ohrt  
Senior Project Professional  
SCS Engineers



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

NPO/TCB

Copies: Mr. Austin Banks, Great River Regional Waste Authority



# 2025 Annual Water Quality Report, Leachate Control System Performance Evaluation Report, & Landfill Gas Annual Report

Great River Regional Waste Authority Sanitary Landfill  
Phase 2 MSWLF Unit  
Solid Waste Permit No. 56-SDP-07-80P  
Fort Madison, Iowa

**SCS ENGINEERS**

27224317.26 | March 2026

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## CERTIFICATION

Prepared by: 

Date: 3/5/2026

Typed: Nathan Ohrt

Reviewed by: 

Date: 3/5/2026

Typed: Timothy C. Buelow, P.E.

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

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

## EXECUTIVE SUMMARY

### ES.1 Period of Report Coverage

The period of report coverage is January – December 2025 and includes the sampling events summarized in **Table 2**.

### ES.2 Report Priority

The following summarizes report priorities associated with groundwater compliance of the Phase 2 municipal solid waste landfill unit (Phase 2 MSWLF unit) at the Great River Regional Waste Authority (GRRWA) Sanitary Landfill (Landfill):

- Department review urgency: None.
- Department review impact on rules schedule: None.
- Actions or activities on hold pending Department review or comment: None.
- Actions and/or permit amendments needed: None.

### ES.3 Site Status and Applicable Rules

- Landfill Status: Active.
- Types of waste accepted: Municipal solid waste, construction and demolition waste, special waste.
- Applicable IAC rules: 2009 567-113.10.

### ES.4 Comments

Statistically significant increases (SSIs) above background were indicated during this reporting period for copper, lead, and zinc in monitoring well MW-26, antimony in monitoring well MW-28, and lead and nickel in monitoring well MW-29. As approved by the Iowa Department of Natural Resources in an email dated March 2, 2026 (Doc #116306), a standalone retesting event will not be conducted for the indicated SSIs. The results of the 1<sup>st</sup> 2026 semi-annual sampling event will be used to confirm or not confirm the indicated SSIs.

There were no groundwater protection standard (GWPS) exceedances and no volatile organic compounds (VOCs) detected during this reporting period.

Monitoring Well/Piezometer Abandonment Forms for monitoring wells MW-34A and MW-34B are included in Appendix G.

## 1.0 ACRONYMS/ABBREVIATIONS

ACM = Assessment of Corrective Measures  
CAMP = Corrective Action Groundwater Monitoring Program  
CCV = Continuing Calibration Verification  
CL = Control Limit - Mean plus Two Standard Deviations  
COC = Chain of Custody  
DNR = Iowa Department of Natural Resources  
DO = Dissolved Oxygen  
DQR = Double Quantification Rule  
GWPS = Groundwater Protection Standard  
LEL = Lower Explosive Limit  
LCL = Lower Confidence Limit  
LCS = Laboratory Control Sample  
LN = Lognormal  
MCL = EPA Maximum Contaminant Level  
N = Normal  
NC = No Change  
NM = Not Measured  
NP = Non-Parametric  
ORP = Oxidation-Reduction Potential  
P = Parametric  
PL = Prediction Limit  
RL = Reporting Limit  
SWS = DNR Statewide Standard for a protected groundwater source  
SSI = Statistically Significant Increase above background  
SSL = Statistically Significant Level above groundwater protection standard  
SSS = Site-Specific Standard (Site-Specific GWPS)  
TSS = Total Suspended Solids  
UCL = Upper Confidence Limit  
VOC = Volatile Organic Compound

## 2.0 SITE BACKGROUND

### 2.1 SITE LOCATION

The Landfill property is depicted in **Figure 1**, Approved Monitoring Network. The facility is located at 2092 303<sup>rd</sup> Avenue in Fort Madison, Iowa. The Landfill property consists of approximately 221 acres generally within the NW  $\frac{1}{4}$  and SW  $\frac{1}{4}$  of Section 27 and the NW  $\frac{1}{4}$  of Section 34, T68N, R4W, in Lee County, Iowa.

## 2.2 FACILITY

The Landfill has two non-contiguous fill areas: the Phase 1 MSWLF unit, regulated under an environmental covenant recorded at the Lee County Recorder's Office on October 17, 2025 (Doc #114521); and the Phase 2 MSWLF unit, which consists of Regions 1, 2, and 3. The Phase 2 MSWLF unit began accepting waste on April 20, 1993 and has been actively receiving waste since that time.

According to information received from Landfill staff, the property was purchased from the State of Iowa, which used the site for agricultural purposes.

## 2.3 GEOLOGY AND HYDROGEOLOGY OF THE SITE

A previous hydrologic investigation of the site was conducted by James M. Montgomery Engineers, Inc. in October 1990. The report entitled Phase II Hydrogeological Investigation of the Lee County Sanitary Landfill, dated February 1991 (1991 HIR), provided a detailed geological description for the Phase 1 and Phase 2 areas. An excerpt from the 2008 Revised HMSP, which relied on the 1991 HIR, is included below.

*The currently closed landfill operation (Phase 1) utilized steep ravines as fill areas. The site is located in an area consisting primarily of loess soils overlying glacial till. Bedrock exists at a depth of approximately 300 feet below ground surface (bgs) with the upper strata consisting of shales, siltstones, dolomites, and limestones from the Devonian Era. The current fill area (Phase 2), located east of the closed fill area, consists of similar geologic strata.*

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

*Bedrock boring logs obtained for the area of the landfill indicate that the uppermost bedrock systems beneath the landfill site are the Mississippian and Devonian units consisting of a sequence of siltstones, limestones, and shales. The first bedrock unit encountered is the Prospect Hill Formation, which is usually classified as an aquifer and is considered a very low-yielding aquifer in Southeast Iowa.*

*Boring logs for the site indicate that the depth to bedrock in the general area of the landfill ranges from 250 feet bgs in the lowland areas to 330 feet bgs in the upland areas.*

*Vertical and horizontal permeabilities of specific site deposits were analyzed by laboratory analysis and slug testing. It was found that the average horizontal permeability measurements of the strata on site were almost two orders of magnitude greater than the average vertical permeability measurements.*

*The water table system occurs entirely within the glacial deposits. In this sense, an aquifer is defined as a saturated, permeable, geologic unit capable of transmitting water. The uppermost useable aquifer on site as a water supply is probably the Mississippian Prospect Hill Formation, located approximately 250 feet bgs in the lowlands. The uppermost aquifer for the site has been determined to be the glacial till, or more specifically, highly permeable sand or gravel seams within. Based on this information, the water table will be subject to groundwater monitoring and compliance determination.*

*Surface water draining from the site and adjacent areas flows to a small stream leaving the southern boundary of the GRRWA Sanitary Landfill property. This stream begins within the landfill, widens and becomes Fork Creek, flows south, and eventually empties into the Mississippi River. The on-site portion of the stream is an ephemeral channel and only flows after heavy precipitation events.*

*The lowest natural elevation at the site is approximately 610 feet asl south of the leachate lagoon in the channel that drains the sedimentation pond. The majority of the site slopes toward the sedimentation pond. Drainage from the site is generally to the sedimentation pond, which outlets to Fork Creek.*

*The depth to the upper or surficial aquifer across the site as measured in annual water quality reports (AWQRs) varies from an average of 9 feet to 24 feet bgs with the deeper levels measured in wells screened in a sandy silty clay layer.*

### **3.0 FIGURES DISCUSSION**

The following figures are attached.

#### **3.1 FIGURE 1 – APPROVED MONITORING NETWORK**

The Landfill property and the hydrologic monitoring system plan (HMSP) monitoring points are depicted in **Figure 1**. **Figure 1** indicates the respective monitoring programs of the HMSP monitoring points as of the beginning of this reporting period. A summary of the HMSP monitoring network is included in **Table 1**.

#### **3.2 FIGURE 2 – GROUNDWATER CONTOURS**

A groundwater contour map based on groundwater levels measured during the November 2025 sampling event is included in **Figure 2**. Groundwater flow at the site is generally to the south/southeast; however, the underdrains beneath the Phase 2 MSWLF unit create an inward gradient, with groundwater flow towards the southern portions of Region 1, and Cells R2-1 and R2-2 in Region 2. This is consistent with previous groundwater contour maps.

### **4.0 STANDARDS HISTORY GRAPHS**

As stated in DNR correspondence dated April 11, 2019 (Doc #94881), the DNR has allowed the use of tables as an alternative to the standards history graphs to reduce the overall report size. Therefore, graphs are not provided as the monitoring network monitoring points were analyzed using intrawell statistical methods.

Prediction limits were below the statewide standards during this reporting period with the exception of the following:

- Cobalt in monitoring points MW-26, MW-28, MW-29, PH2UD, and GU-3A.
- Thallium in monitoring well MW-29.
- Arsenic in monitoring points PH2UD and GU-3A.
- Nickel and vanadium in GU-3A.

The prediction limits for the intrawell background datasets were used for site-specific GWPSs when they exceeded the MCL or the statewide standard. The prediction limits for monitoring points MW-26, MW-28, MW-29, PH2UD, and GU-3A are included in **Table 5**.

Monitoring points PH2UD and GU-3A did not produce samples during this reporting period, so the Table 5 data for the two monitoring points are based on the results of the 2<sup>nd</sup> 2024 statistical evaluation. Monitoring point GU-4A does not yet have sufficient data for statistical evaluation. Monitoring points GU-1 and GU-2 are treated with the leachate.

## 5.0 QA/QC SUMMARY

The quality assurance/quality control (QA/QC) program for the Phase 2 MSWLF unit 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 provided documentation of the accuracy and precision of the analytical data and confirmed that the analyses were sufficiently sensitive to detect constituents at levels below regulatory standards when technically feasible with the laboratory method utilized. SCS then conducted QA/QC data validation of the produced data, which included a review of sample handling, analytical sensitivity, blanks, accuracy, and precision. A summary of the laboratory QA/QC and data validation can be found in **Appendix B-1**, Laboratory Analytical Data Sheets, and **Appendix B-2**, Data Validation Documentation, respectively. The QA review indicated the data were acceptable.

## 6.0 DATA EVALUATION

Detection monitoring statistical evaluation in accordance with the requirements of Iowa Administrative Code (IAC) 567-113.10(5) was performed for the groundwater analytical data collected during the 2025 reporting period. The statistical evaluation output for samples collected during this reporting period is located in **Appendix D** (Statistical Method and Output) of this report.

### 6.1 BACKGROUND UPDATE

.Background datasets for monitoring wells MW-28 and MW-29 were updated during this reporting period. A statistically significant increasing trend was identified for antimony in monitoring well MW-28, but as the increase was based on an increased reporting limit, the trend was not confirmed and the background update was completed.

### 6.2 DATA EVALUATION

Groundwater monitoring for the Phase 2 MSWLF unit consists of samples from two monitoring wells to the south, one monitoring well downgradient of the leachate lagoon to the southwest, and five groundwater underdrain discharge points, three of which discharge to the south of the Phase 2 MSWLF unit and two that discharge to the east of the Phase 2 MSWLF unit.

SSIs above background were indicated during this reporting period for copper, lead, and zinc in monitoring well MW-26; antimony in monitoring well MW-28; and lead and nickel in monitoring well MW-29. The indicated SSIs will be retested before the next semi-annual sampling event.

Monitoring points PH2UD, GU-1, GU-2, and GU-3A did not produce samples during this reporting period, likely due to the deep excavation and cell construction on the north side of the Phase 2 MSWLF unit and the unusually dry weather conditions (excluding the wet July). Monitoring point GU-

4A had insufficient data for statistical evaluation; samples were collected from GU-4A in March and August 2025, but the monitoring point was dry in April and November 2025. Monitoring points PH2UD and GU-3A were also dry during the April 2025 sampling attempt.

There were no GWPS exceedances and no VOCs detected above the reporting limits during this reporting period.

Monitoring points GU-1 and GU-2, which are treated with the leachate and not statistically evaluated, did not produce samples during this reporting period. Due to the impact indicated by persistent VOC detections and elevated arsenic and barium concentrations, the discharge from monitoring points GU-1 and GU-2 will continue to be treated with the leachate.

## **7.0 SUMMARY AND RECOMMENDATIONS**

### **7.1 SITE IMPACT ON GROUNDWATER**

The results of the 1<sup>st</sup> 2026 semi-annual sampling event will be used to confirm or not confirm the indicated SSIs in monitoring wells MW-26, MW-28, and MW-29.

The Phase 2 MSWLF unit does not appear to be having a significant impact on groundwater quality.

### **7.2 PROPOSED MONITORING**

The proposed monitoring for the upcoming reporting period is summarized in the attached **Table 2**.

### **7.3 PROPOSED MONITORING WELL CHANGES**

Monitoring point GU-4A was added to the HMSP monitoring network in 2024 and will continue to be sampled to establish background, provided sufficient flow is present. To date, limited flow has been observed at this monitoring point, so collecting five samples within the first year is unlikely.

## Tables

**Table 1**  
**Monitoring Program Summary**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Monitoring Well	Formation <sup>(1)</sup>	Current Monitoring Program	Change for next sampling event	Constituents with SSIs during the 2025 Reporting Period	Constituents with SSLs	Total # of Samples in each monitoring program <sup>(2)</sup>		
						Detection inorganic #/organic #	Assessment inorganic #/organic #	Corrective Action inorganic #/organic #
MW-26	Weathered Till, Sand	Detection	No change	Copper*, Lead*, Zinc*	Not applicable	20/40	-	-
MW-28	Weathered/Unweathered Till	Detection	No change	Antimony*	Not applicable	21/41	-	-
MW-29	Weathered/Unweathered Till	Detection	No change	Lead*, Nickel*	Not applicable	21/36	-	-
Phase 2 Underdrain (PH2UD)	Not applicable	Detection	No change	N/A**	Not applicable	22/28	-	-
GU-1	Not applicable	Treated with leachate	No change	N/A**	Not applicable	8/22	-	-
GU-2	Not applicable	Treated with leachate	No change	N/A**	Not applicable	9/16	-	-
GU-3A	Not applicable	Detection	No change	N/A**	Not applicable	6/6	-	-
GU-4A	Not applicable	Background Collection	Detection	N/A (insufficient data)	Not applicable	2/2	-	-
MW-9	Not available	Water Level						
MW-31	Weathered/Unweathered Till	Water Level						
MW-32	Weathered till	Water Level						
MW-33	Weathered/Unweathered Till	Water Level						
MW-34A	Weathered till	Water Level						
MW-35A	Weathered till	Water Level						
MW-38A	Weathered/Unweathered Till	Water Level						

Notes:

1) Obtained from screened interval on boring logs or historical cross sections.

2) As directed in DNR correspondence dated November 16, 2017 (Doc #90839), this report was prepared with non-low-flow inorganic data removed from statistical consideration.

\* - Not confirmed pending retesting.

\*\* - No samples produced during the reporting period.

SSI = Statistically Significant Increase above background.

SSL = Statistically Significant Level above groundwater protection standard.

**Table 2**  
**Monitoring Program Implementation Schedule**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Monitoring Well	Upcoming Sampling Dates and Constituents								Full Appendix II Sample Dates	
	April 2025 (Resample & Background) <sup>(1)</sup>	May 2025 (1 <sup>st</sup> Semi-Annual)	August 2025 (Background)	November 2025 (2 <sup>nd</sup> Semi-Annual)	Winter 2026 (Background)	1 <sup>st</sup> 2026 Semi-Annual	Summer 2026 (Background)	2 <sup>nd</sup> 2026 Semi-Annual	Previously Collected	Next Event
MW-26		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS	Not applicable	Not applicable
MW-28		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS	1/19/2012, 3/20/2013, 5/1/2018	Not applicable
MW-29		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS		Appendix I, TSS	1/19/2012, 3/20/2013, 5/1/2018	Not applicable
PH2UD	No sample (Dry)	No sample (Insufficient water)		No sample (Insufficient water)		Appendix I, TSS		Appendix I, TSS	Not applicable	Not applicable
GU-1		No sample (Dry)		No sample (Dry)		Appendix I, TSS		Appendix I, TSS (If no sample in spring)	Not applicable	Not applicable
GU-2		No sample (Insufficient water)		No sample (Dry)		Appendix I, TSS		Appendix I, TSS (If no sample in spring)	Not applicable	Not applicable
GU-3A	No sample (Dry)	No sample (Dry)		No sample (Dry)		Appendix I, TSS		Appendix I, TSS	Not applicable	Not applicable
GU-4A	No sample (Dry)	Appendix I, TSS	Appendix I, TSS	No sample (Dry)	Appendix I, TSS	Appendix I, TSS	Appendix I, TSS	Appendix I, TSS	Not applicable	Not applicable

Notes:

1) Groundwater underdrains GU-3A, GU-4A, and PH2UD did not produce a sample in the previous reporting period during the November 2024 sampling event. A sampling attempt in April 2025 was unsuccessful as the monitoring points were dry.  
TSS - Total Suspended Solids.

**Table 3**  
**Monitoring Well Maintenance and Performance Reevaluation Schedule**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Compliance with:	2023	2024	2025	2026	2027
567 IAC 113.10(2)"f"(1) high and low water levels (biennial)	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(2) changes in the hydrologic setting and flow paths	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(3) well depths	Completed	Completed	Included	Scheduled	Scheduled
567 IAC 113.10(2)"f"(4) well recharge rates and chemistry (biennial)		Completed		Scheduled	
Waste separation from ground water 113.6(2)"I"	Completed	Completed	Included	Scheduled	Scheduled

**Table 4**  
**Monitoring Well Maintenance and Performance Summary**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Well	Top of Casing	Top of Screen	Total Depth		Date of Measurements		Maximum Depth Discrepancy (ft)
					5/2025	11/2025	
MW-26	643.51	614.01	39.5	Groundwater Level (ft)	17.20	18.60	0.5
				Groundwater Elevation (ft msl)	626.31	624.91	
				Measured Well Depth (ft)	39.0	39.5	
				Submerged screen	Y	Y	
MW-28	662.42	642.70	29.7	Groundwater Level (ft)	17.89	18.47	-0.4
				Groundwater Elevation (ft msl)	644.53	643.95	
				Measured Well Depth (ft)	30.1	30.1	
				Submerged screen	Y	Y	
MW-29	661.059	638.27	32.7	Groundwater Level (ft)	20.11	18.50	-0.8
				Groundwater Elevation (ft msl)	640.95	642.56	
				Measured Well Depth (ft)	33.5	33.5	
				Submerged screen	Y	Y	

Notes:

Measured well depths were within 0.8 feet of the installed depths, indicating siltation is not impacting the ability of the monitoring wells to produce samples.

**Groundwater Control System Measurement Points**

The groundwater/waste separation for Phase 2, Region 1 is controlled by a pump in the PH2 UD lift station. The water elevation in the lift station is monitored by a SCADA system, which records the depth measured by a transducer on the bottom of the pump. The engineered groundwater/waste separation distance was maintained. Data after June 24, 2025 was unavailable.

Well		Date of Measurements	
		5/13/2025	6/24/2025
PH2 UD GW	Bottom of waste (feet MSL)	640.0	
	Groundwater Elevation (feet MSL)	621.64	630.51
	Separation distance (feet)	18.4	9.5

The groundwater/waste separation for the R2-1 and R2-2 cells is controlled by pumps in the groundwater underdrain sumps. The water elevation in the sumps is monitored by a SCADA system, which records the depth measured by a transducer on the bottom of the pumps. The bottom of the sumps is approximately nine feet below the waste. The compliance elevation for the R-1 and R-2 sumps is 4 feet (Doc #95742). The engineered groundwater/waste separation distances for the GU-1 and GU-2 underdrains were maintained during this reporting period with the exception of GU-1 in February 2025. Data after October 18, 2025 was unavailable.

Date	GU-1 GW	GU-2 GW
January 2025	3.93	1.96
February 2025	4.09	1.87
March 2025	3.85	1.79
April 2025	1.72	1.78
May 2025	1.75	1.80
June 2025	2.65	1.98
July 2025	3.42	2.20
August 2025	1.99	1.86
September 2025	1.75	1.83
October 2025	1.75	1.82

**Table 5**  
**Background and GWPS Summary**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

**MW-26 Intrawell Background/GWPS (8/31/2015 - 2/27/2024)**

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	16	0	0.0005 (1/2 RL)	0.0015 (1/2 RL)	0.000719	< 0.003	DQR	0.006	MCL
Arsenic (As)	mg/L	16	1	0.000776*	0.001 (1/2 RL)	0.000986	0.00100	PL (NP)	0.01	MCL
Barium (Ba)	mg/L	17	17	0.0268	0.103	0.046485	0.10300	PL (NP)	2.0	MCL
Beryllium (Be)	mg/L	16	0	0.0005 (1/2 RL)	0.0005 (1/2 RL)	5.00E-04	< 0.001	DQR	0.004	MCL
Cadmium (Cd)	mg/L	16	4	0.00005 (1/2 RL)	0.000457	0.000201	0.00046	PL (NP)	0.005	MCL
Chromium (Cr)	mg/L	16	1	0.0025 (1/2 RL)	0.00431*	0.002613	0.00431	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	16	16	0.0014	0.0107	0.006735	0.01091	PL (P)	0.01091	SSS
Copper (Cu)	mg/L	16	7	0.00179	0.00565	0.002711	0.00565	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	16	5	0.00015*	0.000952	0.000307	0.00095	PL (NP)	0.015	MCL
Nickel (Ni)	mg/L	16	16	0.005175	0.0233	0.017908	0.02424	PL (P)	0.1	SWS
Selenium (Se)	mg/L	16	0	0.00125 (1/2 RL)	0.0025 (1/2 RL)	0.002422	< 0.005	DQR	0.05	MCL
Silver (Ag)	mg/L	16	1	0.00025 (1/2 RL)	0.000533*	0.000486	0.00053	PL (NP)	0.1	SWS
Thallium (Tl)	mg/L	17	2	0.000037*	0.00177	0.000577	0.00177	PL (NP)	0.002	MCL
Vanadium (V)	mg/L	16	5	0.000255*	0.002865*	0.002179	0.00287	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	16	3	0.005 (1/2 RL)	0.0146	0.009618	0.01460	PL (NP)	2.0	SWS

**MW-28 Intrawell Background/GWPS (8/31/2015 - 5/15/2025)**

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	20	1	0.000262*	0.0015 (1/2 RL)	0.00076	0.0015	PL (NP)	0.006	MCL
Arsenic (As)	mg/L	20	7	0.000539*	0.00136*	0.00097	0.00136	PL (NP)	0.01	MCL
Barium (Ba)	mg/L	21	21	0.0146	0.0271	0.01940	0.0242	PL (P)	2.0	MCL
Beryllium (Be)	mg/L	20	1	0.000075*	0.0005 (1/2 RL)	0.00048	0.0005	PL (NP)	0.004	MCL
Cadmium (Cd)	mg/L	20	10	0.00005 (1/2 RL)	0.00213	0.00039	0.001184	PL (P)	0.005	MCL
Chromium (Cr)	mg/L	21	3	0.000937*	0.00643	0.00267	0.00643	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	20	20	0.000734	0.0209	0.01137	0.02243	PL (P)	0.02243	SSS
Copper (Cu)	mg/L	20	8	0.00189*	0.00503	0.00278	0.00503	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	20	1	0.00025 (1/2 RL)	0.000327*	0.00025	0.000327	PL (NP)	0.015	MCL
Nickel (Ni)	mg/L	20	20	0.00711	0.0671	0.03428	0.06208	PL (P)	0.1	SWS
Selenium (Se)	mg/L	20	1	0.00125 (1/2 RL)	0.0025 (1/2 RL)	0.00243	0.0025	PL (NP)	0.1	MCL
Silver (Ag)	mg/L	20	2	0.00025 (1/2 RL)	0.000844*	0.00051	0.000844	PL (NP)	0.1	SWS
Thallium (Tl)	mg/L	20	6	0.00008*	0.001 (1/2 RL)	0.00043	0.001	PL (NP)	0.002	MCL
Vanadium (V)	mg/L	20	7	0.00101*	0.0036*	0.00219	0.0036	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	20	4	0.005 (1/2 RL)	0.0234	0.01037	0.0234	PL (NP)	2.0	SWS

**MW-29 Intrawell Background/GWPS (8/31/2015 - 5/15/2025)**

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony (Sb)	mg/L	20	0	0.0005 (1/2 RL)	0.0015 (1/2 RL)	0.000775	< 0.003	DQR	0.006	MCL
Arsenic (As)	mg/L	21	16	0.000833*	0.00945	0.002388	0.00550	PL (P)	0.01	MCL
Barium (Ba)	mg/L	20	20	0.0117	0.0192	0.015818	0.01840	PL (P)	2.0	MCL
Beryllium (Be)	mg/L	20	0	0.0005 (1/2 RL)	0.0015 (1/2 RL)	0.00055	< 0.003	DQR	0.004	MCL
Cadmium (Cd)	mg/L	20	3	0.000041*	0.00025 (1/2 RL)	0.000127	0.00025	PL (NP)	0.005	MCL
Chromium (Cr)	mg/L	20	1	0.0025 (1/2 RL)	0.00341*	0.002546	0.00341	PL (NP)	0.1	MCL
Cobalt (Co)	mg/L	20	20	0.0006995	0.004645	0.002615	0.00450	PL (P)	0.004496	SSS
Copper (Cu)	mg/L	20	5	0.0013*	0.0049*	0.002541	0.00490	PL (NP)	1.3	MCL
Lead (Pb)	mg/L	20	8	0.000144*	0.000898	0.000339	0.00090	PL (NP)	0.015	MCL
Nickel (Ni)	mg/L	19	19	0.00876	0.0127	0.010515	0.01229	PL (P)	0.1	SWS
Selenium (Se)	mg/L	20	1	0.00112*	0.0025 (1/2 RL)	0.002369	0.00250	PL (NP)	0.05	MCL
Silver (Ag)	mg/L	20	0	0.00025 (1/2 RL)	0.0005 (1/2 RL)	0.000488	< 0.001	DQR	0.1	SWS
Thallium (Tl)	mg/L	20	0	0.0005 (1/2 RL)	0.0015 (1/2 RL)	0.000575	< 0.003	DQR	< 0.003	SSS
Vanadium (V)	mg/L	20	3	0.000776*	0.00632	0.002566	0.00632	PL (NP)	0.035	SWS
Zinc (Zn)	mg/L	20	8	0.00772*	0.0297	0.012075	0.02970	PL (NP)	2.0	SWS

**Table 5**  
**Background and GWPS Summary**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

**Phase 2 Underdrain Intrawell Background/GWPS (02/26/2008 - 2/24/2021)**

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony	mg/L	19	1	0.0005 (1/2 RL)	0.003 (1/2 RL)	0.001086	0.00300	PL (NP)	0.006	MCL
Arsenic	mg/L	18	17	0.0005 (1/2 RL)	0.03	0.008216	0.02367	PL (P)	0.02367	SSS
Barium	mg/L	21	21	0.17	2.8	0.626024	1.35800	PL (P)	2.0	MCL
Beryllium	mg/L	19	2	0.000361*	0.0025 (1/2 RL)	0.000645	0.00250	PL (NP)	0.004	MCL
Cadmium	mg/L	21	2	0.00005 (1/2 RL)	0.00117	0.00035	0.00117	PL (NP)	0.005	MCL
Chromium	mg/L	18	6	0.00101*	0.013	0.00541	0.01300	PL (NP)	0.1	MCL
Cobalt	mg/L	18	15	0.000387*	0.012	0.002825	0.00844	PL (P)	0.008439	SSS
Copper	mg/L	20	10	0.00089*	0.0198	0.005123	0.01093	PL (P)	1.3	MCL
Lead	mg/L	20	9	0.00025 (1/2 RL)	0.0144	0.001746	0.01440	PL (NP)	0.015	MCL
Nickel	mg/L	18	17	0.0029*	0.053	0.011833	0.03053	PL (P)	0.1	SWS
Selenium	mg/L	20	7	0.0005 (1/2 RL)	0.0125 (1/2 RL)	0.002876	0.01250	PL (NP)	0.05	MCL
Silver	mg/L	20	0	0.00025 (1/2 RL)	0.01 (1/2 RL)	0.002038	< 0.02	DQR	0.1	SWS
Thallium	mg/L	19	0	0.0005 (1/2 RL)	0.001 (1/2 RL)	0.000579	< 0.002	DQR	0.002	MCL
Vanadium	mg/L	18	5	0.000591*	0.025 (1/2 RL)	0.007331	0.02500	PL (NP)	0.035	SWS
Zinc	mg/L	18	5	0.003 (1/2 RL)	0.066	0.017637	0.06600	PL (NP)	2.0	SWS

**GU-3A Intrawell Background/GWPS (5/24/2022 - 7/16/2024)**

Constituent	Units	Samples	Detections	Min	Max	Mean	Background Level	Statistical Test	GWPS	Source
Antimony	mg/L	5	1	0.001 (1/2 RL)	0.00195*	0.00119	0.00195	PL (NP)	0.006	MCL
Arsenic	mg/L	5	4	0.001 (1/2 RL)	0.0177	0.005222	0.02735	PL (P)	0.02735	SSS
Barium	mg/L	5	5	0.178	0.506	0.308	0.77160	PL (P)	2.0	MCL
Beryllium	mg/L	5	0	0.0005 (1/2 RL)	0.0005 (1/2 RL)	0.0005	< 0.001	DQR	0.004	MCL
Cadmium	mg/L	5	1	0.00005 (1/2 RL)	0.00303	0.000666	0.00303	PL (NP)	0.005	MCL
Chromium	mg/L	5	1	0.0025 (1/2 RL)	0.0329	0.00858	0.03290	PL (NP)	0.1	MCL
Cobalt	mg/L	5	5	0.000372*	0.071	0.015253	0.29070	PL (P)	0.2907	SSS
Copper	mg/L	5	2	0.00235*	0.0585	0.01367	0.05850	PL (NP)	1.3	MCL
Lead	mg/L	5	2	0.00025 (1/2 RL)	0.0144	0.003348	0.01440	PL (NP)	0.015	MCL
Nickel	mg/L	5	5	0.00227*	0.432	0.089248	0.43200	PL (NP)	0.432	SSS
Selenium	mg/L	5	3	0.0025 (1/2 RL)	0.00692	0.003776	0.00952	PL (P)	0.05	MCL
Silver	mg/L	5	0	0.0005 (1/2 RL)	0.0005 (1/2 RL)	0.0005	< 0.001	DQR	0.1	SWS
Thallium	mg/L	5	0	0.0005 (1/2 RL)	0.0005 (1/2 RL)	0.0005	< 0.001	DQR	0.002	MCL
Vanadium	mg/L	5	3	0.00122*	0.0267	0.007124	0.06928	PL (P)	0.06928	SSS
Zinc	mg/L	5	2	0.01 (1/2 RL)	0.077	0.02346	0.07700	PL (NP)	2.0	SWS

Notes:

Background levels are calculated prediction limits or one-half of the highest reporting limit (RL), as applicable.

\* - Indicates J flag. The concentration is above the method detection limit but below the reporting limit; the concentration is estimated.

J flag concentrations are considered detections for the purposes of these tables.

Acronyms/Abbreviations:

RL = Reporting Limit                      PL = Prediction Limit  
DQR = Double Quantification Rule      GWPS = Groundwater Protection Standard (mg/L)  
SSS = Site-Specific GWPS                NP = Non-Parametric  
SWS = Statewide Standard                P = Parametric  
MCL = EPA Maximum Contaminant Level

1) Water quality results and effectiveness of the statistical data evaluation criteria: Statistical evaluations consist of prediction limits and the double quantification rule.

2) Changes to the previous statistical method during reporting period: None.

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Previous SSIs**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Well	Constituent	Units	Most recent result	Background Standard
MW-26	Copper*	mg/L	0.0146	0.006
	Lead*	mg/L	0.00599	0.001
	Zinc*	mg/L	0.152	0.015
MW-28	Antimony*	mg/L	0.00205	0.002
MW-29	Lead*	mg/L	0.00132	0.001
	Nickel*	mg/L	0.0124	0.012

**Notes:**

This table includes SSIs indicated during the 2025 reporting period that were not indicated in the 2024 reporting period.

\* - The indicated SSIs were not confirmed pending retesting results.

- 1) Problems with the current detection network: None.
- 2) Schedule to implement remedies: Not applicable.
- 3) Alternative constituent or sample frequency changes: None.
- 4) Significant changes to calculated prediction limits: None.
- 5) Resampling strategy: Retesting is performed on a 1-of-3 retesting scheme.
- 6) Data Exclusion Justification: Inorganic data collected prior to implementation of low-flow sampling in August 2015 were removed from statistical consideration.

**Table 7**  
**Summary of Ongoing and Newly Identified SSIs**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill**  
**Permit No. 56-SDP-07-80P**

Well	Constituent	Units	Most Recent Result	Background Standard	Lower Confidence Limit	GWPS	Sample Dates		
							Initial Exceedance	Resample(s)	5th background sample
MW-26	Copper*	mg/L	0.0146	0.00565	Detection	1.3	11/6/2025	Pending	8/2/2017
	Lead*	mg/L	0.00599	0.00095	Detection	0.015	11/6/2025	Pending	8/2/2017
	Zinc*	mg/L	0.152	0.01460	Detection	2.0	11/6/2025	Pending	8/2/2017
MW-28	Antimony*	mg/L	0.00205	0.0015	Detection	0.006	11/6/2025	Pending	8/2/2017
MW-29	Lead*	mg/L	0.00132	0.001	Detection	0.015	11/6/2025	Pending	8/2/2017
	Nickel*	mg/L	0.0124	0.012	Detection	0.1	5/15/2025	Pending	8/2/2017
PH2UD	None (No samples)								
GU-3A	None (No samples)								

Shaded rows denote constituent/well pairs with SSIs indicated in 2025 but not in 2024. Unshaded rows denote constituent/well pairs with SSIs indicated during both the 2024 and 2025 reporting periods.

\* - The indicated SSIs were not confirmed pending retesting results.

Detection - Monitoring points are in the detection monitoring program, so confidence limits were not calculated.



**Table 9**  
**Summary of Groundwater Chemistry**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

The Summary of Groundwater Chemistry for this reporting period is located in Appendix C.

Analytical data prior to 2025 is available in the 2024 Annual Water Quality Report dated January 31, 2025 (Doc # 112178).

**Table 10**  
**Historical SSI and SSL since January 1, 2019**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Key

		SSI - Statistically Significant Increase above background													
		SSL - Statistically Significant Level above a groundwater protection standard													
		S	F	S	F	S	F	S	F	S	F	S	F	S	F
		p	a	p	a	p	a	p	a	p	a	p	a	p	a
		r	i	r	i	r	i	r	i	r	i	r	i	r	i
		n	n	n	n	n	n	n	n	n	n	n	n	n	n
		g	l	g	l	g	l	g	l	g	l	g	l	g	l
Well	Constituent	2019	2019	2020	2020	2021	2021	2022	2022	2023	2023	2024	2024	2025	2025
MW-26	Barium											**			
	Copper														PR
	Lead														PR
	Zinc														PR
MW-28	Antimony														PR
	Barium					*	*								
MW-29	Arsenic											***			
	Lead														PR
	Nickel														PR
Phase 2 Underdrain	None														
GU-3A	None														

Comments:

\* - Not confirmed due to natural variability. (Doc #101034)

\*\* - Not confirmed due to natural variability. (Doc #109741)

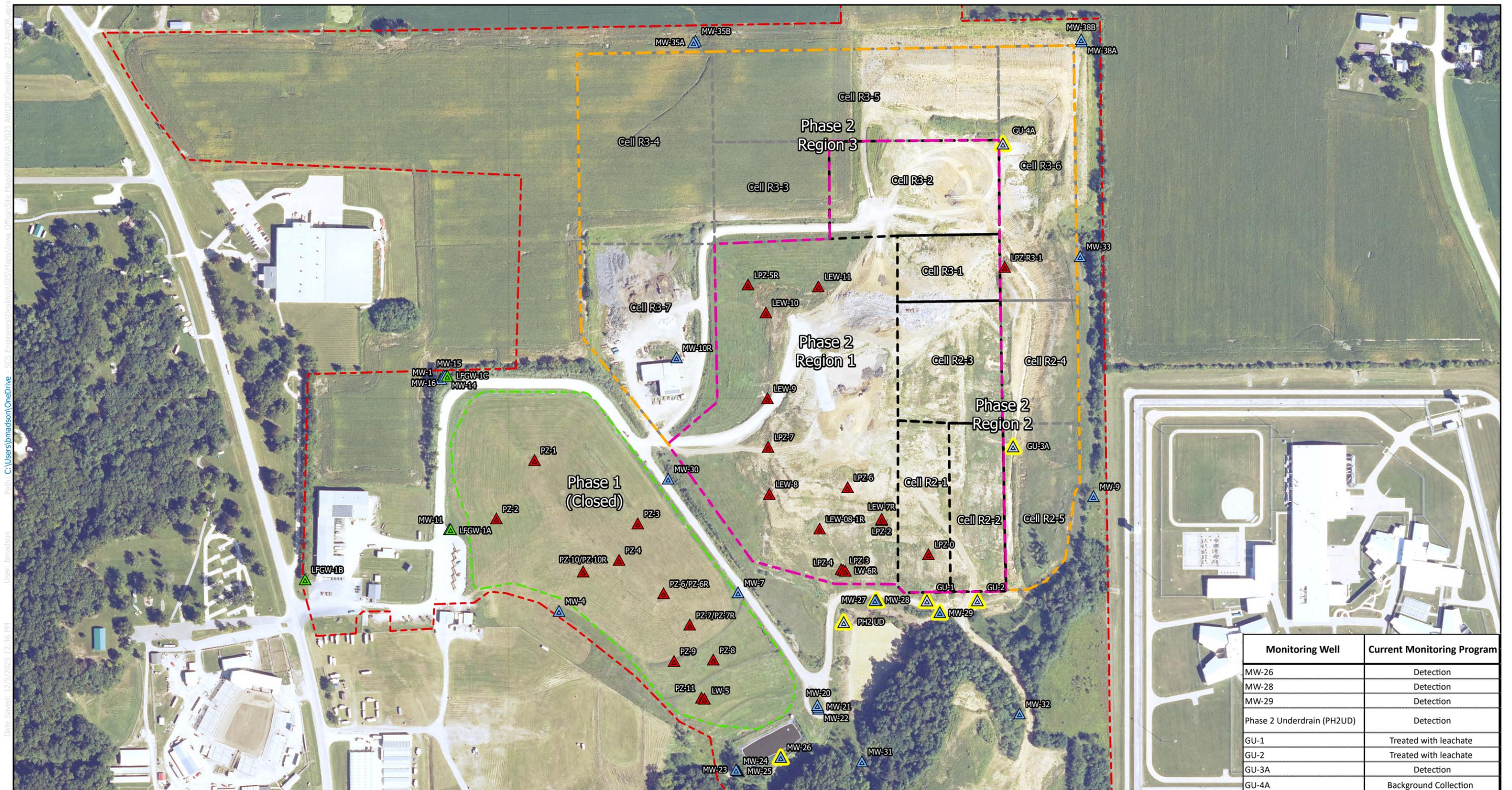
\*\*\* - Not confirmed by retesting.

PR - Pending retest. These parameters will be retested based on the results of the next semi-annual sampling event.

**Table 11**  
**Corrective Action Trend Analysis**  
**2025 Annual Water Quality Report**  
**Great River Regional Waste Authority Sanitary Landfill - Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

Well	Current SSL	Trend	N	Projected Year to Completion
None				

## Figures



Monitoring Well	Current Monitoring Program
MW-26	Detection
MW-28	Detection
MW-29	Detection
Phase 2 Underdrain (PH2UD)	Detection
GU-1	Treated with leachate
GU-2	Treated with leachate
GU-3A	Detection
GU-4A	Background Collection

## Approved Monitoring Network

Legend	
	HMSF Monitoring Point
	Monitoring Well
	Underdrain Monitoring Point
	Landfill Gas Well
	Leachate Piezometer and/or Extraction Well
	Approximate Future Waste Boundary - Phase 2
	Approximate Waste Boundary - Phase 2
	Located Waste Boundary
	Approximate GRRWA Property Boundary
	Approximate Location Of Existing Cell Boundaries
	Approximate Location of Future Cell Boundary

GRRWA Sanitary Landfill  
 Fort Madison, Iowa  
 Project No: 27224317.26  
 Drawing Date: January 2026

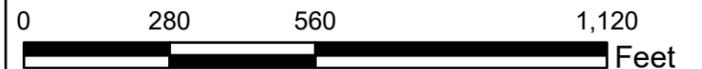
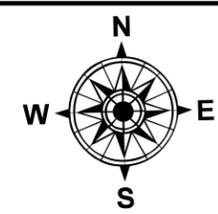


Figure 1



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**Appendix A**  
**Field Sampling Forms**









**FORM FOR SURFACE WATER SAMPLING**

Site Name GRRWA Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. GU-3A Date 5-15-25

Name of Person Sampling Honner Roth

**A. TYPE OF MONITORING POINT**

Stream	<input type="checkbox"/>	Open Tile	<input checked="" type="checkbox"/>
Road Ditch	<input type="checkbox"/>	Tile with Riser	<input type="checkbox"/>
Drainage Ditch	<input type="checkbox"/>	Other	<input type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream	<input type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>
Within Landfill	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

Underdrain for R3-1. Outfall located in Cell R2-5.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<u>Yes</u>	Too little water to sample?	_____
Was water flowing?	<u>NO</u>	If yes, estimate quantity (cfs)	_____
Standing Water?	<u>NO</u>	If yes, estimate depth (inches)	_____
		If yes, estimate width (inches)	_____
Was water discolored?	<u>X</u>		
Does water have odor?	<u>X</u>		
Was ground discolored?	<u>NO</u>		
Litter present?	<u>Yes</u>		

**D. FIELD MEASUREMENTS**

Weather Conditions: Cloudy, 81° F

Time: 11:30

Field Measurements:

Temperature	_____	Units	<u>Celsius</u>
Equipment Used	_____		
pH	_____	Units	<u>Standard units</u>
Equipment Used	_____		
Spec Conductance	_____	Units	<u>uS/cm</u>
Equipment Used	_____		

COMMENTS Dry

2811

FORM FOR SURFACE WATER SAMPLING

Site Name GRRWA Permit No. 56-SDP-07-80P  
Surface Monitoring Point No. GU-4A Date 5-15-25

Name of Person Sampling Konner Roth

A. TYPE OF MONITORING POINT

Stream  Open Tile   
Road Ditch  Tile with Riser   
Drainage Ditch  Other

B. PURPOSE OF MONITORING POINT

Upstream  Downstream   
Within Landfill  Other

C. MONITORING POINT CONDITIONS/LOCATION

Underdrain for R3-2. Outfall located east of Cell R3-2.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Was monitoring point dry? NO Too little water to sample? \_\_\_\_\_  
Was water flowing? YES If yes, estimate quantity (cfs) \_\_\_\_\_  
Standing Water? YES If yes, estimate depth (inches) \_\_\_\_\_  
If yes, estimate width (inches) \_\_\_\_\_  
Was water discolored? NO  
Does water have odor? NO  
Was ground discolored? NO  
Litter present? YES

D. FIELD MEASUREMENTS

Weather Conditions: 82°F  
Time: 12:05  
Field Measurements:

Temperature 17.0 Units Celsius  
Equipment Used \_\_\_\_\_  
pH 11.7 Units Standard units  
Equipment Used \_\_\_\_\_  
Spec Conductance 6.70 Units uS/cm  
Equipment Used \_\_\_\_\_

COMMENTS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### FORM FOR SURFACE WATER SAMPLING

Site Name GRRWA Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. GU-1 Date 5-15-25

Name of Person Sampling Korner Both

**A. TYPE OF MONITORING POINT**

Stream <input type="checkbox"/>	Open Tile <input type="checkbox"/>
Road Ditch <input type="checkbox"/>	Tile with Riser <input type="checkbox"/>
Drainage Ditch <input type="checkbox"/>	Other <input checked="" type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream <input type="checkbox"/>	Downstream <input checked="" type="checkbox"/>
Within Landfill <input checked="" type="checkbox"/>	Other <input type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

Phase \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<u>yes</u>	Too little water to sample?	
Was water flowing?	<u>NO</u>	If yes, estimate quantity (cfs)	
Standing Water?	<u>NO</u>	If yes, estimate depth (inches)	
		If yes, estimate width (inches)	
Was water discolored?	<u>NO</u>		
Does water have odor?	<u>NO</u>		
Was ground discolored?	<u>NO</u>		
Litter present?	<u>NO</u>		

**D. FIELD MEASUREMENTS**

Weather Conditions: cloudy 80°F

Time: 11:40

Field Measurements:

Temperature		Units	<u>Celsius</u>
Equipment Used			
pH		Units	<u>Standard units</u>
Equipment Used			
Spec. Conductance		Units	<u>uS/cm</u>
Equipment Used			

COMMENTS Pry  
 \_\_\_\_\_  
 \_\_\_\_\_









### FORM FOR SURFACE WATER SAMPLING

Site Name GRRWA Sanitary Landfill Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. PH2UD Date 11-3-25

Name of Person Sampling Garrett Lucas

**A. TYPE OF MONITORING POINT**

Stream	<input type="checkbox"/>	Open Tile	<input type="checkbox"/>
Road Ditch	<input type="checkbox"/>	Tile with Riser	<input type="checkbox"/>
Drainage Ditch	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream	<input type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>
Within Landfill	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

Discharge near sediment pond. Pump control on the light post.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<input type="checkbox"/>	Too little water to sample?	<input checked="" type="checkbox"/>
Was water flowing?	<input type="checkbox"/>	If yes, estimate quantity (cfs)	_____
Standing Water?	<input type="checkbox"/>	If yes, estimate depth (inches)	_____
		If yes, estimate width (inches)	_____
Was water discolored?	<input type="checkbox"/>		
Does water have odor?	<input type="checkbox"/>		
Was ground discolored?	<input type="checkbox"/>		
Litter present?	<input type="checkbox"/>		

**D. FIELD MEASUREMENTS**

Weather Conditions: Windy, Sunny, 55° F

Time: 1315

Field Measurements:

Temperature	_____	Units	<u>Celsius</u>
Equipment Used	_____		
pH	_____	Units	<u>Standard units</u>
Equipment Used	_____		
Spec. Conductance	_____	Units	<u>uS/cm</u>
Equipment Used	_____		

**COMMENTS**

Too little water to sample. Only a few drops coming out of pipe  
NO Sample

**FORM FOR SURFACE WATER SAMPLING**

Site Name GRRWA Sanitary Landfill Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. GU-1 Date 11-3-25

Name of Person Sampling Garrett Horais

**A. TYPE OF MONITORING POINT**

Stream	<input type="checkbox"/>	Open Tile	<input type="checkbox"/>
Road Ditch	<input type="checkbox"/>	Tile with Riser	<input type="checkbox"/>
Drainage Ditch	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream	<input type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>
Within Landfill	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<u>yes</u>	Too little water to sample?	_____
Was water flowing?	_____	If yes, estimate quantity (cfs)	_____
Standing Water?	_____	If yes, estimate depth (inches)	_____
		If yes, estimate width (inches)	_____
Was water discolored?	_____		
Does water have odor?	_____		
Was ground discolored?	_____		
Litter present?	_____		

**D. FIELD MEASUREMENTS**

Weather Conditions: 55° F W. Windy, Sunny

Time: 1330

Field Measurements:

Temperature	_____	Units	<u>Celsius</u>
Equipment Used	_____		
pH	_____	Units	<u>Standard units</u>
Equipment Used	_____		
Spec. Conductance	_____	Units	<u>uS/cm</u>
Equipment Used	_____		

COMMENTS Dry NO Sample



### FORM FOR SURFACE WATER SAMPLING

Site Name GRRWA Sanitary Landfill Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. GU-3A Date 11-3-25

Name of Person Sampling Garrett Horak

**A. TYPE OF MONITORING POINT**

Stream	<input type="checkbox"/>	Open Tile	<input checked="" type="checkbox"/>
Road Ditch	<input type="checkbox"/>	Tile with Riser	<input type="checkbox"/>
Drainage Ditch	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream	<input type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>
Within Landfill	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

Underdrain for R3-1. Outfall located east of Cell R2-2.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<u>yes</u>	Too little water to sample?	_____
Was water flowing?	_____	If yes, estimate quantity (cfs)	_____
Standing Water?	_____	If yes, estimate depth (inches)	_____
		If yes, estimate width (inches)	_____
Was water discolored?	_____		
Does water have odor?	_____		
Was ground discolored?	_____		
Litter present?	_____		

**D. FIELD MEASUREMENTS**

Weather Conditions: 55°F Windy, Sunny

Time: 1400

Field Measurements:

Temperature	_____	Units	<u>Celsius</u>
Equipment Used	_____		
pH	_____	Units	<u>Standard units</u>
Equipment Used	_____		
Spec. Conductance	_____	Units	<u>uS/cm</u>
Equipment Used	_____		

COMMENTS Dry NO Sample

**FORM FOR SURFACE WATER SAMPLING**

Site Name GRRWA Sanitary Landfill Permit No. 56-SDP-07-80P  
 Surface Monitoring Point No. GU-4A Date 11-3-25

Name of Person Sampling Garrett Horvath

**A. TYPE OF MONITORING POINT**

Stream	<input checked="" type="checkbox"/>	Open Tile	<input checked="" type="checkbox"/>
Road Ditch	<input checked="" type="checkbox"/>	Tile with Riser	<input checked="" type="checkbox"/>
Drainage Ditch	<input checked="" type="checkbox"/>	Other	<input checked="" type="checkbox"/>

**B. PURPOSE OF MONITORING POINT**

Upstream	<input checked="" type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>
Within Landfill	<input checked="" type="checkbox"/>	Other	<input checked="" type="checkbox"/>

**C. MONITORING POINT CONDITIONS/LOCATION**

Underdrain for R3-2. Outfall located east of Cell R3-2.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry? yes Too little water to sample? \_\_\_\_\_  
 Was water flowing? \_\_\_\_\_ If yes, estimate quantity (cfs) \_\_\_\_\_  
 Standing Water? \_\_\_\_\_ If yes, estimate depth (inches) \_\_\_\_\_  
 \_\_\_\_\_ If yes, estimate width (inches) \_\_\_\_\_  
 Was water discolored? \_\_\_\_\_  
 Does water have odor? \_\_\_\_\_  
 Was ground discolored? \_\_\_\_\_  
 Litter present? \_\_\_\_\_

**D. FIELD MEASUREMENTS**

Weather Conditions: 55° F Windy, Sunny

Time: 1420

Field Measurements:

Temperature	_____	Units	<u>Celsius</u>
Equipment Used	_____		
pH	_____	Units	<u>Standard units</u>
Equipment Used	_____		
Spec. Conductance	_____	Units	<u>uS/cm</u>
Equipment Used	_____		

COMMENTS Dry No Sample

**Appendix B-1**  
**Laboratory Analytical Data Sheets**

 **ANALYTICAL REPORT****PREPARED FOR**

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

Generated 5/28/2025 3:48:52 PM

**JOB DESCRIPTION**

GRRWA 1st 2025 HMSP  
GRRWA Sanitary Landfill Phase 2  
Winter 2024 Retest

**JOB NUMBER**

310-306670-1

# Eurofins Cedar Falls

## Job Notes

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

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

## Authorization



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

Client: SCS Engineers  
Project: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1

**Job ID: 310-306670-1**

**Eurofins Cedar Falls**

## Job Narrative 310-306670-1

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

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

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

### Receipt

The samples were received on 5/16/2025 4:25 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 2.1°C.

### GC/MS VOA

Method 8260D: The method requirement for no headspace was not met. The following volatile sample was analyzed with headspace in the sample container: Trip Blank (310-306670-6).

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: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-306670-1	MW-26	Water	05/15/25 10:02	05/16/25 16:25
310-306670-2	MW-28	Water	05/15/25 10:47	05/16/25 16:25
310-306670-3	MW-29	Water	05/15/25 11:24	05/16/25 16:25
310-306670-4	GU-4A	Water	05/15/25 12:05	05/16/25 16:25
310-306670-5	MW-D	Water	05/15/25 10:02	05/16/25 16:25
310-306670-6	Trip Blank	Water	05/15/25 00:00	05/16/25 16:25

1

2

3

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# Detection Summary

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

## Client Sample ID: MW-26

Lab Sample ID: 310-306670-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00102	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.115		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00188		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00855		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	9.63		1.88	1.31	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-28

Lab Sample ID: 310-306670-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.64	J	10.0	3.10	ug/L	1		8260D	Total/NA
Arsenic	0.000819	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0175		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0142		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0235		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	13.3		2.50	1.75	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-29

Lab Sample ID: 310-306670-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0117		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00249		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0109		0.00500	0.00230	mg/L	1		6020B	Total/NA

## Client Sample ID: GU-4A

Lab Sample ID: 310-306670-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.67	J	10.0	3.10	ug/L	1		8260D	Total/NA
Trichlorofluoromethane	0.403	J	4.00	0.380	ug/L	1		8260D	Total/NA
Barium	0.216		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00190		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00783		0.00500	0.00230	mg/L	1		6020B	Total/NA
Selenium	0.00280	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Total Suspended Solids	6.67		5.00	3.50	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-D

Lab Sample ID: 310-306670-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00243		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0676		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00550		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0136		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	28.5		3.75	2.63	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: Trip Blank

Lab Sample ID: 310-306670-6

No Detections.

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-26**

**Lab Sample ID: 310-306670-1**

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 13:53	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 13:53	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 13:53	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 13:53	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 13:53	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 13:53	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 13:53	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 13:53	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 13:53	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 13:53	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 13:53	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 13:53	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 13:53	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 13:53	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 13:53	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 13:53	1
Acetone	<10.0		10.0	3.10	ug/L			05/20/25 13:53	1
Acrylonitrile	<5.00	F2	5.00	2.20	ug/L			05/20/25 13:53	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 13:53	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 13:53	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 13:53	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 13:53	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 13:53	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 13:53	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 13:53	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 13:53	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 13:53	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 13:53	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 13:53	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 13:53	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 13:53	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 13:53	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 13:53	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 13:53	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 13:53	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 13:53	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 13:53	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 13:53	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 13:53	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 13:53	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 13:53	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 13:53	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 13:53	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 13:53	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 13:53	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 13:53	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		76 - 130		05/20/25 13:53	1

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# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-26**

**Lab Sample ID: 310-306670-1**

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	85		80 - 120		05/20/25 13:53	1
4-Bromofluorobenzene (Surr)	101		80 - 120		05/20/25 13:53	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		05/21/25 15:12	05/28/25 12:05	1
<b>Arsenic</b>	<b>0.00102</b>	<b>J</b>	0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 19:28	1
<b>Barium</b>	<b>0.115</b>		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 19:28	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		05/21/25 15:12	05/28/25 12:05	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 19:28	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 19:28	1
<b>Cobalt</b>	<b>0.00188</b>		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 19:28	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 19:28	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 19:28	1
<b>Nickel</b>	<b>0.00855</b>		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 19:28	1
Selenium	<0.00500		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 19:28	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 19:28	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 19:28	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 19:28	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 19:28	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>9.63</b>		1.88	1.31	mg/L			05/20/25 16:07	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-28**

**Lab Sample ID: 310-306670-2**

Date Collected: 05/15/25 10:47

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 14:15	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 14:15	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 14:15	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 14:15	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 14:15	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 14:15	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 14:15	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 14:15	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 14:15	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 14:15	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 14:15	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 14:15	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 14:15	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 14:15	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 14:15	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 14:15	1
<b>Acetone</b>	<b>3.64</b>	<b>J</b>	10.0	3.10	ug/L			05/20/25 14:15	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 14:15	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 14:15	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 14:15	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 14:15	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 14:15	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 14:15	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 14:15	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 14:15	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 14:15	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 14:15	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 14:15	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 14:15	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 14:15	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 14:15	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 14:15	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 14:15	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 14:15	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 14:15	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 14:15	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 14:15	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 14:15	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 14:15	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 14:15	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 14:15	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 14:15	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 14:15	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 14:15	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 14:15	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 14:15	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 14:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		76 - 130		05/20/25 14:15	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-28**

**Lab Sample ID: 310-306670-2**

Date Collected: 05/15/25 10:47

Matrix: Water

Date Received: 05/16/25 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		80 - 120		05/20/25 14:15	1
4-Bromofluorobenzene (Surr)	112		80 - 120		05/20/25 14:15	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		05/21/25 15:12	05/28/25 12:14	1
<b>Arsenic</b>	<b>0.000819</b>	<b>J</b>	0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 19:30	1
<b>Barium</b>	<b>0.0175</b>		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 19:30	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		05/21/25 15:12	05/28/25 12:14	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 19:30	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 19:30	1
<b>Cobalt</b>	<b>0.0142</b>		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 19:30	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 19:30	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 19:30	1
<b>Nickel</b>	<b>0.0235</b>		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 19:30	1
Selenium	<0.00500		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 19:30	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 19:30	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 19:30	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 19:30	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 19:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>13.3</b>		2.50	1.75	mg/L			05/20/25 16:07	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-29**

**Lab Sample ID: 310-306670-3**

Date Collected: 05/15/25 11:24

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 14:38	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 14:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 14:38	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 14:38	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 14:38	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 14:38	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 14:38	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 14:38	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 14:38	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 14:38	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 14:38	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 14:38	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 14:38	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 14:38	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 14:38	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 14:38	1
Acetone	<10.0		10.0	3.10	ug/L			05/20/25 14:38	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 14:38	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 14:38	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 14:38	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 14:38	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 14:38	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 14:38	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 14:38	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 14:38	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 14:38	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 14:38	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 14:38	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 14:38	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 14:38	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 14:38	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 14:38	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 14:38	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 14:38	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 14:38	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 14:38	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 14:38	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 14:38	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 14:38	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 14:38	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 14:38	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 14:38	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 14:38	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 14:38	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 14:38	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 14:38	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 14:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	99		76 - 130		05/20/25 14:38	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-29**

**Lab Sample ID: 310-306670-3**

Date Collected: 05/15/25 11:24

Matrix: Water

Date Received: 05/16/25 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		80 - 120		05/20/25 14:38	1
4-Bromofluorobenzene (Surr)	100		80 - 120		05/20/25 14:38	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		05/21/25 15:12	05/28/25 12:16	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 19:33	1
<b>Barium</b>	<b>0.0117</b>		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 19:33	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		05/21/25 15:12	05/28/25 12:16	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 19:33	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 19:33	1
<b>Cobalt</b>	<b>0.00249</b>		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 19:33	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 19:33	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 19:33	1
<b>Nickel</b>	<b>0.0109</b>		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 19:33	1
Selenium	<0.00500		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 19:33	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 19:33	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 19:33	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 19:33	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 19:33	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	1.31	mg/L			05/20/25 16:07	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: GU-4A**

**Lab Sample ID: 310-306670-4**

Date Collected: 05/15/25 12:05

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 15:00	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 15:00	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 15:00	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 15:00	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 15:00	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 15:00	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 15:00	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 15:00	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 15:00	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 15:00	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 15:00	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 15:00	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 15:00	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 15:00	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 15:00	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 15:00	1
<b>Acetone</b>	<b>3.67</b>	<b>J</b>	10.0	3.10	ug/L			05/20/25 15:00	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 15:00	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 15:00	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 15:00	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 15:00	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 15:00	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 15:00	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 15:00	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 15:00	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 15:00	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 15:00	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 15:00	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 15:00	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 15:00	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 15:00	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 15:00	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 15:00	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 15:00	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 15:00	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 15:00	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 15:00	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 15:00	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 15:00	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 15:00	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 15:00	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 15:00	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 15:00	1
<b>Trichlorofluoromethane</b>	<b>0.403</b>	<b>J</b>	4.00	0.380	ug/L			05/20/25 15:00	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 15:00	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 15:00	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 15:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	115		76 - 130		05/20/25 15:00	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: GU-4A**

**Lab Sample ID: 310-306670-4**

Date Collected: 05/15/25 12:05

Matrix: Water

Date Received: 05/16/25 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		80 - 120		05/20/25 15:00	1
4-Bromofluorobenzene (Surr)	100		80 - 120		05/20/25 15:00	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		05/21/25 15:12	05/28/25 12:19	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 19:35	1
<b>Barium</b>	<b>0.216</b>		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 19:35	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		05/21/25 15:12	05/28/25 12:19	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 19:35	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 19:35	1
<b>Cobalt</b>	<b>0.00190</b>		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 19:35	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 19:35	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 19:35	1
<b>Nickel</b>	<b>0.00783</b>		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 19:35	1
<b>Selenium</b>	<b>0.00280 J</b>		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 19:35	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 19:35	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 19:35	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 19:35	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 19:35	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>6.67</b>		5.00	3.50	mg/L			05/20/25 16:07	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-D**

**Lab Sample ID: 310-306670-5**

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 15:23	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 15:23	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 15:23	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 15:23	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 15:23	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 15:23	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 15:23	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 15:23	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 15:23	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 15:23	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 15:23	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 15:23	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 15:23	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 15:23	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 15:23	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 15:23	1
Acetone	<10.0		10.0	3.10	ug/L			05/20/25 15:23	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 15:23	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 15:23	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 15:23	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 15:23	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 15:23	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 15:23	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 15:23	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 15:23	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 15:23	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 15:23	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 15:23	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 15:23	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 15:23	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 15:23	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 15:23	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 15:23	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 15:23	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 15:23	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 15:23	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 15:23	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 15:23	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 15:23	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 15:23	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 15:23	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 15:23	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 15:23	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 15:23	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 15:23	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 15:23	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 15:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	102		76 - 130		05/20/25 15:23	1

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# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-D**

**Lab Sample ID: 310-306670-5**

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120		05/20/25 15:23	1
4-Bromofluorobenzene (Surr)	99		80 - 120		05/20/25 15:23	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		05/21/25 15:12	05/28/25 12:22	1
<b>Arsenic</b>	<b>0.00243</b>		0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 19:37	1
<b>Barium</b>	<b>0.0676</b>		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 19:37	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		05/21/25 15:12	05/28/25 12:22	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 19:37	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 19:37	1
<b>Cobalt</b>	<b>0.00550</b>		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 19:37	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 19:37	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 19:37	1
<b>Nickel</b>	<b>0.0136</b>		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 19:37	1
Selenium	<0.00500		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 19:37	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 19:37	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 19:37	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 19:37	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 19:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>28.5</b>		3.75	2.63	mg/L			05/20/25 16:10	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-306670-6**

Date Collected: 05/15/25 00:00

Matrix: Water

Date Received: 05/16/25 16:25

**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			05/20/25 12:00	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 12:00	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 12:00	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 12:00	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 12:00	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 12:00	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 12:00	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 12:00	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 12:00	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 12:00	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 12:00	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 12:00	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 12:00	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 12:00	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 12:00	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 12:00	1
Acetone	<10.0		10.0	3.10	ug/L			05/20/25 12:00	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 12:00	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 12:00	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 12:00	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 12:00	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 12:00	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 12:00	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 12:00	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 12:00	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 12:00	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 12:00	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 12:00	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 12:00	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 12:00	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 12:00	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 12:00	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 12:00	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 12:00	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 12:00	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 12:00	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 12:00	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 12:00	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 12:00	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 12:00	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 12:00	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 12:00	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 12:00	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 12:00	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 12:00	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 12:00	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 12:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	114		76 - 130		05/20/25 12:00	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-306670-6**

Date Collected: 05/15/25 00:00

Matrix: Water

Date Received: 05/16/25 16:25

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	92		80 - 120		05/20/25 12:00	1
<i>4-Bromofluorobenzene (Surr)</i>	96		80 - 120		05/20/25 12:00	1

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# Definitions/Glossary

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
E	Result exceeded calibration range.
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: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (76-130)	TOL (80-120)	BFB (80-120)
310-306670-1	MW-26	97	85	101
310-306670-1 MS	MW-26	89	99	108
310-306670-1 MSD	MW-26	96	100	96
310-306670-2	MW-28	97	95	112
310-306670-3	MW-29	99	94	100
310-306670-4	GU-4A	115	92	100
310-306670-5	MW-D	102	98	99
310-306670-6	Trip Blank	114	92	96
LCS 310-455074/7	Lab Control Sample	91	101	97
LCS 310-455074/8	Lab Control Sample	108	97	97
MB 310-455074/6	Method Blank	106	97	97

### Surrogate Legend

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-455074/6**  
**Matrix: Water**  
**Analysis Batch: 455074**

**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			05/20/25 09:45	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			05/20/25 09:45	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			05/20/25 09:45	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			05/20/25 09:45	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			05/20/25 09:45	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			05/20/25 09:45	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			05/20/25 09:45	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			05/20/25 09:45	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			05/20/25 09:45	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			05/20/25 09:45	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			05/20/25 09:45	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			05/20/25 09:45	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			05/20/25 09:45	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			05/20/25 09:45	1
2-Hexanone	<10.0		10.0	2.00	ug/L			05/20/25 09:45	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			05/20/25 09:45	1
Acetone	<10.0		10.0	3.10	ug/L			05/20/25 09:45	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			05/20/25 09:45	1
Benzene	<0.500		0.500	0.220	ug/L			05/20/25 09:45	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			05/20/25 09:45	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			05/20/25 09:45	1
Bromoform	<5.00		5.00	0.780	ug/L			05/20/25 09:45	1
Bromomethane	<4.00		4.00	1.10	ug/L			05/20/25 09:45	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			05/20/25 09:45	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			05/20/25 09:45	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			05/20/25 09:45	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			05/20/25 09:45	1
Chloroethane	<4.00		4.00	0.790	ug/L			05/20/25 09:45	1
Chloroform	<3.00		3.00	1.30	ug/L			05/20/25 09:45	1
Chloromethane	<3.00		3.00	0.610	ug/L			05/20/25 09:45	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			05/20/25 09:45	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			05/20/25 09:45	1
Dibromomethane	<1.00		1.00	0.330	ug/L			05/20/25 09:45	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			05/20/25 09:45	1
Iodomethane	<10.0		10.0	7.00	ug/L			05/20/25 09:45	1
Methylene chloride	<5.00		5.00	1.70	ug/L			05/20/25 09:45	1
Styrene	<1.00		1.00	0.370	ug/L			05/20/25 09:45	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			05/20/25 09:45	1
Toluene	<1.00		1.00	0.430	ug/L			05/20/25 09:45	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			05/20/25 09:45	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			05/20/25 09:45	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			05/20/25 09:45	1
Trichloroethene	<1.00		1.00	0.430	ug/L			05/20/25 09:45	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			05/20/25 09:45	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			05/20/25 09:45	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			05/20/25 09:45	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			05/20/25 09:45	1

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-455074/6**  
**Matrix: Water**  
**Analysis Batch: 455074**

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	106		76 - 130		05/20/25 09:45	1
Toluene-d8 (Surr)	97		80 - 120		05/20/25 09:45	1
4-Bromofluorobenzene (Surr)	97		80 - 120		05/20/25 09:45	1

**Lab Sample ID: LCS 310-455074/7**  
**Matrix: Water**  
**Analysis Batch: 455074**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,1-Trichloroethane	20.0	19.41		ug/L		97	69 - 130
1,1,1,2,2-Tetrachloroethane	20.0	18.02		ug/L		90	70 - 122
1,1,2-Trichloroethane	20.0	18.31		ug/L		92	75 - 121
1,1-Dichloroethane	20.0	20.29		ug/L		101	69 - 127
1,1-Dichloroethane	20.0	20.88		ug/L		104	64 - 134
1,2,3-Trichloropropane	20.0	18.24		ug/L		91	70 - 122
1,2-Dibromo-3-chloropropane	20.0	20.18		ug/L		101	62 - 132
1,2-Dibromoethane (EDB)	20.0	17.78		ug/L		89	74 - 122
1,2-Dichlorobenzene	20.0	18.66		ug/L		93	74 - 120
1,2-Dichloroethane	20.0	21.27		ug/L		106	68 - 125
1,2-Dichloropropane	20.0	19.61		ug/L		98	72 - 128
1,4-Dichlorobenzene	20.0	17.85		ug/L		89	72 - 120
2-Butanone (MEK)	40.0	42.98		ug/L		107	60 - 134
2-Hexanone	40.0	43.15		ug/L		108	62 - 139
4-Methyl-2-pentanone (MIBK)	40.0	45.24		ug/L		113	62 - 136
Acetone	40.0	50.26		ug/L		126	59 - 136
Acrylonitrile	200	209.2		ug/L		105	50 - 150
Benzene	20.0	19.57		ug/L		98	71 - 125
Bromochloromethane	20.0	18.53		ug/L		93	69 - 131
Bromodichloromethane	20.0	19.30		ug/L		96	70 - 122
Bromoform	20.0	15.71		ug/L		79	62 - 122
Carbon disulfide	20.0	21.86		ug/L		109	58 - 137
Carbon tetrachloride	20.0	20.56		ug/L		103	63 - 136
Chlorobenzene	20.0	18.99		ug/L		95	74 - 120
Chlorodibromomethane	20.0	17.54		ug/L		88	69 - 121
Chloroform	20.0	19.95		ug/L		100	72 - 122
cis-1,2-Dichloroethene	20.0	19.24		ug/L		96	72 - 123
cis-1,3-Dichloropropene	20.0	18.26		ug/L		91	72 - 123
Dibromomethane	20.0	19.92		ug/L		100	72 - 122
Ethylbenzene	20.0	19.75		ug/L		99	75 - 120
Iodomethane	20.0	11.38		ug/L		57	18 - 150
Methylene chloride	20.0	19.71		ug/L		99	72 - 128
Styrene	20.0	16.34		ug/L		82	74 - 122
Tetrachloroethene	20.0	19.22		ug/L		96	70 - 128
Toluene	20.0	20.39		ug/L		102	74 - 120
trans-1,2-Dichloroethene	20.0	20.39		ug/L		102	67 - 127
trans-1,3-Dichloropropene	20.0	18.08		ug/L		90	67 - 123
trans-1,4-Dichloro-2-butene	20.0	17.68		ug/L		88	50 - 150

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: LCS 310-455074/7**

**Matrix: Water**

**Analysis Batch: 455074**

**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	17.77		ug/L		89	70 - 128
Vinyl acetate	40.0	36.44		ug/L		91	50 - 150
Xylenes, Total	40.0	36.57		ug/L		91	74 - 121

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	91		76 - 130
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120

**Lab Sample ID: LCS 310-455074/8**

**Matrix: Water**

**Analysis Batch: 455074**

**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	16.67		ug/L		83	33 - 138
Chloroethane	20.0	19.28		ug/L		96	59 - 139
Chloromethane	20.0	18.21		ug/L		91	52 - 146
Trichlorofluoromethane	20.0	23.08		ug/L		115	55 - 150
Vinyl chloride	20.0	19.86		ug/L		99	60 - 142

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	108		76 - 130
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120

**Lab Sample ID: 310-306670-1 MS**

**Matrix: Water**

**Analysis Batch: 455074**

**Client Sample ID: MW-26**

**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	24.47		ug/L		98	55 - 121
1,1,1-Trichloroethane	<1.00		25.0	22.63		ug/L		91	53 - 130
1,1,2,2-Tetrachloroethane	<1.00		25.0	23.29		ug/L		93	55 - 123
1,1,2-Trichloroethane	<1.00		25.0	24.36		ug/L		97	60 - 121
1,1-Dichloroethane	<1.00		25.0	22.62		ug/L		90	53 - 127
1,1-Dichloroethene	<2.00		25.0	23.96		ug/L		96	51 - 134
1,2,3-Trichloropropane	<1.00		25.0	23.11		ug/L		92	56 - 122
1,2-Dibromo-3-chloropropane	<5.00		25.0	25.49		ug/L		102	44 - 138
1,2-Dibromoethane (EDB)	<1.00		25.0	22.98		ug/L		92	60 - 122
1,2-Dichlorobenzene	<1.00		25.0	25.38		ug/L		102	60 - 120
1,2-Dichloroethane	<1.00		25.0	25.18		ug/L		101	48 - 128
1,2-Dichloropropane	<1.00		25.0	22.48		ug/L		90	59 - 128
1,4-Dichlorobenzene	<1.00		25.0	24.20		ug/L		97	58 - 120
2-Butanone (MEK)	<10.0		50.0	48.03		ug/L		96	46 - 134
2-Hexanone	<10.0		50.0	52.82		ug/L		106	46 - 141
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	55.99		ug/L		112	49 - 138
Acetone	<10.0		50.0	60.54		ug/L		121	39 - 141
Acrylonitrile	<5.00	F2	250	212.7		ug/L		85	41 - 150

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

Lab Sample ID: 310-306670-1 MS

Client Sample ID: MW-26

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 455074

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec
	Result	Qualifier	Added	Result	Qualifier				
Benzene	<0.500		25.0	22.78		ug/L		91	48 - 125
Bromochloromethane	<5.00		25.0	24.04		ug/L		96	55 - 131
Bromodichloromethane	<1.00		25.0	22.28		ug/L		89	53 - 122
Bromoform	<5.00		25.0	22.73		ug/L		91	47 - 122
Carbon disulfide	<1.00		25.0	22.35		ug/L		89	45 - 137
Carbon tetrachloride	<2.00		25.0	24.15		ug/L		97	45 - 136
Chlorobenzene	<1.00		25.0	23.35		ug/L		93	59 - 120
Chlorodibromomethane	<5.00		25.0	23.78		ug/L		95	53 - 121
Chloroform	<3.00		25.0	24.85		ug/L		99	52 - 122
cis-1,2-Dichloroethene	<1.00		25.0	22.91		ug/L		92	51 - 123
cis-1,3-Dichloropropene	<5.00		25.0	22.67		ug/L		91	55 - 123
Dibromomethane	<1.00		25.0	24.65		ug/L		99	57 - 122
Ethylbenzene	<1.00		25.0	23.64		ug/L		95	53 - 120
Iodomethane	<10.0		25.0	16.11		ug/L		64	18 - 150
Methylene chloride	<5.00		25.0	24.32		ug/L		97	59 - 128
Styrene	<1.00		25.0	22.10		ug/L		88	50 - 125
Tetrachloroethene	<1.00		25.0	23.73		ug/L		95	51 - 128
Toluene	<1.00		25.0	25.39		ug/L		102	52 - 120
trans-1,2-Dichloroethene	<1.00		25.0	22.51		ug/L		90	53 - 127
trans-1,3-Dichloropropene	<5.00		25.0	21.84		ug/L		87	50 - 123
trans-1,4-Dichloro-2-butene	<10.0		25.0	23.21		ug/L		93	28 - 150
Trichloroethene	<1.00		25.0	21.91		ug/L		88	50 - 128
Vinyl acetate	<10.0		50.0	33.28		ug/L		67	31 - 150
Xylenes, Total	<3.00		50.0	47.15		ug/L		94	50 - 122

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	89		76 - 130
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	108		80 - 120

Lab Sample ID: 310-306670-1 MSD

Client Sample ID: MW-26

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 455074

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
1,1,1,2-Tetrachloroethane	<1.00		25.0	25.73		ug/L		103	55 - 121	5	20
1,1,1-Trichloroethane	<1.00		25.0	24.10		ug/L		96	53 - 130	6	20
1,1,1,2,2-Tetrachloroethane	<1.00		25.0	24.84		ug/L		99	55 - 123	6	20
1,1,2-Trichloroethane	<1.00		25.0	23.34		ug/L		93	60 - 121	4	20
1,1-Dichloroethane	<1.00		25.0	25.47		ug/L		102	53 - 127	12	20
1,1-Dichloroethene	<2.00		25.0	22.64		ug/L		91	51 - 134	6	20
1,2,3-Trichloropropane	<1.00		25.0	25.56		ug/L		102	56 - 122	10	21
1,2-Dibromo-3-chloropropane	<5.00		25.0	28.26		ug/L		113	44 - 138	10	24
1,2-Dibromoethane (EDB)	<1.00		25.0	22.20		ug/L		89	60 - 122	3	20
1,2-Dichlorobenzene	<1.00		25.0	26.06		ug/L		104	60 - 120	3	20
1,2-Dichloroethane	<1.00		25.0	27.00		ug/L		108	48 - 128	7	20
1,2-Dichloropropane	<1.00		25.0	25.54		ug/L		102	59 - 128	13	20
1,4-Dichlorobenzene	<1.00		25.0	24.59		ug/L		98	58 - 120	2	20

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: 310-306670-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 455074**

**Client Sample ID: MW-26**  
**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	56.59		ug/L		113	46 - 134	16	23
2-Hexanone	<10.0		50.0	49.70		ug/L		99	46 - 141	6	20
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	52.11		ug/L		104	49 - 138	7	20
Acetone	<10.0		50.0	60.71		ug/L		121	39 - 141	0	23
Acrylonitrile	<5.00	F2	250	270.3	F2	ug/L		108	41 - 150	24	20
Benzene	<0.500		25.0	23.31		ug/L		93	48 - 125	2	20
Bromochloromethane	<5.00		25.0	25.14		ug/L		101	55 - 131	4	21
Bromodichloromethane	<1.00		25.0	23.90		ug/L		96	53 - 122	7	20
Bromoform	<5.00		25.0	24.05		ug/L		96	47 - 122	6	20
Carbon disulfide	<1.00		25.0	22.08		ug/L		88	45 - 137	1	24
Carbon tetrachloride	<2.00		25.0	24.78		ug/L		99	45 - 136	3	20
Chlorobenzene	<1.00		25.0	23.49		ug/L		94	59 - 120	1	20
Chlorodibromomethane	<5.00		25.0	23.09		ug/L		92	53 - 121	3	20
Chloroform	<3.00		25.0	26.80		ug/L		107	52 - 122	8	20
cis-1,2-Dichloroethene	<1.00		25.0	26.03		ug/L		104	51 - 123	13	20
cis-1,3-Dichloropropene	<5.00		25.0	21.46		ug/L		86	55 - 123	6	20
Dibromomethane	<1.00		25.0	27.04		ug/L		108	57 - 122	9	20
Ethylbenzene	<1.00		25.0	24.07		ug/L		96	53 - 120	2	20
Iodomethane	<10.0		25.0	18.74		ug/L		75	18 - 150	15	32
Methylene chloride	<5.00		25.0	26.68		ug/L		107	59 - 128	9	20
Styrene	<1.00		25.0	22.49		ug/L		90	50 - 125	2	20
Tetrachloroethene	<1.00		25.0	21.70		ug/L		87	51 - 128	9	20
Toluene	<1.00		25.0	23.81		ug/L		95	52 - 120	6	20
trans-1,2-Dichloroethene	<1.00		25.0	25.39		ug/L		102	53 - 127	12	20
trans-1,3-Dichloropropene	<5.00		25.0	20.39		ug/L		82	50 - 123	7	20
trans-1,4-Dichloro-2-butene	<10.0		25.0	25.02		ug/L		100	28 - 150	8	24
Trichloroethene	<1.00		25.0	23.62		ug/L		94	50 - 128	8	20
Vinyl acetate	<10.0		50.0	38.24		ug/L		76	31 - 150	14	25
Xylenes, Total	<3.00		50.0	48.15		ug/L		96	50 - 122	2	20

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

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

**Lab Sample ID: MB 310-455394/1-A**  
**Matrix: Water**  
**Analysis Batch: 455874**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455394**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	<0.00200		0.00200	0.000530	mg/L		05/21/25 15:12	05/27/25 18:59	1
Barium	<0.00200		0.00200	0.000660	mg/L		05/21/25 15:12	05/27/25 18:59	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		05/21/25 15:12	05/27/25 18:59	1
Chromium	<0.00500		0.00500	0.00180	mg/L		05/21/25 15:12	05/27/25 18:59	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		05/21/25 15:12	05/27/25 18:59	1
Copper	<0.00500		0.00500	0.00320	mg/L		05/21/25 15:12	05/27/25 18:59	1
Lead	<0.000500		0.000500	0.000330	mg/L		05/21/25 15:12	05/27/25 18:59	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-455394/1-A**  
**Matrix: Water**  
**Analysis Batch: 455874**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455394**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Nickel	<0.00500		0.00500	0.00230	mg/L		05/21/25 15:12	05/27/25 18:59	1
Selenium	<0.00500		0.00500	0.00140	mg/L		05/21/25 15:12	05/27/25 18:59	1
Silver	<0.00100		0.00100	0.000500	mg/L		05/21/25 15:12	05/27/25 18:59	1
Thallium	<0.00100		0.00100	0.000570	mg/L		05/21/25 15:12	05/27/25 18:59	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		05/21/25 15:12	05/27/25 18:59	1
Zinc	<0.0200		0.0200	0.0130	mg/L		05/21/25 15:12	05/27/25 18:59	1

**Lab Sample ID: MB 310-455394/1-A**  
**Matrix: Water**  
**Analysis Batch: 455968**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 455394**

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

**Lab Sample ID: LCS 310-455394/2-A**  
**Matrix: Water**  
**Analysis Batch: 455874**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455394**

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

**Lab Sample ID: LCS 310-455394/2-A**  
**Matrix: Water**  
**Analysis Batch: 455968**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 455394**

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

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

**Lab Sample ID: MB 310-455262/1**  
**Matrix: Water**  
**Analysis Batch: 455262**

**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	3.50	mg/L			05/20/25 16:07	1

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# QC Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: LCS 310-455262/2**  
**Matrix: Water**  
**Analysis Batch: 455262**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	107.0		mg/L		107	81 - 116

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

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

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

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

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

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

# QC Association Summary

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

## GC/MS VOA

### Analysis Batch: 455074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-1	MW-26	Total/NA	Water	8260D	
310-306670-2	MW-28	Total/NA	Water	8260D	
310-306670-3	MW-29	Total/NA	Water	8260D	
310-306670-4	GU-4A	Total/NA	Water	8260D	
310-306670-5	MW-D	Total/NA	Water	8260D	
310-306670-6	Trip Blank	Total/NA	Water	8260D	
MB 310-455074/6	Method Blank	Total/NA	Water	8260D	
LCS 310-455074/7	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-455074/8	Lab Control Sample	Total/NA	Water	8260D	
310-306670-1 MS	MW-26	Total/NA	Water	8260D	
310-306670-1 MSD	MW-26	Total/NA	Water	8260D	

## Metals

### Prep Batch: 455394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-1	MW-26	Total/NA	Water	3005A	
310-306670-2	MW-28	Total/NA	Water	3005A	
310-306670-3	MW-29	Total/NA	Water	3005A	
310-306670-4	GU-4A	Total/NA	Water	3005A	
310-306670-5	MW-D	Total/NA	Water	3005A	
MB 310-455394/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-455394/2-A	Lab Control Sample	Total/NA	Water	3005A	

### Analysis Batch: 455874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-1	MW-26	Total/NA	Water	6020B	455394
310-306670-2	MW-28	Total/NA	Water	6020B	455394
310-306670-3	MW-29	Total/NA	Water	6020B	455394
310-306670-4	GU-4A	Total/NA	Water	6020B	455394
310-306670-5	MW-D	Total/NA	Water	6020B	455394
MB 310-455394/1-A	Method Blank	Total/NA	Water	6020B	455394
LCS 310-455394/2-A	Lab Control Sample	Total/NA	Water	6020B	455394

### Analysis Batch: 455968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-1	MW-26	Total/NA	Water	6020B	455394
310-306670-2	MW-28	Total/NA	Water	6020B	455394
310-306670-3	MW-29	Total/NA	Water	6020B	455394
310-306670-4	GU-4A	Total/NA	Water	6020B	455394
310-306670-5	MW-D	Total/NA	Water	6020B	455394
MB 310-455394/1-A	Method Blank	Total/NA	Water	6020B	455394
LCS 310-455394/2-A	Lab Control Sample	Total/NA	Water	6020B	455394

## General Chemistry

### Analysis Batch: 455262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-1	MW-26	Total/NA	Water	I-3765-85	
310-306670-2	MW-28	Total/NA	Water	I-3765-85	
310-306670-3	MW-29	Total/NA	Water	I-3765-85	
310-306670-4	GU-4A	Total/NA	Water	I-3765-85	

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# QC Association Summary

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

## General Chemistry (Continued)

### Analysis Batch: 455262 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-455262/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-455262/2	Lab Control Sample	Total/NA	Water	I-3765-85	

### Analysis Batch: 455263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-306670-5	MW-D	Total/NA	Water	I-3765-85	
MB 310-455263/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-455263/2	Lab Control Sample	Total/NA	Water	I-3765-85	

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# Lab Chronicle

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

## Client Sample ID: MW-26

## Lab Sample ID: 310-306670-1

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 13:53
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455874	NFT2	EET CF	05/27/25 19:28
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455968	NFT2	EET CF	05/28/25 12:05
Total/NA	Analysis	I-3765-85		1	455262	MDU9	EET CF	05/20/25 16:07

## Client Sample ID: MW-28

## Lab Sample ID: 310-306670-2

Date Collected: 05/15/25 10:47

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 14:15
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455874	NFT2	EET CF	05/27/25 19:30
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455968	NFT2	EET CF	05/28/25 12:14
Total/NA	Analysis	I-3765-85		1	455262	MDU9	EET CF	05/20/25 16:07

## Client Sample ID: MW-29

## Lab Sample ID: 310-306670-3

Date Collected: 05/15/25 11:24

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 14:38
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455874	NFT2	EET CF	05/27/25 19:33
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455968	NFT2	EET CF	05/28/25 12:16
Total/NA	Analysis	I-3765-85		1	455262	MDU9	EET CF	05/20/25 16:07

## Client Sample ID: GU-4A

## Lab Sample ID: 310-306670-4

Date Collected: 05/15/25 12:05

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 15:00
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455874	NFT2	EET CF	05/27/25 19:35
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455968	NFT2	EET CF	05/28/25 12:19
Total/NA	Analysis	I-3765-85		1	455262	MDU9	EET CF	05/20/25 16:07

# Lab Chronicle

Client: SCS Engineers  
 Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-D**

**Lab Sample ID: 310-306670-5**

Date Collected: 05/15/25 10:02

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 15:23
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455874	NFT2	EET CF	05/27/25 19:37
Total/NA	Prep	3005A			455394	QTZ5	EET CF	05/21/25 15:12
Total/NA	Analysis	6020B		1	455968	NFT2	EET CF	05/28/25 12:22
Total/NA	Analysis	I-3765-85		1	455263	MDU9	EET CF	05/20/25 16:10

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-306670-6**

Date Collected: 05/15/25 00:00

Matrix: Water

Date Received: 05/16/25 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	455074	WSE8	EET CF	05/20/25 12:00

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

## 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

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# Method Summary

Client: SCS Engineers  
Project/Site: GRRWA 1st 2025 HMSP

Job ID: 310-306670-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

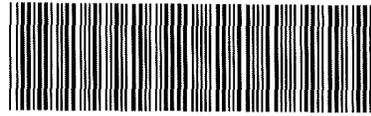
**Laboratory References:**

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





Environment Testing  
America



310-306670 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

<b>Client Information</b>			
Client: <i>SCS</i>			
City/State:	CITY <i>W. Des Moines</i>	STATE <i>IA</i>	Project:
<b>Receipt Information</b>			
Date/Time Received:	DATE <i>5.16.25</i>	TIME <i>1625</i>	Received By: <i>PH</i>
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? ↓
<i>All</i>			
<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. <i>AA</i>		Correction Factor (°C): <i>C</i>	
• <b>Temp Blank Temperature</b> – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		Corrected Temp (°C):	
• <b>Sample Container Temperature</b>			
Container(s) used.	CONTAINER 1 <i>PL 12</i>	CONTAINER 2	
Uncorrected Temp (°C):	<i>2.1</i>		
Corrected Temp (°C):	<i>2.1</i>		
<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>			



# Chain of Custody Record



ESTING

**Eurofins TestAmerica, Cedar Falls**  
3019 Venture Way

Cedar Falls IA, 50613-6907  
phone 319 277 2401 fax 319 277 2425

TestAmerica Laboratories Inc. d/b/a Eurofins TestAmerica

Regulatory Program  DW  NPDES  RCRA  Other

Project Manager Nathan Ohrt

Email nohrt@sccsengineers.com

Cell 319-331-9613

Analysis Turnaround Time

CALENDAR DAYS  WORKING DAYS

Other \_\_\_\_\_

2 weeks

1 week

2 days

1 day

Client Contact	Regulatory Program	Project Manager	Site Contact	Date	COC No						
Nathan Ohrt		Nathan Ohrt	Austin Banks		1 of 1 COCs						
SCS Engineers		Cell 319-331-9613	Lab Contact: Sam Miller	Carrier	Sampler						
1690 All State Court, Suite 100					For Lab Use Only						
West Des Moines Iowa 50265					Walk-in Client						
Project Name GRRWA 1st 2025 HMSP					Lab Sampling						
Site GRRWA Sanitary Landfill Phase 2					Job / SDG No						
PO # 27224317 25											
Sample Identification	Sample Date	Sample Time	Sample Type (G=Comp G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Appendix I	Total Suspended Solids	Trip Blank	Sample Specific Notes
MW-26	5-15-25	10:02	G	W		N	N	X			
MW-28	5-15-25	10:47	G	W		N	N	X			
MW-29	5-15-25	11:24	G	W		N	N	X			
PH2UD			G	W		N	N	X			
GU-1			G	W		N	N	X			
GU-2			G	W		N	N	X			
GU-3A			G	W		N	N	X			
GU-4A	5-15-25	12:05	G	W		N	N	X			
MW-D	5-15-25	10:02	G	W		N	N	X			
Trip Blank										X	
<p><b>Preservation Used</b> 1= Ice 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other _____</p> <p>Possible Hazard Identification _____</p> <p>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 _____</p> <p><input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown</p> <p>Special Instructions/QC Requirements &amp; Comments: _____</p>											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Cooler Temp (°C) Obs'd _____			Therm ID No _____			Date/Time _____		
Relinquished by <i>homo both</i>			Company <i>SC</i>			Received by _____			Company _____		
Relinquished by _____			Company _____			Received by _____			Company _____		
Relinquished by _____			Company _____			Received in Laboratory by <i>84</i>			Company _____		
						Date/Time _____			Date/Time <i>5-16-26 1445</i>		



## Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-306670-1  
SDG Number: GRRWA Sanitary Landfill Phase 2

**Login Number: 306670**

**List Number: 1**

**Creator: Hirsch, Preston**

**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	





# ANALYTICAL REPORT

## PREPARED FOR

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

Generated 8/28/2025 8:53:37 AM

## JOB DESCRIPTION

Great River Regional Waste Authority  
Iowa

## JOB NUMBER

310-313862-1

# 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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8/28/2025 8:53:37 AM

Authorized for release by  
Samuel Miller, Project Management Assistant I  
[Samuel.Miller@et.eurofinsus.com](mailto:Samuel.Miller@et.eurofinsus.com)  
(319)595-2008



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# Case Narrative

Client: SCS Engineers  
Project: Great River Regional Waste Authority

Job ID: 310-313862-1

**Job ID: 310-313862-1**

**Eurofins Cedar Falls**

## **Job Narrative 310-313862-1**

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

### **Receipt**

The samples were received on 8/21/2025 8:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.2°C.

### **GC/MS VOA**

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: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-313862-1	GU-4A	Water	08/20/25 10:15	08/21/25 08:15	Iowa
310-313862-2	Trip Blank	Water	08/20/25 10:15	08/21/25 08:15	Iowa

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# Detection Summary

Client: SCS Engineers  
Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

## Client Sample ID: GU-4A

## Lab Sample ID: 310-313862-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	0.396	J	1.00	0.270	ug/L	1		8260D	Total/NA
Trichlorofluoromethane	0.563	J	4.00	0.380	ug/L	1		8260D	Total/NA
Arsenic	0.00133	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.248		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00799		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0118		0.00500	0.00230	mg/L	1		6020B	Total/NA
Selenium	0.00227	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.67		5.00	3.50	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: Trip Blank

## Lab Sample ID: 310-313862-2

No Detections.

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

**Client Sample ID: GU-4A**

**Lab Sample ID: 310-313862-1**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

**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			08/21/25 14:24	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/21/25 14:24	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/21/25 14:24	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/21/25 14:24	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/21/25 14:24	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/21/25 14:24	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/21/25 14:24	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/21/25 14:24	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/21/25 14:24	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/21/25 14:24	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/21/25 14:24	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/21/25 14:24	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/21/25 14:24	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/21/25 14:24	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/21/25 14:24	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/21/25 14:24	1
Acetone	<10.0		10.0	3.10	ug/L			08/21/25 14:24	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/21/25 14:24	1
Benzene	<0.500		0.500	0.220	ug/L			08/21/25 14:24	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/21/25 14:24	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/21/25 14:24	1
Bromoform	<5.00		5.00	0.780	ug/L			08/21/25 14:24	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/21/25 14:24	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/21/25 14:24	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/21/25 14:24	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/21/25 14:24	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/21/25 14:24	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/21/25 14:24	1
Chloroform	<3.00		3.00	1.30	ug/L			08/21/25 14:24	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/21/25 14:24	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/21/25 14:24	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/21/25 14:24	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/21/25 14:24	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/21/25 14:24	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/21/25 14:24	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/21/25 14:24	1
Styrene	<1.00		1.00	0.370	ug/L			08/21/25 14:24	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/21/25 14:24	1
Toluene	<1.00		1.00	0.430	ug/L			08/21/25 14:24	1
<b>trans-1,2-Dichloroethene</b>	<b>0.396</b>	<b>J</b>	1.00	0.270	ug/L			08/21/25 14:24	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/21/25 14:24	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/21/25 14:24	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/21/25 14:24	1
<b>Trichlorofluoromethane</b>	<b>0.563</b>	<b>J</b>	4.00	0.380	ug/L			08/21/25 14:24	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/21/25 14:24	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/21/25 14:24	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/21/25 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	122		76 - 130		08/21/25 14:24	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

**Client Sample ID: GU-4A**

**Lab Sample ID: 310-313862-1**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120		08/21/25 14:24	1
4-Bromofluorobenzene (Surr)	98		80 - 120		08/21/25 14:24	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		08/26/25 09:00	08/27/25 15:30	1
<b>Arsenic</b>	<b>0.00133</b>	<b>J</b>	0.00200	0.000530	mg/L		08/26/25 09:00	08/27/25 15:30	1
<b>Barium</b>	<b>0.248</b>		0.00200	0.000660	mg/L		08/26/25 09:00	08/27/25 15:30	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/26/25 09:00	08/27/25 15:30	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/26/25 09:00	08/27/25 15:30	1
Chromium	<0.00500		0.00500	0.00180	mg/L		08/26/25 09:00	08/27/25 15:30	1
<b>Cobalt</b>	<b>0.00799</b>		0.000500	0.000170	mg/L		08/26/25 09:00	08/27/25 15:30	1
Copper	<0.00500		0.00500	0.00320	mg/L		08/26/25 09:00	08/27/25 15:30	1
Lead	<0.000500		0.000500	0.000330	mg/L		08/26/25 09:00	08/27/25 15:30	1
<b>Nickel</b>	<b>0.0118</b>		0.00500	0.00230	mg/L		08/26/25 09:00	08/27/25 15:30	1
<b>Selenium</b>	<b>0.00227</b>	<b>J</b>	0.00500	0.00140	mg/L		08/26/25 09:00	08/27/25 15:30	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/26/25 09:00	08/27/25 15:30	1
Thallium	<0.00100		0.00100	0.000570	mg/L		08/26/25 09:00	08/27/25 15:30	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		08/26/25 09:00	08/27/25 15:30	1
Zinc	<0.0200		0.0200	0.0130	mg/L		08/26/25 09:00	08/27/25 15:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>5.67</b>		5.00	3.50	mg/L			08/22/25 14:13	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-313862-2**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

**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			08/21/25 13:18	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/21/25 13:18	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/21/25 13:18	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/21/25 13:18	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/21/25 13:18	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/21/25 13:18	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/21/25 13:18	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/21/25 13:18	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/21/25 13:18	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/21/25 13:18	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/21/25 13:18	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/21/25 13:18	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/21/25 13:18	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/21/25 13:18	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/21/25 13:18	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/21/25 13:18	1
Acetone	<10.0		10.0	3.10	ug/L			08/21/25 13:18	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/21/25 13:18	1
Benzene	<0.500		0.500	0.220	ug/L			08/21/25 13:18	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/21/25 13:18	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/21/25 13:18	1
Bromoform	<5.00		5.00	0.780	ug/L			08/21/25 13:18	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/21/25 13:18	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/21/25 13:18	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/21/25 13:18	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/21/25 13:18	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/21/25 13:18	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/21/25 13:18	1
Chloroform	<3.00		3.00	1.30	ug/L			08/21/25 13:18	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/21/25 13:18	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/21/25 13:18	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/21/25 13:18	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/21/25 13:18	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/21/25 13:18	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/21/25 13:18	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/21/25 13:18	1
Styrene	<1.00		1.00	0.370	ug/L			08/21/25 13:18	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/21/25 13:18	1
Toluene	<1.00		1.00	0.430	ug/L			08/21/25 13:18	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/21/25 13:18	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/21/25 13:18	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/21/25 13:18	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/21/25 13:18	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/21/25 13:18	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/21/25 13:18	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/21/25 13:18	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/21/25 13:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	116		76 - 130		08/21/25 13:18	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-313862-2**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

**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)	99		80 - 120		08/21/25 13:18	1
4-Bromofluorobenzene (Surr)	103		80 - 120		08/21/25 13:18	1

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# Definitions/Glossary

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

## Qualifiers

### GC/MS VOA

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

### Metals

Qualifier	Qualifier Description
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: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

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

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DBFM	TOL	BFB
		(76-130)	(80-120)	(80-120)
310-313862-1	GU-4A	122	97	98
310-313862-2	Trip Blank	116	99	103
LCS 310-464308/6	Lab Control Sample	97	103	97
LCS 310-464308/7	Lab Control Sample	115	98	96
MB 310-464308/5	Method Blank	119	99	98

### Surrogate Legend

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

# QC Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

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

**Lab Sample ID: MB 310-464308/5**  
**Matrix: Water**  
**Analysis Batch: 464308**

**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			08/21/25 10:51	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/21/25 10:51	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/21/25 10:51	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/21/25 10:51	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/21/25 10:51	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/21/25 10:51	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/21/25 10:51	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/21/25 10:51	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/21/25 10:51	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/21/25 10:51	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/21/25 10:51	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/21/25 10:51	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/21/25 10:51	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/21/25 10:51	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/21/25 10:51	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/21/25 10:51	1
Acetone	<10.0		10.0	3.10	ug/L			08/21/25 10:51	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/21/25 10:51	1
Benzene	<0.500		0.500	0.220	ug/L			08/21/25 10:51	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/21/25 10:51	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/21/25 10:51	1
Bromoform	<5.00		5.00	0.780	ug/L			08/21/25 10:51	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/21/25 10:51	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/21/25 10:51	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/21/25 10:51	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/21/25 10:51	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/21/25 10:51	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/21/25 10:51	1
Chloroform	<3.00		3.00	1.30	ug/L			08/21/25 10:51	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/21/25 10:51	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/21/25 10:51	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/21/25 10:51	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/21/25 10:51	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/21/25 10:51	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/21/25 10:51	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/21/25 10:51	1
Styrene	<1.00		1.00	0.370	ug/L			08/21/25 10:51	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/21/25 10:51	1
Toluene	<1.00		1.00	0.430	ug/L			08/21/25 10:51	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/21/25 10:51	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/21/25 10:51	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/21/25 10:51	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/21/25 10:51	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/21/25 10:51	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/21/25 10:51	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/21/25 10:51	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/21/25 10:51	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

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

**Lab Sample ID: MB 310-464308/5**  
**Matrix: Water**  
**Analysis Batch: 464308**

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	119		76 - 130		08/21/25 10:51	1
Toluene-d8 (Surr)	99		80 - 120		08/21/25 10:51	1
4-Bromofluorobenzene (Surr)	98		80 - 120		08/21/25 10:51	1

**Lab Sample ID: LCS 310-464308/6**  
**Matrix: Water**  
**Analysis Batch: 464308**

**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	21.55		ug/L		108	69 - 130
1,1,2,2-Tetrachloroethane	20.0	20.88		ug/L		104	70 - 122
1,1,2-Trichloroethane	20.0	22.16		ug/L		111	75 - 121
1,1-Dichloroethane	20.0	21.35		ug/L		107	69 - 127
1,1-Dichloroethane	20.0	21.67		ug/L		108	64 - 134
1,2,3-Trichloropropane	20.0	21.62		ug/L		108	70 - 122
1,2-Dibromo-3-chloropropane	20.0	19.22		ug/L		96	62 - 132
1,2-Dibromoethane (EDB)	20.0	20.79		ug/L		104	74 - 122
1,2-Dichlorobenzene	20.0	21.29		ug/L		106	74 - 120
1,2-Dichloroethane	20.0	21.67		ug/L		108	68 - 125
1,2-Dichloropropane	20.0	21.25		ug/L		106	72 - 128
1,4-Dichlorobenzene	20.0	21.89		ug/L		109	72 - 120
2-Butanone (MEK)	40.0	38.65		ug/L		97	60 - 134
2-Hexanone	40.0	39.55		ug/L		99	62 - 139
4-Methyl-2-pentanone (MIBK)	40.0	40.76		ug/L		102	62 - 136
Acetone	40.0	41.26		ug/L		103	59 - 136
Acrylonitrile	200	212.5		ug/L		106	50 - 150
Benzene	20.0	21.72		ug/L		109	71 - 125
Bromochloromethane	20.0	20.48		ug/L		102	69 - 131
Bromodichloromethane	20.0	20.29		ug/L		101	70 - 122
Bromoform	20.0	19.53		ug/L		98	62 - 122
Carbon disulfide	20.0	22.25		ug/L		111	58 - 137
Carbon tetrachloride	20.0	19.74		ug/L		99	63 - 136
Chlorobenzene	20.0	22.39		ug/L		112	74 - 120
Chlorodibromomethane	20.0	18.73		ug/L		94	69 - 121
Chloroform	20.0	21.83		ug/L		109	72 - 122
cis-1,2-Dichloroethene	20.0	20.26		ug/L		101	72 - 123
cis-1,3-Dichloropropene	20.0	19.18		ug/L		96	72 - 123
Dibromomethane	20.0	22.05		ug/L		110	72 - 122
Ethylbenzene	20.0	20.49		ug/L		102	75 - 120
Iodomethane	20.0	11.43		ug/L		57	18 - 150
Methylene chloride	20.0	21.16		ug/L		106	72 - 128
Styrene	20.0	19.90		ug/L		100	74 - 122
Tetrachloroethene	20.0	20.88		ug/L		104	70 - 128
Toluene	20.0	19.32		ug/L		97	74 - 120
trans-1,2-Dichloroethene	20.0	21.34		ug/L		107	67 - 127
trans-1,3-Dichloropropene	20.0	20.10		ug/L		100	67 - 123
trans-1,4-Dichloro-2-butene	20.0	21.50		ug/L		107	50 - 150

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# QC Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

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

**Lab Sample ID: LCS 310-464308/6**  
**Matrix: Water**  
**Analysis Batch: 464308**

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

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
Trichloroethene	20.0	18.60		ug/L		93	70 - 128
Vinyl acetate	40.0	36.20		ug/L		91	50 - 150
Xylenes, Total	40.0	39.22		ug/L		98	74 - 121

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	97		76 - 130
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120

**Lab Sample ID: LCS 310-464308/7**  
**Matrix: Water**  
**Analysis Batch: 464308**

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

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
Bromomethane	20.0	18.88		ug/L		94	33 - 138
Chloroethane	20.0	24.28		ug/L		121	59 - 139
Chloromethane	20.0	21.33		ug/L		107	52 - 146
Trichlorofluoromethane	20.0	22.49		ug/L		112	55 - 150
Vinyl chloride	20.0	23.06		ug/L		115	60 - 142

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	115		76 - 130
Toluene-d8 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	96		80 - 120

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

**Lab Sample ID: MB 310-464703/1-A**  
**Matrix: Water**  
**Analysis Batch: 465005**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 464703**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<0.00200		0.00200	0.00100	mg/L		08/26/25 09:00	08/27/25 14:18	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/26/25 09:00	08/27/25 14:18	1
Barium	<0.00200		0.00200	0.000660	mg/L		08/26/25 09:00	08/27/25 14:18	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/26/25 09:00	08/27/25 14:18	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/26/25 09:00	08/27/25 14:18	1
Chromium	<0.00500		0.00500	0.00180	mg/L		08/26/25 09:00	08/27/25 14:18	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/26/25 09:00	08/27/25 14:18	1
Copper	<0.00500		0.00500	0.00320	mg/L		08/26/25 09:00	08/27/25 14:18	1
Lead	<0.000500		0.000500	0.000330	mg/L		08/26/25 09:00	08/27/25 14:18	1
Nickel	<0.00500		0.00500	0.00230	mg/L		08/26/25 09:00	08/27/25 14:18	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/26/25 09:00	08/27/25 14:18	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/26/25 09:00	08/27/25 14:18	1
Thallium	<0.00100		0.00100	0.000570	mg/L		08/26/25 09:00	08/27/25 14:18	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		08/26/25 09:00	08/27/25 14:18	1
Zinc	<0.0200		0.0200	0.0130	mg/L		08/26/25 09:00	08/27/25 14:18	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

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

**Lab Sample ID: LCS 310-464703/2-A**  
**Matrix: Water**  
**Analysis Batch: 465005**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 464703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2109		mg/L		105	80 - 120
Arsenic	0.200	0.2069		mg/L		103	80 - 120
Barium	0.100	0.09731		mg/L		97	80 - 120
Beryllium	0.100	0.1013		mg/L		101	80 - 120
Cadmium	0.100	0.09884		mg/L		99	80 - 120
Chromium	0.100	0.1045		mg/L		104	80 - 120
Cobalt	0.100	0.1081		mg/L		108	80 - 120
Copper	0.200	0.2095		mg/L		105	80 - 120
Lead	0.200	0.2142		mg/L		107	80 - 120
Nickel	0.200	0.2063		mg/L		103	80 - 120
Selenium	0.400	0.3874		mg/L		97	80 - 120
Silver	0.100	0.1121		mg/L		112	80 - 120
Thallium	0.100	0.09178		mg/L		92	80 - 120
Vanadium	0.100	0.09960		mg/L		100	80 - 120
Zinc	0.200	0.1873		mg/L		94	80 - 120

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

**Lab Sample ID: MB 310-464546/1**  
**Matrix: Water**  
**Analysis Batch: 464546**

**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	3.50	mg/L			08/22/25 14:13	1

**Lab Sample ID: LCS 310-464546/2**  
**Matrix: Water**  
**Analysis Batch: 464546**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	100.0		mg/L		100	82 - 117

# QC Association Summary

Client: SCS Engineers  
Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

## GC/MS VOA

### Analysis Batch: 464308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-313862-1	GU-4A	Total/NA	Water	8260D	
310-313862-2	Trip Blank	Total/NA	Water	8260D	
MB 310-464308/5	Method Blank	Total/NA	Water	8260D	
LCS 310-464308/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-464308/7	Lab Control Sample	Total/NA	Water	8260D	

## Metals

### Prep Batch: 464703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-313862-1	GU-4A	Total/NA	Water	3005A	
MB 310-464703/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-464703/2-A	Lab Control Sample	Total/NA	Water	3005A	

### Analysis Batch: 465005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-313862-1	GU-4A	Total/NA	Water	6020B	464703
MB 310-464703/1-A	Method Blank	Total/NA	Water	6020B	464703
LCS 310-464703/2-A	Lab Control Sample	Total/NA	Water	6020B	464703

## General Chemistry

### Analysis Batch: 464546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-313862-1	GU-4A	Total/NA	Water	I-3765-85	
MB 310-464546/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-464546/2	Lab Control Sample	Total/NA	Water	I-3765-85	

# Lab Chronicle

Client: SCS Engineers  
 Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
 SDG: Iowa

**Client Sample ID: GU-4A**

**Lab Sample ID: 310-313862-1**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	464308	WSE8	EET CF	08/21/25 14:24
Total/NA	Prep	3005A			464703	QTZ5	EET CF	08/26/25 09:00
Total/NA	Analysis	6020B		1	465005	NFT2	EET CF	08/27/25 15:30
Total/NA	Analysis	I-3765-85		1	464546	HE7K	EET CF	08/22/25 14:13

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-313862-2**

Date Collected: 08/20/25 10:15

Matrix: Water

Date Received: 08/21/25 08:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	464308	WSE8	EET CF	08/21/25 13:18

**Laboratory References:**

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

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- 5
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# Accreditation/Certification Summary

Client: SCS Engineers  
Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

## 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

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# Method Summary

Client: SCS Engineers  
Project/Site: Great River Regional Waste Authority

Job ID: 310-313862-1  
SDG: Iowa

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

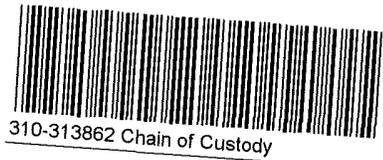
**Laboratory References:**

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





Environment Testing  
America



### Cooler/Sample Receipt and Temperature Log Form

<b>Client Information</b>			
Client: <u>SCS Engineers</u>			
City/State:	CITY	STATE	Project:
		<u>CA</u>	
<b>Receipt Information</b>			
Date/Time Received:	DATE	TIME	Received By
	<u>08/21/25</u>	<u>0815</u>	<u>ES</u>
Delivery Type: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other _____			
<b>Condition of Cooler/Containers</b>			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID.	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # ____ of ____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" 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>R</u>		Correction Factor (°C): _____	
• <b>Temp Blank Temperature</b> -- If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C) <u>4. ES 08/21/25</u>		Corrected Temp (°C): _____	
• <b>Sample Container Temperature</b>			
Container(s) used:	CONTAINER 1	CONTAINER 2	
	<u>plc 250 ml</u>		
Uncorrected Temp (°C):	<u>4.2</u>		
Corrected Temp (°C):	<u>4.2</u>		
<b>Exceptions Noted</b>			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No 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>			





## Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-313862-1

SDG Number: Iowa

**Login Number: 313862**

**List Number: 1**

**Creator: Schaufenbuel, Erin**

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



 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Nathan Ohrt  
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**JOB DESCRIPTION**

GRRWA 2nd 2025 HMSP  
GRRWA Sanitary Landfill Phase 2  
Winter 2024 Retest

**JOB NUMBER**

310-320133-1

# 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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# Case Narrative

Client: SCS Engineers  
Project: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1

Job ID: 310-320133-1

Eurofins Cedar Falls

## Job Narrative 310-320133-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

### Receipt

The samples were received on 11/7/2025 5:30 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 0.1°C.

### GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-472995 recovered outside control limits for 2-Hexanone (-23%D). The LCS associated with this CCV passes CCV criteria for the affected analytes; therefore, the data have been reported. The associated sample is:(CCV 310-472995/3).

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

### Metals

Method 6020B: The method blank for preparation batch 310-473182 contained zinc, lead, copper above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 6020B: The method blank for preparation batch 310-473182 contained zinc, copper above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 6020B: The initial calibration verification (ICV) result for batch 310-473366 was above the upper control limit. The affected analytes are: antimony. Sample results were non-detects, and have been reported as qualified data.

Method 6020B: The method blank for preparation batch 310-473182 contained zinc, copper, lead above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 6020B: The initial calibration verification (ICV) result for batch 310-473366 was above the upper control limit. The affected analytes are: antimony. Sample results were non-detects, and have been reported as qualified data.

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: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-320133-1	MW-26	Water	11/06/25 11:00	11/07/25 17:30	Iowa
310-320133-2	MW-28	Water	11/06/25 12:22	11/07/25 17:30	Iowa
310-320133-3	MW-29	Water	11/06/25 13:09	11/07/25 17:30	Iowa
310-320133-4	Duplicate (MW-28)	Water	11/06/25 12:22	11/07/25 17:30	Iowa
310-320133-5	Trip Blank	Trip Blank	11/06/25 00:00	11/07/25 17:30	Iowa

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# Detection Summary

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

## Client Sample ID: MW-26

## Lab Sample ID: 310-320133-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	4.59	J	10.0	3.80	ug/L	1		8260D	Total/NA
Arsenic	0.00126	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0352		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000201		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00162		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.0146		0.00500	0.00320	mg/L	1		6020B	Total/NA
Lead	0.00599		0.000500	0.000330	mg/L	1		6020B	Total/NA
Nickel	0.00401	J	0.00500	0.00230	mg/L	1		6020B	Total/NA
Zinc	0.152	F1	0.0200	0.0130	mg/L	1		6020B	Total/NA
Total Suspended Solids	17.0		15.0	10.5	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-28

## Lab Sample ID: 310-320133-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00205		0.00200	0.00100	mg/L	1		6020B	Total/NA
Arsenic	0.00112	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0203		0.00200	0.000660	mg/L	1		6020B	Total/NA
Chromium	0.00180	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Cobalt	0.00671		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0122		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	7.13		1.88	1.31	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: MW-29

## Lab Sample ID: 310-320133-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00350		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0158		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00327		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.00132		0.000500	0.000330	mg/L	1		6020B	Total/NA
Nickel	0.0124		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	18.0		5.00	3.50	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: Duplicate (MW-28)

## Lab Sample ID: 310-320133-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	4.68	J	10.0	3.80	ug/L	1		8260D	Total/NA
Arsenic	0.00123	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0212		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00656		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.0137		0.00500	0.00230	mg/L	1		6020B	Total/NA
Total Suspended Solids	9.33		5.00	3.50	mg/L	1		I-3765-85	Total/NA

## Client Sample ID: Trip Blank

## Lab Sample ID: 310-320133-5

No Detections.

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-26**

**Lab Sample ID: 310-320133-1**

Date Collected: 11/06/25 11:00

Matrix: Water

Date Received: 11/07/25 17:30

**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			11/11/25 19:47	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 19:47	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 19:47	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 19:47	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 19:47	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 19:47	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 19:47	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 19:47	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 19:47	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 19:47	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 19:47	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 19:47	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 19:47	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 19:47	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 19:47	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 19:47	1
<b>Acetone</b>	<b>4.59</b>	<b>J</b>	10.0	3.80	ug/L			11/11/25 19:47	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 19:47	1
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 19:47	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 19:47	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 19:47	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 19:47	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 19:47	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 19:47	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 19:47	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 19:47	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 19:47	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 19:47	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 19:47	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 19:47	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 19:47	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 19:47	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 19:47	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 19:47	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 19:47	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 19:47	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 19:47	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 19:47	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 19:47	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 19:47	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 19:47	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 19:47	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 19:47	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 19:47	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 19:47	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 19:47	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 19:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		76 - 130		11/11/25 19:47	1

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# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-26**

**Lab Sample ID: 310-320133-1**

Date Collected: 11/06/25 11:00

Matrix: Water

Date Received: 11/07/25 17:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120		11/11/25 19:47	1
4-Bromofluorobenzene (Surr)	100		80 - 120		11/11/25 19:47	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		11/12/25 09:00	11/13/25 14:48	1
<b>Arsenic</b>	<b>0.00126</b>	<b>J</b>	0.00200	0.000530	mg/L		11/12/25 09:00	11/12/25 18:21	1
<b>Barium</b>	<b>0.0352</b>		0.00200	0.000660	mg/L		11/12/25 09:00	11/12/25 18:21	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/12/25 09:00	11/12/25 18:21	1
<b>Cadmium</b>	<b>0.000201</b>		0.000200	0.000100	mg/L		11/12/25 09:00	11/12/25 18:21	1
Chromium	<0.00500		0.00500	0.00180	mg/L		11/12/25 09:00	11/12/25 18:21	1
<b>Cobalt</b>	<b>0.00162</b>		0.000500	0.000170	mg/L		11/12/25 09:00	11/12/25 18:21	1
<b>Copper</b>	<b>0.0146</b>		0.00500	0.00320	mg/L		11/12/25 09:00	11/13/25 14:48	1
<b>Lead</b>	<b>0.00599</b>		0.000500	0.000330	mg/L		11/12/25 09:00	11/13/25 14:48	1
<b>Nickel</b>	<b>0.00401</b>	<b>J</b>	0.00500	0.00230	mg/L		11/12/25 09:00	11/12/25 18:21	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/12/25 09:00	11/12/25 18:21	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/12/25 09:00	11/12/25 18:21	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/12/25 09:00	11/12/25 18:21	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		11/12/25 09:00	11/12/25 18:21	1
<b>Zinc</b>	<b>0.152</b>	<b>F1</b>	0.0200	0.0130	mg/L		11/12/25 09:00	11/13/25 14:48	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>17.0</b>		15.0	10.5	mg/L			11/11/25 07:58	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-28**

**Lab Sample ID: 310-320133-2**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

**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			11/11/25 15:43	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 15:43	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 15:43	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 15:43	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 15:43	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 15:43	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 15:43	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 15:43	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 15:43	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 15:43	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 15:43	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 15:43	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 15:43	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 15:43	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 15:43	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 15:43	1
Acetone	<10.0		10.0	3.80	ug/L			11/11/25 15:43	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 15:43	1
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 15:43	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 15:43	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 15:43	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 15:43	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 15:43	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 15:43	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 15:43	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 15:43	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 15:43	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 15:43	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 15:43	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 15:43	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 15:43	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 15:43	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 15:43	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 15:43	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 15:43	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 15:43	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 15:43	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 15:43	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 15:43	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 15:43	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 15:43	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 15:43	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 15:43	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 15:43	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 15:43	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 15:43	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 15:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	99		76 - 130		11/11/25 15:43	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-28**

**Lab Sample ID: 310-320133-2**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		80 - 120		11/11/25 15:43	1
4-Bromofluorobenzene (Surr)	102		80 - 120		11/11/25 15:43	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Antimony</b>	<b>0.00205</b>		0.00200	0.00100	mg/L		11/12/25 09:00	11/13/25 15:03	1
<b>Arsenic</b>	<b>0.00112</b>	<b>J</b>	0.00200	0.000530	mg/L		11/12/25 09:00	11/12/25 18:32	1
<b>Barium</b>	<b>0.0203</b>		0.00200	0.000660	mg/L		11/12/25 09:00	11/12/25 18:32	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/12/25 09:00	11/12/25 18:32	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/12/25 09:00	11/12/25 18:32	1
<b>Chromium</b>	<b>0.00180</b>	<b>J</b>	0.00500	0.00180	mg/L		11/12/25 09:00	11/12/25 18:32	1
<b>Cobalt</b>	<b>0.00671</b>		0.000500	0.000170	mg/L		11/12/25 09:00	11/12/25 18:32	1
Copper	<0.00500		0.00500	0.00320	mg/L		11/12/25 09:00	11/12/25 18:32	1
Lead	<0.000500		0.000500	0.000330	mg/L		11/12/25 09:00	11/12/25 18:32	1
<b>Nickel</b>	<b>0.0122</b>		0.00500	0.00230	mg/L		11/12/25 09:00	11/12/25 18:32	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/12/25 09:00	11/12/25 18:32	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/12/25 09:00	11/12/25 18:32	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/12/25 09:00	11/12/25 18:32	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		11/12/25 09:00	11/12/25 18:32	1
Zinc	<0.0200		0.0200	0.0130	mg/L		11/12/25 09:00	11/12/25 18:32	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>7.13</b>		1.88	1.31	mg/L			11/11/25 07:58	1

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-29**

**Lab Sample ID: 310-320133-3**

Date Collected: 11/06/25 13:09

Matrix: Water

Date Received: 11/07/25 17:30

**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			11/11/25 16:05	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 16:05	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 16:05	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 16:05	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 16:05	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 16:05	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 16:05	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 16:05	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 16:05	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 16:05	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 16:05	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 16:05	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 16:05	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 16:05	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 16:05	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 16:05	1
Acetone	<10.0		10.0	3.80	ug/L			11/11/25 16:05	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 16:05	1
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 16:05	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 16:05	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 16:05	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 16:05	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 16:05	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 16:05	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 16:05	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 16:05	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 16:05	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 16:05	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 16:05	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 16:05	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 16:05	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 16:05	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 16:05	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 16:05	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 16:05	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 16:05	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 16:05	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 16:05	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 16:05	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 16:05	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 16:05	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 16:05	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 16:05	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 16:05	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 16:05	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 16:05	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 16:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		76 - 130		11/11/25 16:05	1

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# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-29**

**Lab Sample ID: 310-320133-3**

Date Collected: 11/06/25 13:09

Matrix: Water

Date Received: 11/07/25 17:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		80 - 120		11/11/25 16:05	1
4-Bromofluorobenzene (Surr)	103		80 - 120		11/11/25 16:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200	^1+	0.00200	0.00100	mg/L		11/12/25 09:00	11/12/25 18:35	1
<b>Arsenic</b>	<b>0.00350</b>		0.00200	0.000530	mg/L		11/12/25 09:00	11/12/25 18:35	1
<b>Barium</b>	<b>0.0158</b>		0.00200	0.000660	mg/L		11/12/25 09:00	11/12/25 18:35	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/12/25 09:00	11/12/25 18:35	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/12/25 09:00	11/12/25 18:35	1
Chromium	<0.00500		0.00500	0.00180	mg/L		11/12/25 09:00	11/12/25 18:35	1
<b>Cobalt</b>	<b>0.00327</b>		0.000500	0.000170	mg/L		11/12/25 09:00	11/12/25 18:35	1
Copper	<0.00500		0.00500	0.00320	mg/L		11/12/25 09:00	11/12/25 18:35	1
<b>Lead</b>	<b>0.00132</b>		0.000500	0.000330	mg/L		11/12/25 09:00	11/13/25 15:06	1
<b>Nickel</b>	<b>0.0124</b>		0.00500	0.00230	mg/L		11/12/25 09:00	11/12/25 18:35	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/12/25 09:00	11/12/25 18:35	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/12/25 09:00	11/12/25 18:35	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/12/25 09:00	11/12/25 18:35	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		11/12/25 09:00	11/12/25 18:35	1
Zinc	<0.0200		0.0200	0.0130	mg/L		11/12/25 09:00	11/12/25 18:35	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>18.0</b>		5.00	3.50	mg/L			11/11/25 07:58	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Duplicate (MW-28)**

**Lab Sample ID: 310-320133-4**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

**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			11/11/25 16:27	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 16:27	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 16:27	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 16:27	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 16:27	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 16:27	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 16:27	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 16:27	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 16:27	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 16:27	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 16:27	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 16:27	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 16:27	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 16:27	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 16:27	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 16:27	1
<b>Acetone</b>	<b>4.68</b>	<b>J</b>	10.0	3.80	ug/L			11/11/25 16:27	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 16:27	1
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 16:27	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 16:27	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 16:27	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 16:27	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 16:27	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 16:27	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 16:27	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 16:27	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 16:27	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 16:27	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 16:27	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 16:27	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 16:27	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 16:27	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 16:27	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 16:27	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 16:27	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 16:27	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 16:27	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 16:27	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 16:27	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 16:27	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 16:27	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 16:27	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 16:27	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 16:27	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 16:27	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 16:27	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	98		76 - 130		11/11/25 16:27	1

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Duplicate (MW-28)**

**Lab Sample ID: 310-320133-4**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		80 - 120		11/11/25 16:27	1
4-Bromofluorobenzene (Surr)	102		80 - 120		11/11/25 16:27	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200	^1+	0.00200	0.00100	mg/L		11/12/25 09:00	11/12/25 18:37	1
<b>Arsenic</b>	<b>0.00123</b>	<b>J</b>	0.00200	0.000530	mg/L		11/12/25 09:00	11/12/25 18:37	1
<b>Barium</b>	<b>0.0212</b>		0.00200	0.000660	mg/L		11/12/25 09:00	11/12/25 18:37	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/12/25 09:00	11/12/25 18:37	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/12/25 09:00	11/12/25 18:37	1
Chromium	<0.00500		0.00500	0.00180	mg/L		11/12/25 09:00	11/12/25 18:37	1
<b>Cobalt</b>	<b>0.00656</b>		0.000500	0.000170	mg/L		11/12/25 09:00	11/12/25 18:37	1
Copper	<0.00500		0.00500	0.00320	mg/L		11/12/25 09:00	11/12/25 18:37	1
Lead	<0.000500		0.000500	0.000330	mg/L		11/12/25 09:00	11/12/25 18:37	1
<b>Nickel</b>	<b>0.0137</b>		0.00500	0.00230	mg/L		11/12/25 09:00	11/12/25 18:37	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/12/25 09:00	11/12/25 18:37	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/12/25 09:00	11/12/25 18:37	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/12/25 09:00	11/12/25 18:37	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		11/12/25 09:00	11/12/25 18:37	1
Zinc	<0.0200		0.0200	0.0130	mg/L		11/12/25 09:00	11/12/25 18:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Suspended Solids (USGS I-3765-85)</b>	<b>9.33</b>		5.00	3.50	mg/L			11/11/25 07:58	1

# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-320133-5**

Date Collected: 11/06/25 00:00

Matrix: Trip Blank

Date Received: 11/07/25 17:30

**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			11/11/25 01:07	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 01:07	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 01:07	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 01:07	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 01:07	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 01:07	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 01:07	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 01:07	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 01:07	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 01:07	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 01:07	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 01:07	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 01:07	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 01:07	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 01:07	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 01:07	1
Acetone	<10.0		10.0	3.80	ug/L			11/11/25 01:07	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 01:07	1
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 01:07	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 01:07	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 01:07	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 01:07	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 01:07	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 01:07	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 01:07	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 01:07	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 01:07	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 01:07	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 01:07	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 01:07	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 01:07	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 01:07	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 01:07	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 01:07	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 01:07	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 01:07	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 01:07	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 01:07	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 01:07	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 01:07	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 01:07	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 01:07	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 01:07	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 01:07	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 01:07	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 01:07	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 01:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	96		76 - 130		11/11/25 01:07	1

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# Client Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-320133-5**

Date Collected: 11/06/25 00:00

Matrix: Trip Blank

Date Received: 11/07/25 17:30

**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)	95		80 - 120		11/11/25 01:07	1
4-Bromofluorobenzene (Surr)	102		80 - 120		11/11/25 01:07	1

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# Definitions/Glossary

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

## Qualifiers

### GC/MS VOA

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

### Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## 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: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

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

Matrix: Trip Blank

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (76-130)	TOL (80-120)	BFB (80-120)
310-320133-5	Trip Blank	96	95	102

**Surrogate Legend**

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (76-130)	TOL (80-120)	BFB (80-120)
310-320133-1	MW-26	97	97	100
310-320133-2	MW-28	99	95	102
310-320133-3	MW-29	97	94	103
310-320133-3 MS	MW-29	101	97	101
310-320133-3 MSD	MW-29	100	96	102
310-320133-4	Duplicate (MW-28)	98	95	102
LCS 310-472995/6	Lab Control Sample	103	97	101
LCS 310-472995/7	Lab Control Sample	96	96	101
LCS 310-472998/6	Lab Control Sample	103	97	102
LCS 310-472998/7	Lab Control Sample	97	97	102
MB 310-472995/5	Method Blank	96	95	103
MB 310-472998/5	Method Blank	99	96	103

**Surrogate Legend**

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

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-472995/5**  
**Matrix: Water**  
**Analysis Batch: 472995**

**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			11/10/25 23:38	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/10/25 23:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/10/25 23:38	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/10/25 23:38	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/10/25 23:38	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/10/25 23:38	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/10/25 23:38	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/10/25 23:38	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/10/25 23:38	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/10/25 23:38	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/10/25 23:38	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/10/25 23:38	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/10/25 23:38	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/10/25 23:38	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/10/25 23:38	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/10/25 23:38	1
Acetone	<10.0		10.0	3.80	ug/L			11/10/25 23:38	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/10/25 23:38	1
Benzene	<0.500		0.500	0.220	ug/L			11/10/25 23:38	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/10/25 23:38	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/10/25 23:38	1
Bromoform	<5.00		5.00	2.60	ug/L			11/10/25 23:38	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/10/25 23:38	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/10/25 23:38	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/10/25 23:38	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/10/25 23:38	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/10/25 23:38	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/10/25 23:38	1
Chloroform	<3.00		3.00	1.30	ug/L			11/10/25 23:38	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/10/25 23:38	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/10/25 23:38	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/10/25 23:38	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/10/25 23:38	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/10/25 23:38	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/10/25 23:38	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/10/25 23:38	1
Styrene	<1.00		1.00	0.370	ug/L			11/10/25 23:38	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/10/25 23:38	1
Toluene	<1.00		1.00	0.430	ug/L			11/10/25 23:38	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/10/25 23:38	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/10/25 23:38	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/10/25 23:38	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/10/25 23:38	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/10/25 23:38	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/10/25 23:38	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/10/25 23:38	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/10/25 23:38	1

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-472995/5**

**Matrix: Water**

**Analysis Batch: 472995**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	96		76 - 130		11/10/25 23:38	1
Toluene-d8 (Surr)	95		80 - 120		11/10/25 23:38	1
4-Bromofluorobenzene (Surr)	103		80 - 120		11/10/25 23:38	1

**Lab Sample ID: LCS 310-472995/6**

**Matrix: Water**

**Analysis Batch: 472995**

**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	20.54		ug/L		103	69 - 130
1,1,2,2-Tetrachloroethane	20.0	19.34		ug/L		97	70 - 122
1,1,2-Trichloroethane	20.0	20.37		ug/L		102	75 - 121
1,1-Dichloroethane	20.0	20.72		ug/L		104	69 - 127
1,1-Dichloroethane	20.0	20.89		ug/L		104	64 - 134
1,2,3-Trichloropropane	20.0	20.57		ug/L		103	70 - 122
1,2-Dibromo-3-chloropropane	20.0	19.32		ug/L		97	62 - 132
1,2-Dibromoethane (EDB)	20.0	20.77		ug/L		104	74 - 122
1,2-Dichlorobenzene	20.0	21.57		ug/L		108	74 - 120
1,2-Dichloroethane	20.0	20.03		ug/L		100	68 - 125
1,2-Dichloropropane	20.0	19.21		ug/L		96	72 - 128
1,4-Dichlorobenzene	20.0	21.29		ug/L		106	72 - 120
2-Butanone (MEK)	40.0	34.38		ug/L		86	60 - 134
2-Hexanone	40.0	33.25		ug/L		83	62 - 139
4-Methyl-2-pentanone (MIBK)	40.0	35.14		ug/L		88	62 - 136
Acetone	40.0	36.93		ug/L		92	59 - 136
Acrylonitrile	200	196.7		ug/L		98	50 - 150
Benzene	20.0	20.66		ug/L		103	71 - 125
Bromochloromethane	20.0	23.84		ug/L		119	69 - 131
Bromodichloromethane	20.0	19.24		ug/L		96	70 - 122
Bromoform	20.0	20.40		ug/L		102	62 - 122
Carbon disulfide	20.0	21.14		ug/L		106	58 - 137
Carbon tetrachloride	20.0	20.69		ug/L		103	63 - 136
Chlorobenzene	20.0	21.60		ug/L		108	74 - 120
Chlorodibromomethane	20.0	19.94		ug/L		100	69 - 121
Chloroform	20.0	21.11		ug/L		106	72 - 122
cis-1,2-Dichloroethene	20.0	22.82		ug/L		114	72 - 123
cis-1,3-Dichloropropene	20.0	18.54		ug/L		93	72 - 123
Dibromomethane	20.0	22.14		ug/L		111	72 - 122
Ethylbenzene	20.0	20.97		ug/L		105	75 - 120
Iodomethane	20.0	18.30		ug/L		92	18 - 150
Methylene chloride	20.0	20.32		ug/L		102	72 - 128
Styrene	20.0	21.90		ug/L		110	74 - 122
Tetrachloroethene	20.0	23.62		ug/L		118	70 - 128
Toluene	20.0	21.65		ug/L		108	74 - 120
trans-1,2-Dichloroethene	20.0	22.67		ug/L		113	67 - 127
trans-1,3-Dichloropropene	20.0	18.64		ug/L		93	67 - 123
trans-1,4-Dichloro-2-butene	20.0	17.05		ug/L		85	50 - 150

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: LCS 310-472995/6**

**Matrix: Water**

**Analysis Batch: 472995**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
Trichloroethene	20.0	21.21		ug/L		106	70 - 128
Vinyl acetate	40.0	32.42		ug/L		81	50 - 150
Xylenes, Total	40.0	42.67		ug/L		107	74 - 121

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	103		76 - 130
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120

**Lab Sample ID: LCS 310-472995/7**

**Matrix: Water**

**Analysis Batch: 472995**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
Bromomethane	20.0	16.25		ug/L		81	33 - 138
Chloroethane	20.0	17.42		ug/L		87	59 - 139
Chloromethane	20.0	16.27		ug/L		81	52 - 146
Trichlorofluoromethane	20.0	19.55		ug/L		98	55 - 150
Vinyl chloride	20.0	17.17		ug/L		86	60 - 142

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	96		76 - 130
Toluene-d8 (Surr)	96		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120

**Lab Sample ID: MB 310-472998/5**

**Matrix: Water**

**Analysis Batch: 472998**

**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			11/11/25 11:38	1
1,1,1-Trichloroethane	<1.00		1.00	0.420	ug/L			11/11/25 11:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.350	ug/L			11/11/25 11:38	1
1,1,2-Trichloroethane	<1.00		1.00	0.330	ug/L			11/11/25 11:38	1
1,1-Dichloroethane	<1.00		1.00	0.400	ug/L			11/11/25 11:38	1
1,1-Dichloroethene	<2.00		2.00	0.460	ug/L			11/11/25 11:38	1
1,2,3-Trichloropropane	<1.00		1.00	0.430	ug/L			11/11/25 11:38	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			11/11/25 11:38	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			11/11/25 11:38	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			11/11/25 11:38	1
1,2-Dichloroethane	<1.00		1.00	0.890	ug/L			11/11/25 11:38	1
1,2-Dichloropropane	<1.00		1.00	0.380	ug/L			11/11/25 11:38	1
1,4-Dichlorobenzene	<1.00		1.00	0.490	ug/L			11/11/25 11:38	1
2-Butanone (MEK)	<10.0		10.0	3.40	ug/L			11/11/25 11:38	1
2-Hexanone	<10.0		10.0	3.80	ug/L			11/11/25 11:38	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	3.50	ug/L			11/11/25 11:38	1
Acetone	<10.0		10.0	3.80	ug/L			11/11/25 11:38	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			11/11/25 11:38	1

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

Lab Sample ID: MB 310-472998/5

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 472998

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.500		0.500	0.220	ug/L			11/11/25 11:38	1
Bromochloromethane	<5.00		5.00	1.70	ug/L			11/11/25 11:38	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			11/11/25 11:38	1
Bromoform	<5.00		5.00	2.60	ug/L			11/11/25 11:38	1
Bromomethane	<4.00		4.00	1.10	ug/L			11/11/25 11:38	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			11/11/25 11:38	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			11/11/25 11:38	1
Chlorobenzene	<1.00		1.00	0.350	ug/L			11/11/25 11:38	1
Chlorodibromomethane	<5.00		5.00	1.50	ug/L			11/11/25 11:38	1
Chloroethane	<4.00		4.00	0.900	ug/L			11/11/25 11:38	1
Chloroform	<3.00		3.00	1.30	ug/L			11/11/25 11:38	1
Chloromethane	<3.00		3.00	0.610	ug/L			11/11/25 11:38	1
cis-1,2-Dichloroethene	<1.00		1.00	0.550	ug/L			11/11/25 11:38	1
cis-1,3-Dichloropropene	<5.00		5.00	1.20	ug/L			11/11/25 11:38	1
Dibromomethane	<1.00		1.00	0.330	ug/L			11/11/25 11:38	1
Ethylbenzene	<1.00		1.00	0.420	ug/L			11/11/25 11:38	1
Iodomethane	<10.0		10.0	2.60	ug/L			11/11/25 11:38	1
Methylene chloride	<5.00		5.00	1.70	ug/L			11/11/25 11:38	1
Styrene	<1.00		1.00	0.370	ug/L			11/11/25 11:38	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			11/11/25 11:38	1
Toluene	<1.00		1.00	0.430	ug/L			11/11/25 11:38	1
trans-1,2-Dichloroethene	<1.00		1.00	0.410	ug/L			11/11/25 11:38	1
trans-1,3-Dichloropropene	<5.00		5.00	2.30	ug/L			11/11/25 11:38	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	2.40	ug/L			11/11/25 11:38	1
Trichloroethene	<1.00		1.00	0.350	ug/L			11/11/25 11:38	1
Trichlorofluoromethane	<4.00		4.00	0.470	ug/L			11/11/25 11:38	1
Vinyl acetate	<10.0		10.0	7.10	ug/L			11/11/25 11:38	1
Vinyl chloride	<1.00		1.00	0.430	ug/L			11/11/25 11:38	1
Xylenes, Total	<3.00		3.00	1.10	ug/L			11/11/25 11:38	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Dibromofluoromethane (Surr)	99		76 - 130		11/11/25 11:38	1
Toluene-d8 (Surr)	96		80 - 120		11/11/25 11:38	1
4-Bromofluorobenzene (Surr)	103		80 - 120		11/11/25 11:38	1

Lab Sample ID: LCS 310-472998/6

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 472998

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	20.58		ug/L		103	69 - 130
1,1,2,2-Tetrachloroethane	20.0	20.24		ug/L		101	70 - 122
1,1,2-Trichloroethane	20.0	20.97		ug/L		105	75 - 121
1,1-Dichloroethane	20.0	19.94		ug/L		100	69 - 127
1,1-Dichloroethene	20.0	20.13		ug/L		101	64 - 134
1,2,3-Trichloropropane	20.0	21.55		ug/L		108	70 - 122
1,2-Dibromo-3-chloropropane	20.0	21.01		ug/L		105	62 - 132

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

Lab Sample ID: LCS 310-472998/6

Matrix: Water

Analysis Batch: 472998

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromoethane (EDB)	20.0	21.63		ug/L		108	74 - 122
1,2-Dichlorobenzene	20.0	21.21		ug/L		106	74 - 120
1,2-Dichloroethane	20.0	20.60		ug/L		103	68 - 125
1,2-Dichloropropane	20.0	19.35		ug/L		97	72 - 128
1,4-Dichlorobenzene	20.0	20.86		ug/L		104	72 - 120
2-Butanone (MEK)	40.0	36.67		ug/L		92	60 - 134
2-Hexanone	40.0	33.85		ug/L		85	62 - 139
4-Methyl-2-pentanone (MIBK)	40.0	35.71		ug/L		89	62 - 136
Acetone	40.0	37.19		ug/L		93	59 - 136
Acrylonitrile	200	202.1		ug/L		101	50 - 150
Benzene	20.0	20.20		ug/L		101	71 - 125
Bromochloromethane	20.0	23.58		ug/L		118	69 - 131
Bromodichloromethane	20.0	20.62		ug/L		103	70 - 122
Bromoform	20.0	22.26		ug/L		111	62 - 122
Carbon disulfide	20.0	20.31		ug/L		102	58 - 137
Carbon tetrachloride	20.0	20.63		ug/L		103	63 - 136
Chlorobenzene	20.0	20.89		ug/L		104	74 - 120
Chlorodibromomethane	20.0	21.34		ug/L		107	69 - 121
Chloroform	20.0	20.87		ug/L		104	72 - 122
cis-1,2-Dichloroethene	20.0	22.07		ug/L		110	72 - 123
cis-1,3-Dichloropropene	20.0	18.58		ug/L		93	72 - 123
Dibromomethane	20.0	22.67		ug/L		113	72 - 122
Ethylbenzene	20.0	20.32		ug/L		102	75 - 120
Iodomethane	20.0	15.61		ug/L		78	18 - 150
Methylene chloride	20.0	19.49		ug/L		97	72 - 128
Styrene	20.0	21.13		ug/L		106	74 - 122
Tetrachloroethene	20.0	22.69		ug/L		113	70 - 128
Toluene	20.0	20.73		ug/L		104	74 - 120
trans-1,2-Dichloroethene	20.0	22.13		ug/L		111	67 - 127
trans-1,3-Dichloropropene	20.0	18.84		ug/L		94	67 - 123
trans-1,4-Dichloro-2-butene	20.0	17.03		ug/L		85	50 - 150
Trichloroethene	20.0	21.09		ug/L		105	70 - 128
Vinyl acetate	40.0	32.69		ug/L		82	50 - 150
Xylenes, Total	40.0	41.34		ug/L		103	74 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	103		76 - 130
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120

Lab Sample ID: LCS 310-472998/7

Matrix: Water

Analysis Batch: 472998

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	14.83		ug/L		74	33 - 138
Chloroethane	20.0	16.61		ug/L		83	59 - 139
Chloromethane	20.0	16.30		ug/L		82	52 - 146

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: LCS 310-472998/7**

**Matrix: Water**

**Analysis Batch: 472998**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichlorofluoromethane	20.0	18.76		ug/L		94	55 - 150
Vinyl chloride	20.0	16.37		ug/L		82	60 - 142

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	97		76 - 130
Toluene-d8 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120

**Lab Sample ID: 310-320133-3 MS**

**Matrix: Water**

**Analysis Batch: 472998**

**Client Sample ID: MW-29**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	<1.00		20.0	19.91		ug/L		100	55 - 121
1,1,1-Trichloroethane	<1.00		20.0	18.31		ug/L		92	53 - 130
1,1,1,2,2-Tetrachloroethane	<1.00		20.0	18.60		ug/L		93	55 - 123
1,1,2-Trichloroethane	<1.00		20.0	18.97		ug/L		95	60 - 121
1,1-Dichloroethane	<1.00		20.0	18.46		ug/L		92	53 - 127
1,1-Dichloroethane	<2.00		20.0	19.04		ug/L		95	51 - 134
1,2,3-Trichloropropane	<1.00		20.0	19.04		ug/L		95	56 - 122
1,2-Dibromo-3-chloropropane	<5.00		20.0	17.90		ug/L		89	44 - 138
1,2-Dibromoethane (EDB)	<1.00		20.0	19.03		ug/L		95	60 - 122
1,2-Dichlorobenzene	<1.00		20.0	19.37		ug/L		97	60 - 120
1,2-Dichloroethane	<1.00		20.0	18.76		ug/L		94	48 - 128
1,2-Dichloropropane	<1.00		20.0	17.73		ug/L		89	59 - 128
1,4-Dichlorobenzene	<1.00		20.0	18.96		ug/L		95	58 - 120
2-Butanone (MEK)	<10.0		40.0	30.52		ug/L		76	46 - 134
2-Hexanone	<10.0		40.0	29.93		ug/L		75	46 - 141
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	33.13		ug/L		83	49 - 138
Acetone	<10.0		40.0	35.08		ug/L		88	39 - 141
Acrylonitrile	<5.00		200	175.9		ug/L		88	41 - 150
Benzene	<0.500		20.0	18.59		ug/L		93	48 - 125
Bromochloromethane	<5.00		20.0	21.15		ug/L		106	55 - 131
Bromodichloromethane	<1.00		20.0	18.20		ug/L		91	53 - 122
Bromoform	<5.00		20.0	19.25		ug/L		96	47 - 122
Carbon disulfide	<1.00		20.0	19.36		ug/L		97	45 - 137
Carbon tetrachloride	<2.00		20.0	18.49		ug/L		92	45 - 136
Chlorobenzene	<1.00		20.0	18.77		ug/L		94	59 - 120
Chlorodibromomethane	<5.00		20.0	18.93		ug/L		95	53 - 121
Chloroform	<3.00		20.0	18.82		ug/L		94	52 - 122
cis-1,2-Dichloroethane	<1.00		20.0	20.21		ug/L		101	51 - 123
cis-1,3-Dichloropropene	<5.00		20.0	15.72		ug/L		79	55 - 123
Dibromomethane	<1.00		20.0	19.48		ug/L		97	57 - 122
Ethylbenzene	<1.00		20.0	18.15		ug/L		91	53 - 120
Iodomethane	<10.0		20.0	15.98		ug/L		80	18 - 150
Methylene chloride	<5.00		20.0	17.98		ug/L		90	59 - 128
Styrene	<1.00		20.0	19.31		ug/L		97	50 - 125
Tetrachloroethene	<1.00		20.0	19.73		ug/L		99	51 - 128

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: 310-320133-3 MS**

**Matrix: Water**

**Analysis Batch: 472998**

**Client Sample ID: MW-29**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Toluene	<1.00		20.0	18.25		ug/L		91	52 - 120
trans-1,2-Dichloroethene	<1.00		20.0	20.09		ug/L		100	53 - 127
trans-1,3-Dichloropropene	<5.00		20.0	15.51		ug/L		78	50 - 123
trans-1,4-Dichloro-2-butene	<10.0		20.0	13.99		ug/L		70	28 - 150
Trichloroethene	<1.00		20.0	18.40		ug/L		92	50 - 128
Vinyl acetate	<10.0		40.0	27.02		ug/L		68	31 - 150
Xylenes, Total	<3.00		40.0	37.32		ug/L		93	50 - 122

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

**Lab Sample ID: 310-320133-3 MSD**

**Matrix: Water**

**Analysis Batch: 472998**

**Client Sample ID: MW-29**

**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier						
1,1,1,2-Tetrachloroethane	<1.00		20.0	18.83		ug/L		94	55 - 121	6	20
1,1,1-Trichloroethane	<1.00		20.0	17.89		ug/L		89	53 - 130	2	20
1,1,2,2-Tetrachloroethane	<1.00		20.0	18.07		ug/L		90	55 - 123	3	20
1,1,2-Trichloroethane	<1.00		20.0	18.03		ug/L		90	60 - 121	5	20
1,1-Dichloroethane	<1.00		20.0	18.04		ug/L		90	53 - 127	2	20
1,1-Dichloroethene	<2.00		20.0	18.51		ug/L		93	51 - 134	3	20
1,2,3-Trichloropropane	<1.00		20.0	19.32		ug/L		97	56 - 122	1	21
1,2-Dibromo-3-chloropropane	<5.00		20.0	17.99		ug/L		90	44 - 138	1	24
1,2-Dibromoethane (EDB)	<1.00		20.0	18.61		ug/L		93	60 - 122	2	20
1,2-Dichlorobenzene	<1.00		20.0	19.72		ug/L		99	60 - 120	2	20
1,2-Dichloroethane	<1.00		20.0	17.93		ug/L		90	48 - 128	5	20
1,2-Dichloropropane	<1.00		20.0	16.96		ug/L		85	59 - 128	4	20
1,4-Dichlorobenzene	<1.00		20.0	19.06		ug/L		95	58 - 120	1	20
2-Butanone (MEK)	<10.0		40.0	30.39		ug/L		76	46 - 134	0	23
2-Hexanone	<10.0		40.0	29.46		ug/L		74	46 - 141	2	20
4-Methyl-2-pentanone (MIBK)	<10.0		40.0	30.92		ug/L		77	49 - 138	7	20
Acetone	<10.0		40.0	33.54		ug/L		84	39 - 141	4	23
Acrylonitrile	<5.00		200	173.6		ug/L		87	41 - 150	1	20
Benzene	<0.500		20.0	17.95		ug/L		90	48 - 125	3	20
Bromochloromethane	<5.00		20.0	20.60		ug/L		103	55 - 131	3	21
Bromodichloromethane	<1.00		20.0	17.72		ug/L		89	53 - 122	3	20
Bromoform	<5.00		20.0	18.83		ug/L		94	47 - 122	2	20
Carbon disulfide	<1.00		20.0	17.46		ug/L		87	45 - 137	10	24
Carbon tetrachloride	<2.00		20.0	18.14		ug/L		91	45 - 136	2	20
Chlorobenzene	<1.00		20.0	18.25		ug/L		91	59 - 120	3	20
Chlorodibromomethane	<5.00		20.0	18.07		ug/L		90	53 - 121	5	20
Chloroform	<3.00		20.0	18.00		ug/L		90	52 - 122	4	20
cis-1,2-Dichloroethene	<1.00		20.0	19.16		ug/L		96	51 - 123	5	20
cis-1,3-Dichloropropene	<5.00		20.0	14.98		ug/L		75	55 - 123	5	20
Dibromomethane	<1.00		20.0	18.76		ug/L		94	57 - 122	4	20

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# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: 310-320133-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 472998**

**Client Sample ID: MW-29**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
Ethylbenzene	<1.00		20.0	18.05		ug/L		90	53 - 120	1	20
Iodomethane	<10.0		20.0	16.71		ug/L		84	18 - 150	4	32
Methylene chloride	<5.00		20.0	17.33		ug/L		87	59 - 128	4	20
Styrene	<1.00		20.0	18.91		ug/L		95	50 - 125	2	20
Tetrachloroethene	<1.00		20.0	19.77		ug/L		99	51 - 128	0	20
Toluene	<1.00		20.0	17.79		ug/L		89	52 - 120	3	20
trans-1,2-Dichloroethene	<1.00		20.0	19.45		ug/L		97	53 - 127	3	20
trans-1,3-Dichloropropene	<5.00		20.0	14.58		ug/L		73	50 - 123	6	20
trans-1,4-Dichloro-2-butene	<10.0		20.0	14.11		ug/L		71	28 - 150	1	24
Trichloroethene	<1.00		20.0	17.61		ug/L		88	50 - 128	4	20
Vinyl acetate	<10.0		40.0	27.22		ug/L		68	31 - 150	1	25
Xylenes, Total	<3.00		40.0	36.90		ug/L		92	50 - 122	1	20

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
Dibromofluoromethane (Surr)	100		76 - 130
Toluene-d8 (Surr)	96		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120

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

**Lab Sample ID: MB 310-473182/1-A**  
**Matrix: Water**  
**Analysis Batch: 473366**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<0.00200	^1+	0.00200	0.00100	mg/L		11/12/25 09:00	11/12/25 18:06	1
Arsenic	<0.00200		0.00200	0.000530	mg/L		11/12/25 09:00	11/12/25 18:06	1
Barium	<0.00200		0.00200	0.000660	mg/L		11/12/25 09:00	11/12/25 18:06	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		11/12/25 09:00	11/12/25 18:06	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		11/12/25 09:00	11/12/25 18:06	1
Chromium	<0.00500		0.00500	0.00180	mg/L		11/12/25 09:00	11/12/25 18:06	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		11/12/25 09:00	11/12/25 18:06	1
Copper	0.01283		0.00500	0.00320	mg/L		11/12/25 09:00	11/12/25 18:06	1
Lead	0.005170		0.000500	0.000330	mg/L		11/12/25 09:00	11/12/25 18:06	1
Nickel	<0.00500		0.00500	0.00230	mg/L		11/12/25 09:00	11/12/25 18:06	1
Selenium	<0.00500		0.00500	0.00140	mg/L		11/12/25 09:00	11/12/25 18:06	1
Silver	<0.00100		0.00100	0.000500	mg/L		11/12/25 09:00	11/12/25 18:06	1
Thallium	<0.00100		0.00100	0.000570	mg/L		11/12/25 09:00	11/12/25 18:06	1
Vanadium	<0.00500		0.00500	0.00170	mg/L		11/12/25 09:00	11/12/25 18:06	1
Zinc	0.1375		0.0200	0.0130	mg/L		11/12/25 09:00	11/12/25 18:06	1

**Lab Sample ID: MB 310-473182/1-A**  
**Matrix: Water**  
**Analysis Batch: 473479**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<0.00200		0.00200	0.00100	mg/L		11/12/25 09:00	11/13/25 14:40	1
Copper	<0.00500		0.00500	0.00320	mg/L		11/12/25 09:00	11/13/25 14:40	1
Lead	<0.000500		0.000500	0.000330	mg/L		11/12/25 09:00	11/13/25 14:40	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: MB 310-473182/1-A**  
**Matrix: Water**  
**Analysis Batch: 473479**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	<0.0200		0.0200	0.0130	mg/L		11/12/25 09:00	11/13/25 14:40	1

**Lab Sample ID: LCS 310-473182/2-A**  
**Matrix: Water**  
**Analysis Batch: 473366**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2034	^1+	mg/L		102	80 - 120
Arsenic	0.200	0.1836		mg/L		92	80 - 120
Barium	0.100	0.09255		mg/L		93	80 - 120
Beryllium	0.100	0.09396		mg/L		94	80 - 120
Cadmium	0.100	0.09182		mg/L		92	80 - 120
Chromium	0.100	0.09694		mg/L		97	80 - 120
Cobalt	0.100	0.09217		mg/L		92	80 - 120
Copper	0.200	0.1969		mg/L		98	80 - 120
Lead	0.200	0.1808		mg/L		90	80 - 120
Nickel	0.200	0.1934		mg/L		97	80 - 120
Selenium	0.400	0.3740		mg/L		94	80 - 120
Silver	0.100	0.1105		mg/L		111	80 - 120
Thallium	0.100	0.09031		mg/L		90	80 - 120
Vanadium	0.100	0.09599		mg/L		96	80 - 120

**Lab Sample ID: LCS 310-473182/2-A**  
**Matrix: Water**  
**Analysis Batch: 473479**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2081		mg/L		104	80 - 120
Copper	0.200	0.1858		mg/L		93	80 - 120
Lead	0.200	0.1916		mg/L		96	80 - 120
Zinc	0.200	0.1874		mg/L		94	80 - 120

**Lab Sample ID: 310-320133-1 MS**  
**Matrix: Water**  
**Analysis Batch: 473366**

**Client Sample ID: MW-26**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.00126	J	0.200	0.2071		mg/L		103	75 - 125
Barium	0.0352		0.100	0.1396		mg/L		104	75 - 125
Beryllium	<0.00100		0.100	0.1051		mg/L		105	75 - 125
Cadmium	0.000201		0.100	0.1031		mg/L		103	75 - 125
Chromium	<0.00500		0.100	0.1062		mg/L		106	75 - 125
Cobalt	0.00162		0.100	0.1009		mg/L		99	75 - 125
Copper	0.0153	B	0.200	0.2109		mg/L		98	75 - 125
Lead	0.00581	B	0.200	0.2052		mg/L		100	75 - 125
Nickel	0.00401	J	0.200	0.2109		mg/L		103	75 - 125
Selenium	<0.00500		0.400	0.3234		mg/L		81	75 - 125
Silver	<0.00100		0.100	0.1207		mg/L		121	75 - 125
Thallium	<0.00100		0.100	0.09532		mg/L		95	75 - 125

# QC Sample Results

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: 310-320133-1 MS**  
**Matrix: Water**  
**Analysis Batch: 473366**

**Client Sample ID: MW-26**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Vanadium	<0.00500		0.100	0.1060		mg/L		106	75 - 125

**Lab Sample ID: 310-320133-1 MS**  
**Matrix: Water**  
**Analysis Batch: 473479**

**Client Sample ID: MW-26**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.00200		0.200	0.2231		mg/L		112	75 - 125
Copper	0.0146		0.200	0.1957		mg/L		91	75 - 125
Lead	0.00599		0.200	0.1959		mg/L		95	75 - 125
Zinc	0.152	F1	0.200	0.2186	F1	mg/L		33	75 - 125

**Lab Sample ID: 310-320133-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 473366**

**Client Sample ID: MW-26**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.00126	J	0.200	0.2066		mg/L		103	75 - 125	0	20
Barium	0.0352		0.100	0.1383		mg/L		103	75 - 125	1	20
Beryllium	<0.00100		0.100	0.1037		mg/L		104	75 - 125	1	20
Cadmium	0.000201		0.100	0.1032		mg/L		103	75 - 125	0	20
Chromium	<0.00500		0.100	0.1056		mg/L		106	75 - 125	1	20
Cobalt	0.00162		0.100	0.1009		mg/L		99	75 - 125	0	20
Copper	0.0153	B	0.200	0.2101		mg/L		97	75 - 125	0	20
Lead	0.00581	B	0.200	0.2054		mg/L		100	75 - 125	0	20
Nickel	0.00401	J	0.200	0.2119		mg/L		104	75 - 125	0	20
Selenium	<0.00500		0.400	0.3605		mg/L		90	75 - 125	11	20
Silver	<0.00100		0.100	0.1201		mg/L		120	75 - 125	1	20
Thallium	<0.00100		0.100	0.09665		mg/L		97	75 - 125	1	20
Vanadium	<0.00500		0.100	0.1064		mg/L		106	75 - 125	0	20

**Lab Sample ID: 310-320133-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 473479**

**Client Sample ID: MW-26**  
**Prep Type: Total/NA**  
**Prep Batch: 473182**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00200		0.200	0.2224		mg/L		111	75 - 125	0	20
Copper	0.0146		0.200	0.1953		mg/L		90	75 - 125	0	20
Lead	0.00599		0.200	0.1945		mg/L		94	75 - 125	1	20
Zinc	0.152	F1	0.200	0.2060	F1	mg/L		27	75 - 125	6	20

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

**Lab Sample ID: MB 310-473059/1**  
**Matrix: Water**  
**Analysis Batch: 473059**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	3.50	mg/L			11/11/25 07:58	1

Eurofins Cedar Falls

# QC Sample Results

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

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

**Lab Sample ID: LCS 310-473059/2**  
**Matrix: Water**  
**Analysis Batch: 473059**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	95.00		mg/L		95	82 - 117

**Lab Sample ID: 310-320133-3 DU**  
**Matrix: Water**  
**Analysis Batch: 473059**

**Client Sample ID: MW-29**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	18.0		18.67		mg/L		4	35

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# QC Association Summary

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

## GC/MS VOA

### Analysis Batch: 472995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-5	Trip Blank	Total/NA	Trip Blank	8260D	
MB 310-472995/5	Method Blank	Total/NA	Water	8260D	
LCS 310-472995/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-472995/7	Lab Control Sample	Total/NA	Water	8260D	

### Analysis Batch: 472998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-1	MW-26	Total/NA	Water	8260D	
310-320133-2	MW-28	Total/NA	Water	8260D	
310-320133-3	MW-29	Total/NA	Water	8260D	
310-320133-4	Duplicate (MW-28)	Total/NA	Water	8260D	
MB 310-472998/5	Method Blank	Total/NA	Water	8260D	
LCS 310-472998/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-472998/7	Lab Control Sample	Total/NA	Water	8260D	
310-320133-3 MS	MW-29	Total/NA	Water	8260D	
310-320133-3 MSD	MW-29	Total/NA	Water	8260D	

## Metals

### Prep Batch: 473182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-1	MW-26	Total/NA	Water	3005A	
310-320133-2	MW-28	Total/NA	Water	3005A	
310-320133-3	MW-29	Total/NA	Water	3005A	
310-320133-4	Duplicate (MW-28)	Total/NA	Water	3005A	
MB 310-473182/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-473182/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-320133-1 MS	MW-26	Total/NA	Water	3005A	
310-320133-1 MSD	MW-26	Total/NA	Water	3005A	

### Analysis Batch: 473366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-1	MW-26	Total/NA	Water	6020B	473182
310-320133-2	MW-28	Total/NA	Water	6020B	473182
310-320133-3	MW-29	Total/NA	Water	6020B	473182
310-320133-4	Duplicate (MW-28)	Total/NA	Water	6020B	473182
MB 310-473182/1-A	Method Blank	Total/NA	Water	6020B	473182
LCS 310-473182/2-A	Lab Control Sample	Total/NA	Water	6020B	473182
310-320133-1 MS	MW-26	Total/NA	Water	6020B	473182
310-320133-1 MSD	MW-26	Total/NA	Water	6020B	473182

### Analysis Batch: 473479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-1	MW-26	Total/NA	Water	6020B	473182
310-320133-2	MW-28	Total/NA	Water	6020B	473182
310-320133-3	MW-29	Total/NA	Water	6020B	473182
MB 310-473182/1-A	Method Blank	Total/NA	Water	6020B	473182
LCS 310-473182/2-A	Lab Control Sample	Total/NA	Water	6020B	473182
310-320133-1 MS	MW-26	Total/NA	Water	6020B	473182
310-320133-1 MSD	MW-26	Total/NA	Water	6020B	473182

# QC Association Summary

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

## General Chemistry

### Analysis Batch: 473059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-320133-1	MW-26	Total/NA	Water	I-3765-85	
310-320133-2	MW-28	Total/NA	Water	I-3765-85	
310-320133-3	MW-29	Total/NA	Water	I-3765-85	
310-320133-4	Duplicate (MW-28)	Total/NA	Water	I-3765-85	
MB 310-473059/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-473059/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-320133-3 DU	MW-29	Total/NA	Water	I-3765-85	

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# Lab Chronicle

Client: SCS Engineers  
 Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
 SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: MW-26**

**Lab Sample ID: 310-320133-1**

Date Collected: 11/06/25 11:00

Matrix: Water

Date Received: 11/07/25 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	472998	FE5V	EET CF	11/11/25 19:47
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473479	NFT2	EET CF	11/13/25 14:48
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473366	NFT2	EET CF	11/12/25 18:21
Total/NA	Analysis	I-3765-85		1	473059	DGU1	EET CF	11/11/25 07:58

**Client Sample ID: MW-28**

**Lab Sample ID: 310-320133-2**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	472998	FE5V	EET CF	11/11/25 15:43
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473479	NFT2	EET CF	11/13/25 15:03
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473366	NFT2	EET CF	11/12/25 18:32
Total/NA	Analysis	I-3765-85		1	473059	DGU1	EET CF	11/11/25 07:58

**Client Sample ID: MW-29**

**Lab Sample ID: 310-320133-3**

Date Collected: 11/06/25 13:09

Matrix: Water

Date Received: 11/07/25 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	472998	FE5V	EET CF	11/11/25 16:05
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473479	NFT2	EET CF	11/13/25 15:06
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473366	NFT2	EET CF	11/12/25 18:35
Total/NA	Analysis	I-3765-85		1	473059	DGU1	EET CF	11/11/25 07:58

**Client Sample ID: Duplicate (MW-28)**

**Lab Sample ID: 310-320133-4**

Date Collected: 11/06/25 12:22

Matrix: Water

Date Received: 11/07/25 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	472998	FE5V	EET CF	11/11/25 16:27
Total/NA	Prep	3005A			473182	RLT9	EET CF	11/12/25 09:00
Total/NA	Analysis	6020B		1	473366	NFT2	EET CF	11/12/25 18:37
Total/NA	Analysis	I-3765-85		1	473059	DGU1	EET CF	11/11/25 07:58

# Lab Chronicle

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

**Client Sample ID: Trip Blank**

**Lab Sample ID: 310-320133-5**

**Date Collected: 11/06/25 00:00**

**Matrix: Trip Blank**

**Date Received: 11/07/25 17:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	472995	FE5V	EET CF	11/11/25 01:07

**Laboratory References:**

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

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# Accreditation/Certification Summary

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

## 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

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# Method Summary

Client: SCS Engineers  
Project/Site: GRRWA 2nd 2025 HMSP

Job ID: 310-320133-1  
SDG: GRRWA Sanitary Landfill Phase 2

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



310-320133 Chain of Custody

### Cooler/Sample Receipt and Temperature Log Form

<b>Client Information</b>			
Client: <u>ScS</u>			
City/State:	CITY <u>W. Des Moines</u>	STATE <u>IA</u>	Project:
<b>Receipt Information</b>			
Date/Time Received:	DATE <u>11.7.25</u>	TIME <u>1730</u>	Received By: <u>PH</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 <i>If yes: Cooler ID</i>			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler # ____ of ____</i>			
Cooler Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No</i>			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No</i>			
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Which VOA samples are in cooler? ↓</i>			
<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>CC</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>0.1</u>		Corrected Temp (°C): <u>0.1</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) <i>If yes: Is there evidence that the chilling process began?</i> <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>			





Evo of a Testing  
TestAmerica

Cedar Falls, IA 50613-6907 phone 319 277 2401 fax 319 277 2425  
 TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program:  DW  NPDES  RCRA  Other

Client Contact Nathan Ohrt SCS Engineers 1690 All State Court, Suite 100 West Des Moines Iowa 50265 Project Name: GRRWA 2nd 2025 HMSP Site: GRRWA Sanitary Landfill Phase 2 P O # 27224317 26		Project Manager: Nathan Ohrt Email nohrt@scsengineers.com Cell 319-331-9613 Analysis Turnaround Time <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		Site Contact: Austin Banks Lab Contact: Sam Miller Date: _____ Carrier: _____		COC No _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No _____					
Sample Identification	Sample Date	Sample Time	Sample Type (c=Comp, g=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Appendix I	Total Suspended Solids	Trip Blank	Sample Specific Notes
MW-26	11-6	1100	G	W		N	X				
MW-28	12-22	11-6	G	W		N	X				
MW-29	11-6	1309	G	W		N	X				
PH2UD			G	W		N	X				NO SAMPLE
GU-3A			G	W		N	X				
GU-4A			G	W		N	X				
GU-1			G	W		N	X				
GU-2			G	W		N	X				
Trip Blank										X	
Duplicate (MW-29)	11-6	1222									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____ Possible Hazard Identification 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											
Special Instructions/QC Requirements & Comments: _____ Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											
Custody Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: <i>Garrett Heras</i> Relinquished by: _____ Relinquished by: _____						Received by: _____ Received by: _____ Received in Laboratory by: _____ Date/Time: 11-7-20 Date/Time: _____ Date/Time: _____ Date/Time: 11-7-15 [72]					



## Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-320133-1  
SDG Number: GRRWA Sanitary Landfill Phase 2

**Login Number: 320133**

**List Number: 1**

**Creator: Collins, Charlotte G**

**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: Nathan Ohrt  
 Sample Date: 5/15/2025  
 Site Name: Great River Regional Waste Authority - Phase 2  
 Project Type: 1<sup>st</sup> 2025 HMSP  
 Lab Job ID: 310-306670  
 Lab Report Date: 5/28/2025

	OK	NO	N/A	NOTES
<b>Sample Collection and Sample Holding</b>				
Chain of Custody	X			
Temperature	X			
Preservation	X			
Condition	X			The Trip Blank was analyzed with headspace in the sample container.
Correct Constituents Analyzed	X			
Case Narrative	X			
Holding Times	X			
<b>Analytical Sensitivity and Blanks</b>				
Method Blank Detections	X			No detections.
Trip Blank Detections	X			No detections.
<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			Sample MW-26 and duplicate sample MW-D had <50% RPD for analyzed parameters with the exceptions of barium (51.9%) and cobalt (98.1%).

QA/QC Completed by: Nathan Ohrt  
 Sample Date: 8/20/2025  
 Site Name: Great River Regional Waste Authority - Phase 2  
 Project Type: GU-4A Background  
 Lab Job ID: 310-313862  
 Lab Report Date: 8/28/2025

	OK	NO	N/A	NOTES
<b>Sample Collection and Sample Holding</b>				
Chain of Custody	X			
Temperature	X			
Preservation	X			
Condition	X			
Correct Constituents Analyzed	X			
Case Narrative	X			
Holding Times	X			
<b>Analytical Sensitivity and Blanks</b>				
Method Blank Detections	X			No detections.
Trip Blank Detections	X			No detections.
<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	

QA/QC Completed by: Nathan Ohrt  
 Sample Date: 11/6/2025  
 Site Name: Great River Regional Waste Authority - Phase 2  
 Project Type: 2<sup>nd</sup> 2025 HMSP  
 Lab Job ID: 310-320133  
 Lab Report Date: 11/13/2025

	OK	NO	N/A	NOTES
<b>Sample Collection and Sample Holding</b>				
Chain of Custody	X			
Temperature	X			
Preservation	X			
Condition	X			
Correct Constituents Analyzed	X			
Case Narrative	X			
Holding Times	X			
<b>Analytical Sensitivity and Blanks</b>				
Method Blank Detections	X			The method blanks contained zinc, lead, and copper above the reporting limits; none of the associated samples contained these compounds so re-analysis was not performed.
Trip Blank Detections	X			No detections.
<b>Accuracy</b>				
ICV/CCV		X		The continuing calibration verification (CCV) associated with with batch 310-472995 recovered outside control limits for 2-Hexanone; the associated laboratory control samples (LCS) passed using CCV criteria so the data was reported.  The initial calibration verification (ICV) result for batch 310-473366 was above the upper control limit for antimony; the associated samples were non-detect and reported as qualified data.
LCS/LCSD	X			
MS/MSD	X			
Surrogates (organics only)	X			
<b>Precision</b>				
QA/QC Sample RPDs	X			
Field Duplicates	X			Sample MW-28 and duplicate sample MW-D had <50% RPD for analyzed parameters.

**Appendix C**  
**Reporting Period Summary of Groundwater Chemistry**

# SCS ENGINEERS

## Summary of Groundwater Chemistry

Great River Regional Waste Authority 56 SDP 07 80P

Total Metals Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
Antimony, mg/L (CAS NO - 7440-36-0)	5/15/2025	< 0.002	< 0.002	< 0.002	< 0.002
	5/15/2025	N/A	< 0.002	N/A	N/A
	8/20/2025	< 0.002	N/A	N/A	N/A
	11/6/2025	N/A	< 0.002	<b>0.00205</b>	< 0.002
	11/6/2025	N/A	N/A	< 0.002	N/A
Arsenic, mg/L (CAS NO - 7440-38-2)	5/15/2025	< 0.002	0.00102*	0.000819*	< 0.002
	5/15/2025	N/A	<b>0.00243</b>	N/A	N/A
	8/20/2025	0.00133*	N/A	N/A	N/A
	11/6/2025	N/A	0.00126*	0.00123*	<b>0.0035</b>
	11/6/2025	N/A	N/A	0.00112*	N/A
Barium, mg/L (CAS NO - 7440-39-3)	5/15/2025	<b>0.216</b>	<b>0.115</b>	<b>0.0175</b>	<b>0.0117</b>
	5/15/2025	N/A	<b>0.0676</b>	N/A	N/A
	8/20/2025	<b>0.248</b>	N/A	N/A	N/A
	11/6/2025	N/A	<b>0.0352</b>	<b>0.0203</b>	<b>0.0158</b>
	11/6/2025	N/A	N/A	<b>0.0212</b>	N/A
Beryllium, mg/L (CAS NO - 7440-41-7)	5/15/2025	< 0.001	< 0.001	< 0.001	< 0.001
	5/15/2025	N/A	< 0.001	N/A	N/A
	8/20/2025	< 0.001	N/A	N/A	N/A
	11/6/2025	N/A	< 0.001	< 0.001	< 0.001
	11/6/2025	N/A	N/A	< 0.001	N/A
Cadmium, mg/L (CAS NO - 7440-43-9)	5/15/2025	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	5/15/2025	N/A	< 0.0002	N/A	N/A
	8/20/2025	< 0.0002	N/A	N/A	N/A
	11/6/2025	N/A	<b>0.000201</b>	< 0.0002	< 0.0002
	11/6/2025	N/A	N/A	< 0.0002	N/A
Chromium, mg/L (CAS NO - 7440-47-3)	5/15/2025	< 0.005	< 0.005	< 0.005	< 0.005
	5/15/2025	N/A	< 0.005	N/A	N/A
	8/20/2025	< 0.005	N/A	N/A	N/A
	11/6/2025	N/A	< 0.005	< 0.005	< 0.005
	11/6/2025	N/A	N/A	0.0018*	N/A
Cobalt, mg/L (CAS NO - 7440-48-4)	5/15/2025	<b>0.0019</b>	<b>0.0055</b>	<b>0.0142</b>	<b>0.00249</b>
	5/15/2025	N/A	<b>0.00188</b>	N/A	N/A
	8/20/2025	<b>0.00799</b>	N/A	N/A	N/A
	11/6/2025	N/A	<b>0.00162</b>	<b>0.00671</b>	<b>0.00327</b>
	11/6/2025	N/A	N/A	<b>0.00656</b>	N/A
Copper, mg/L (CAS NO - 7440-50-8)	5/15/2025	< 0.005	< 0.005	< 0.005	< 0.005
	5/15/2025	N/A	< 0.005	N/A	N/A
	8/20/2025	< 0.005	N/A	N/A	N/A
	11/6/2025	N/A	<b>0.0146</b>	< 0.005	< 0.005
	11/6/2025	N/A	N/A	< 0.005	N/A
Lead, mg/L (CAS NO - 7439-92-1)	5/15/2025	< 0.0005	< 0.0005	< 0.0005	< 0.0005
	5/15/2025	N/A	< 0.0005	N/A	N/A
	8/20/2025	< 0.0005	N/A	N/A	N/A
	11/6/2025	N/A	<b>0.00599</b>	< 0.0005	<b>0.00132</b>
	11/6/2025	N/A	N/A	< 0.0005	N/A
Nickel, mg/L (CAS NO - 7440-02-0)	5/15/2025	<b>0.00783</b>	<b>0.00855</b>	<b>0.0235</b>	<b>0.0109</b>
	5/15/2025	N/A	<b>0.0136</b>	N/A	N/A
	8/20/2025	<b>0.0118</b>	N/A	N/A	N/A
	11/6/2025	N/A	0.00401*	<b>0.0122</b>	<b>0.0124</b>
	11/6/2025	N/A	N/A	<b>0.0137</b>	N/A

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Summary of Groundwater Chemistry  
 Great River Regional Waste Authority 56 SDP 07 80P

	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
<b>Total Metals Constituents</b> Selenium, mg/L (CAS NO - 7782-49-2)	5/15/2025	0.0028*	< 0.005	< 0.005	< 0.005
	5/15/2025	N/A	< 0.005	N/A	N/A
	8/20/2025	0.00227*	N/A	N/A	N/A
	11/6/2025	N/A	< 0.005	< 0.005	< 0.005
	11/6/2025	N/A	N/A	< 0.005	N/A
Silver, mg/L (CAS NO - 7440-22-4)	5/15/2025	< 0.001	< 0.001	< 0.001	< 0.001
	5/15/2025	N/A	< 0.001	N/A	N/A
	8/20/2025	< 0.001	N/A	N/A	N/A
	11/6/2025	N/A	< 0.001	< 0.001	< 0.001
	11/6/2025	N/A	N/A	< 0.001	N/A
Thallium, mg/L (CAS NO - 7440-28-0)	5/15/2025	< 0.001	< 0.001	< 0.001	< 0.001
	5/15/2025	N/A	< 0.001	N/A	N/A
	8/20/2025	< 0.001	N/A	N/A	N/A
	11/6/2025	N/A	< 0.001	< 0.001	< 0.001
	11/6/2025	N/A	N/A	< 0.001	N/A
Vanadium, mg/L (CAS NO - 7440-62-2)	5/15/2025	< 0.005	< 0.005	< 0.005	< 0.005
	5/15/2025	N/A	< 0.005	N/A	N/A
	8/20/2025	< 0.005	N/A	N/A	N/A
	11/6/2025	N/A	< 0.005	< 0.005	< 0.005
	11/6/2025	N/A	N/A	< 0.005	N/A
Zinc, mg/L (CAS NO - 7440-66-6)	5/15/2025	< 0.02	< 0.02	< 0.02	< 0.02
	5/15/2025	N/A	< 0.02	N/A	N/A
	8/20/2025	< 0.02	N/A	N/A	N/A
	11/6/2025	N/A	0.152	< 0.02	< 0.02
	11/6/2025	N/A	N/A	< 0.02	N/A
Total Suspended Solids, mg/L (CAS NO - TSS)	5/15/2025	6.67	9.63	13.3	< 1.88
	5/15/2025	N/A	28.5	N/A	N/A
	8/20/2025	5.67	N/A	N/A	N/A
	11/6/2025	N/A	17	7.13	18
	11/6/2025	N/A	N/A	9.33	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

Great River Regional Waste Authority 56 SDP 07 80P

Appendix I VOC Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
1,1,1,2-Tetrachloroethane, ug/L (CAS NO - 630-20-6)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,1,1-Trichloroethane, ug/L (CAS NO - 71-55-6)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,1,2,2-Tetrachloroethane, ug/L (CAS NO - 79-34-5)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,1,2-Trichloroethane, ug/L (CAS NO - 79-00-5)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,1-Dichloroethane, ug/L (CAS NO - 75-34-3)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,1-Dichloroethene, ug/L (CAS NO - 75-35-4)	5/15/2025	< 2	< 2	< 2	< 2
	5/15/2025	N/A	< 2	N/A	N/A
	8/20/2025	< 2	N/A	N/A	N/A
	11/6/2025	N/A	< 2	< 2	< 2
	11/6/2025	N/A	N/A	< 2	N/A
1,2,3-Trichloropropane, ug/L (CAS NO - 96-18-4)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,2-Dibromo-3-Chloropropane, ug/L (CAS NO - 96-12-8)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
1,2-Dibromoethane [EDB], ug/L (CAS NO - 106-93-4)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,2-Dichlorobenzene, ug/L (CAS NO - 95-50-1)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A

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## Summary of Groundwater Chemistry

Great River Regional Waste Authority 56 SDP 07 80P

Appendix I VOC Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
1,2-Dichloroethane, ug/L (CAS NO - 107-06-2)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,2-Dichloropropane, ug/L (CAS NO - 78-87-5)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
1,4-Dichlorobenzene, ug/L (CAS NO - 106-46-7)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
2-Butanone, ug/L (CAS NO - 78-93-3)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
2-Hexanone, ug/L (CAS NO - 591-78-6)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
4-Methyl-2-Pentanone, ug/L (CAS NO - 108-10-1)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
Acetone, ug/L (CAS NO - 67-64-1)	5/15/2025	3.67*	< 10	3.64*	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	4.59*	4.68*	< 10
	11/6/2025	N/A	N/A	< 10	N/A
Acrylonitrile, ug/L (CAS NO - 107-13-1)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
Benzene, ug/L (CAS NO - 71-43-2)	5/15/2025	< 0.5	< 0.5	< 0.5	< 0.5
	5/15/2025	N/A	< 0.5	N/A	N/A
	8/20/2025	< 0.5	N/A	N/A	N/A
	11/6/2025	N/A	< 0.5	< 0.5	< 0.5
	11/6/2025	N/A	N/A	< 0.5	N/A
Bromochloromethane, ug/L (CAS NO - 74-97-5)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A

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## Summary of Groundwater Chemistry

Great River Regional Waste Authority 56 SDP 07 80P

Appendix I VOC Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
<b>Bromodichloromethane, ug/L (CAS NO - 75-27-4)</b>	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
<b>Bromoform, ug/L (CAS NO - 75-25-2)</b>	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
<b>Bromomethane, ug/L (CAS NO - 74-83-9)</b>	5/15/2025	< 4	< 4	< 4	< 4
	5/15/2025	N/A	< 4	N/A	N/A
	8/20/2025	< 4	N/A	N/A	N/A
	11/6/2025	N/A	< 4	< 4	< 4
	11/6/2025	N/A	N/A	< 4	N/A
<b>Carbon Disulfide, ug/L (CAS NO - 75-15-0)</b>	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
<b>Carbon Tetrachloride, ug/L (CAS NO - 56-23-5)</b>	5/15/2025	< 2	< 2	< 2	< 2
	5/15/2025	N/A	< 2	N/A	N/A
	8/20/2025	< 2	N/A	N/A	N/A
	11/6/2025	N/A	< 2	< 2	< 2
	11/6/2025	N/A	N/A	< 2	N/A
<b>Chlorobenzene, ug/L (CAS NO - 108-90-7)</b>	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
<b>Chlorodibromomethane, ug/L (CAS NO - 124-48-1)</b>	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
<b>Chloroethane, ug/L (CAS NO - 75-00-3)</b>	5/15/2025	< 4	< 4	< 4	< 4
	5/15/2025	N/A	< 4	N/A	N/A
	8/20/2025	< 4	N/A	N/A	N/A
	11/6/2025	N/A	< 4	< 4	< 4
	11/6/2025	N/A	N/A	< 4	N/A
<b>Chloroform, ug/L (CAS NO - 67-66-3)</b>	5/15/2025	< 3	< 3	< 3	< 3
	5/15/2025	N/A	< 3	N/A	N/A
	8/20/2025	< 3	N/A	N/A	N/A
	11/6/2025	N/A	< 3	< 3	< 3
	11/6/2025	N/A	N/A	< 3	N/A
<b>Chloromethane, ug/L (CAS NO - 74-87-3)</b>	5/15/2025	< 3	< 3	< 3	< 3
	5/15/2025	N/A	< 3	N/A	N/A
	8/20/2025	< 3	N/A	N/A	N/A
	11/6/2025	N/A	< 3	< 3	< 3
	11/6/2025	N/A	N/A	< 3	N/A

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## Summary of Groundwater Chemistry

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Appendix I VOC Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
cis-1,2-Dichloroethene, ug/L (CAS NO - 156-59-2)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
cis-1,3-Dichloropropene, ug/L (CAS NO - 10061-01-5)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
Ethylbenzene, ug/L (CAS NO - 100-41-4)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Iodomethane, ug/L (CAS NO - 74-88-4)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
Methylene Bromide, ug/L (CAS NO - 74-95-3)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Methylene Chloride, ug/L (CAS NO - 75-09-2)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
Styrene, ug/L (CAS NO - 100-42-5)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Tetrachloroethene, ug/L (CAS NO - 127-18-4)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Toluene, ug/L (CAS NO - 108-88-3)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
trans-1,2-Dichloroethene, ug/L (CAS NO - 156-60-5)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	0.396*	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A

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## Summary of Groundwater Chemistry

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Appendix I VOC Constituents	Sample Date	GU-4A DNG	MW-26 DNG	MW-28 DNG	MW-29 DNG
trans-1,3-Dichloropropene, ug/L (CAS NO - 10061-02-6)	5/15/2025	< 5	< 5	< 5	< 5
	5/15/2025	N/A	< 5	N/A	N/A
	8/20/2025	< 5	N/A	N/A	N/A
	11/6/2025	N/A	< 5	< 5	< 5
	11/6/2025	N/A	N/A	< 5	N/A
trans-1,4-Dichloro-2-Butene, ug/L (CAS NO - 110-57-6)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
Trichloroethene, ug/L (CAS NO - 79-01-6)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Trichlorofluoromethane, ug/L (CAS NO - 75-69-4)	5/15/2025	0.403*	< 4	< 4	< 4
	5/15/2025	N/A	< 4	N/A	N/A
	8/20/2025	0.563*	N/A	N/A	N/A
	11/6/2025	N/A	< 4	< 4	< 4
	11/6/2025	N/A	N/A	< 4	N/A
Vinyl Acetate, ug/L (CAS NO - 108-05-4)	5/15/2025	< 10	< 10	< 10	< 10
	5/15/2025	N/A	< 10	N/A	N/A
	8/20/2025	< 10	N/A	N/A	N/A
	11/6/2025	N/A	< 10	< 10	< 10
	11/6/2025	N/A	N/A	< 10	N/A
Vinyl Chloride, ug/L (CAS NO - 75-01-4)	5/15/2025	< 1	< 1	< 1	< 1
	5/15/2025	N/A	< 1	N/A	N/A
	8/20/2025	< 1	N/A	N/A	N/A
	11/6/2025	N/A	< 1	< 1	< 1
	11/6/2025	N/A	N/A	< 1	N/A
Xylenes, total, ug/L (CAS NO - 1330-20-7)	5/15/2025	< 3	< 3	< 3	< 3
	5/15/2025	N/A	< 3	N/A	N/A
	8/20/2025	< 3	N/A	N/A	N/A
	11/6/2025	N/A	< 3	< 3	< 3
	11/6/2025	N/A	N/A	< 3	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.

**Appendix D**  
**Statistical Method and Output**

## Statistical Method and Output

### Purpose

The purpose of this document is to provide the statistical evaluation of groundwater analytical data collected from the groundwater monitoring network of the Phase 2 municipal solid waste landfill unit (Phase 2 MSWLF unit) at the Great River Regional Waste Authority Sanitary Landfill.

### ***Diagnostic and Exploratory Evaluations and Tests of Assumptions***

The detection and assessment monitoring statistical programs include diagnostic and exploratory evaluations and statistical tests of assumptions, as appropriate, including the following:

- Time Series Plots
- Shapiro-Wilk test for normality
- Ohio Environmental Protection Agency (EPA) Method for outliers
- Mann-Kendall/Sen's Slope trend test

### ***Management of Non-Detect Data***

Non-detect values in the dataset are managed using simple substitution or the Kaplan-Meier estimator. If less than 15% of the data are non-detects, simple substitution is used, where non-detect values are assigned a concentration of one-half ( $\frac{1}{2}$ ) of the practical quantification limit (PQL). If greater than 15% but less than 50% of the data are non-detects, the Kaplan-Meier estimator is used to define the distribution for the dataset. If non-detects comprise greater than 50% of the available data, non-parametric statistical methods are used.

### ***Management of Outliers***

Background datasets are evaluated for outliers using the Ohio EPA Method as included in the Sanitas™ statistical software program and described below, which includes the use of Dixon's, Rosner's, and Tukey's outlier tests, as appropriate based on the diagnostic tests, for the datasets that contain less than 75% of the measured concentrations below the PQL. Outliers are not confirmed unless a physical cause or explanation for the outlier is determined.

### ***Management of Data (ND data < 75%)***

If less than 75% of the background dataset is below the PQL, outliers are statistically evaluated using the following guidelines.

- A parametric dataset with  $n < 20$  was evaluated with the Dixon's outlier test.
- A parametric dataset with  $n \geq 20$  was evaluated with the Rosner's outlier test.
- A non-parametric dataset was evaluated with the Tukey's outlier test.

In accordance with the Ohio EPA Method, if a statistically significant outlier is not found using the above tests, but the highest value data point exceeds the second highest data point by an order of magnitude, the highest point is considered an outlier.

### ***Management of Data (ND data $\geq$ 75%)***

If greater than or equal to 75% of the background dataset is less than the PQL, outliers are statistically evaluated using the following guidelines.

- Single detection  $\geq$  the PQL:
  - If  $\geq 50\%$  of the background dataset has detections  $\geq$  the method detection limit (MDL), any value  $\geq$  two times the PQL of background is considered an outlier.
  - If  $< 50\%$  of the background dataset has detections  $\geq$  the MDL, any value  $\geq$  the PQL of background is considered an outlier.
- Two or more detections  $\geq$  the PQL:
  - If  $\geq 50\%$  of the background dataset has detections  $\geq$  the MDL, any value  $\geq$  three times the PQL of background is considered an outlier.
  - If  $< 50\%$  of the background dataset has detections  $\geq$  the MDL, any value  $\geq$  two times the PQL of background is considered an outlier.

Confirmed outliers, if any, are shown in the Summary of Groundwater Chemistry included in the Annual Water Quality Report. Analytical data prior to 2025 is available in the 2024 Annual Water Quality Report dated January 31, 2025 (Doc #112178).

#### **Detection Monitoring Statistical Program**

The detection monitoring statistical program for the Phase 2 MSWLF unit is defined by Iowa Administrative Code (IAC) 567-113.10(4)“g.” Intrawell prediction limits with retesting were selected as the appropriate statistical method for the determination of statistically significant increases (SSIs) over background for inorganic constituents with historical detections in the background dataset. Prediction limits are established using the process below. Data from the most recent sampling event is compared to the prediction limits for the determination of SSIs.

#### **Intrawell Prediction Limits with Retesting**

- If the dataset has a normal distribution (or can be transformed to a normal distribution using Ladder of Powers), parametric intrawell prediction limits are calculated if at least six datasets have been collected.
- If the dataset does not have a normal distribution (and cannot be transformed to a normal distribution using Ladder of Powers) or has greater than 50% non-detects, nonparametric intrawell prediction limits are calculated if at least six datasets have been collected.
- If an SSI above the prediction limit is indicated, retesting samples using the 1-of-3 retesting scheme should be collected prior to the next regularly scheduled sampling event with temporal sample spacing consideration to provide samples with greater independence. If the retesting results are both above the prediction limit, the SSI is confirmed, and the monitoring well should be placed into the assessment monitoring program or discharge from the monitoring point should be treated with the leachate for groundwater underdrain discharge points. If any retesting sample concentration is below the prediction limit, the SSI is not confirmed, and the monitoring point continues in the detection monitoring program.

#### **Updating the Background Dataset for Intrawell Prediction Limits**

If no SSI is confirmed for any two-year period, the intrawell background dataset will be updated using the following procedure:

- Test for normality (normal distribution) of the dataset either outright or through a transformation using Ladder of Powers:
  - Shapiro-Wilk test
- Test for statistically significant trends:
  - Mann-Kendall/Sen’s Slope trend test

If an increasing trend is detected, the monitoring point will be placed into the assessment monitoring program or the discharge treated with the leachate for groundwater underdrain discharge points.

- If the dataset has a normal distribution and no trend is present, conduct a two-sample Welch's t-test at a 0.01 significance level to compare current background to the most recent two years of detection monitoring data.

If Welch's t-test test is significant and shows that the most recent two years of concentration data appear to be increasing, the background will not be updated.

- If the dataset does not have a normal distribution and no trend is present, conduct a two-sample non-parametric Wilcoxon rank-sum test (also known as the Mann-Whitney test) at a 0.01 significance level to compare current background to the most recent two years of detection monitoring data.

If the Wilcoxon rank-sum test is significant and shows that the most recent two years of concentration data appear to be increasing, the background will not be updated.

- If the Welch's t-test and the Wilcoxon rank-sum test are not significant, the most recent two years of detection monitoring data will be added to the intrawell background dataset.
- Establish prediction limits based on the updated intrawell background dataset.

The process will repeat every two years in which an SSI is not confirmed.

### ***Double Quantification Method***

The quasi-statistical "double quantification" method is used for constituents not detected in the associated background data set. If a constituent is detected in the compliance dataset that has not been historically detected in the background dataset, that constituent is retested before the next regularly scheduled sampling event. If the retesting results confirm the original detection with a quantifiable detection, the SSI is confirmed, and the monitoring point must be placed into the assessment monitoring program.

### ***Assessment Monitoring Statistical Program***

Confidence intervals or confidence bands, as appropriate, were selected as the appropriate statistical methods for comparison of the groundwater analytical data against a fixed groundwater protection standard (GWPS). The assessment monitoring statistical evaluations are performed using the most recent eight samples or all samples if less than eight samples were available. The confidence intervals or confidence bands used for the assessment monitoring statistical evaluation are established using the process below. Transformation of the distribution is not considered.

### ***Confidence Intervals or Confidence Bands***

- A parametric confidence interval around a normal mean is calculated if the dataset has a normal distribution and no statistically significant trend is present.
- A non-parametric confidence interval around a median is calculated if the dataset does not have a normal distribution and no statistically significant trend is present.
- Non-parametric confidence bands around a Theil-Sen trend line are calculated if the dataset has a statistically significant trend.

In the event that the lower confidence limit or any part of the lower confidence band, as appropriate, exceeds the GWPS, then the monitoring point is declared out of compliance, and an assessment of corrective measures (ACM) is required.

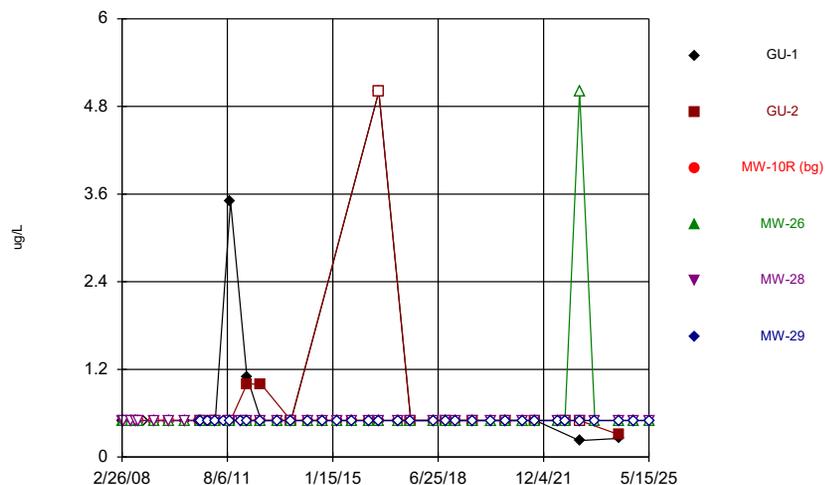
### ***Statistical Software Output***

Sanitas™ statistical software was used to perform the statistical evaluations. The statistical output for the 1<sup>st</sup> and 2<sup>nd</sup> 2025 statistical evaluations are included in Attachments A and B of this appendix, respectively.

**Attachment A**  
**1<sup>st</sup> 2025 Statistical Evaluation Output**

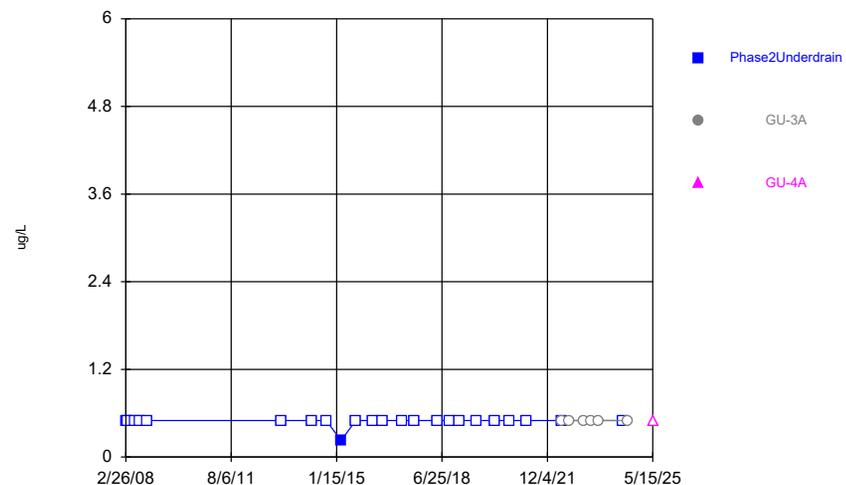
## Time Series Plots

### Time Series



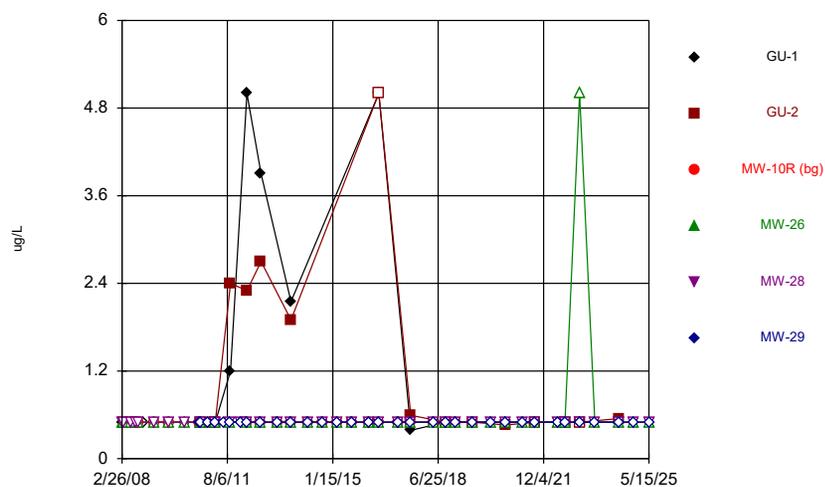
Constituent: 1,1-Dichloroethane Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



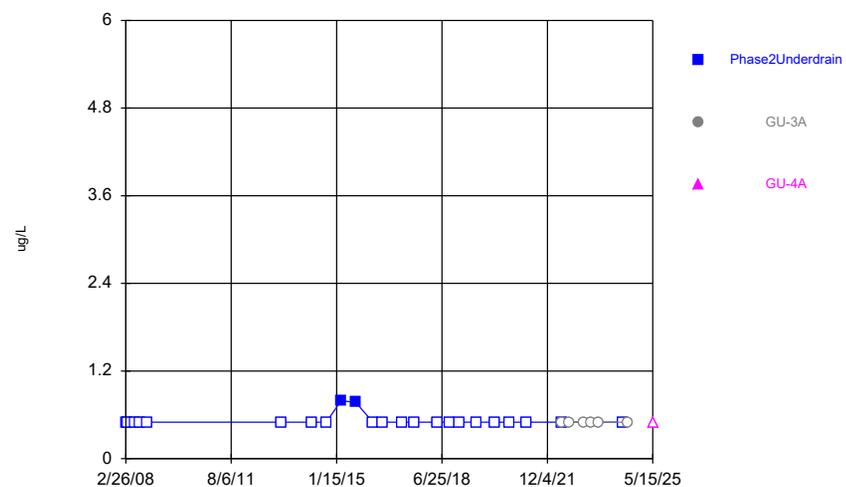
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



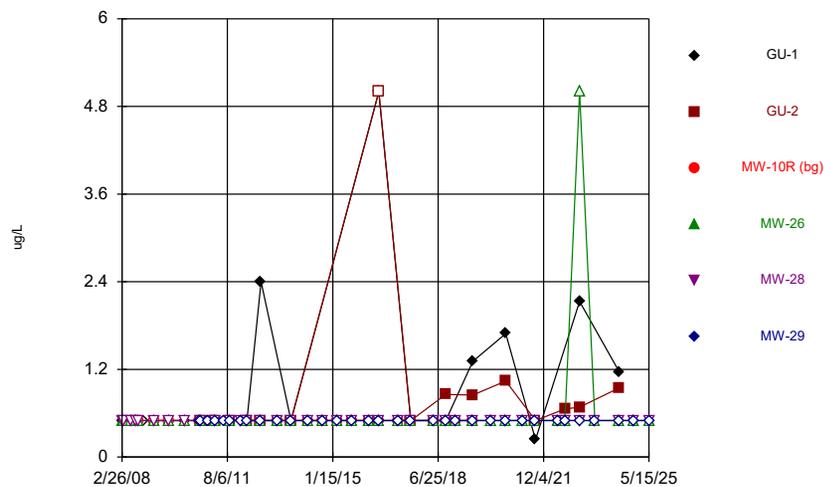
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### Time Series



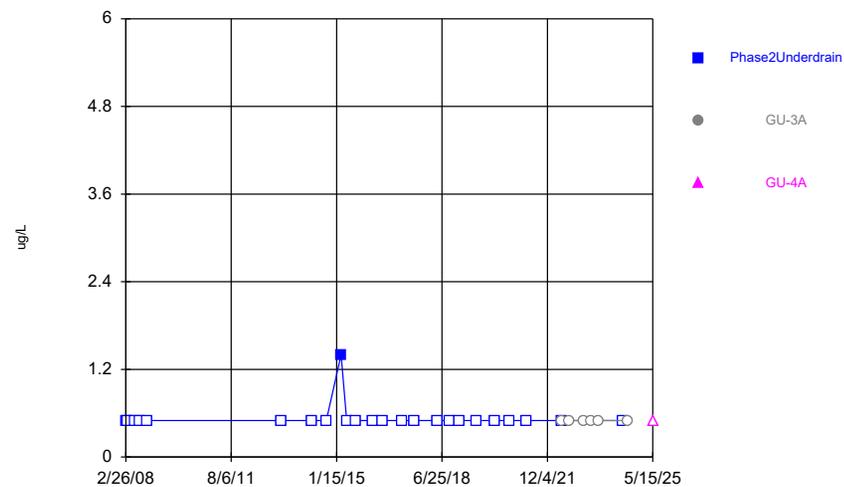
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### Time Series



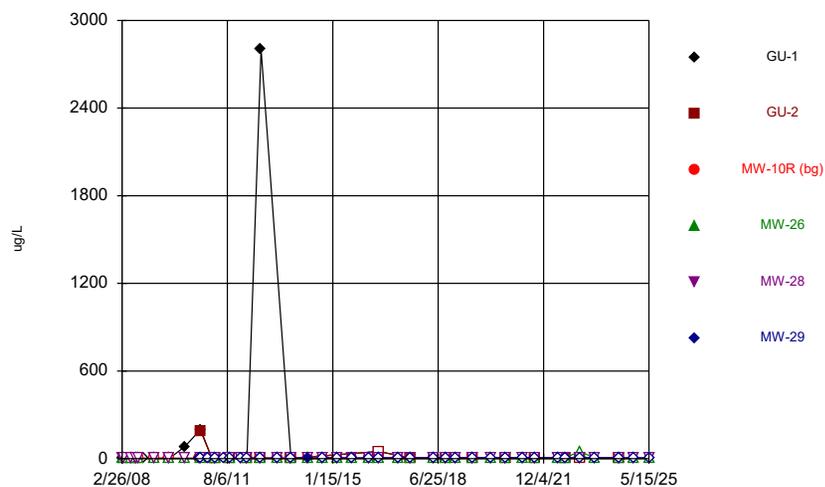
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### Time Series



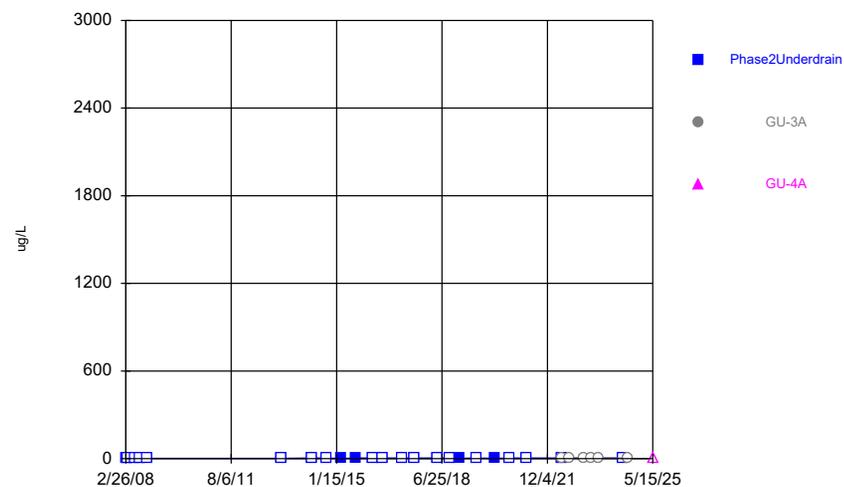
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



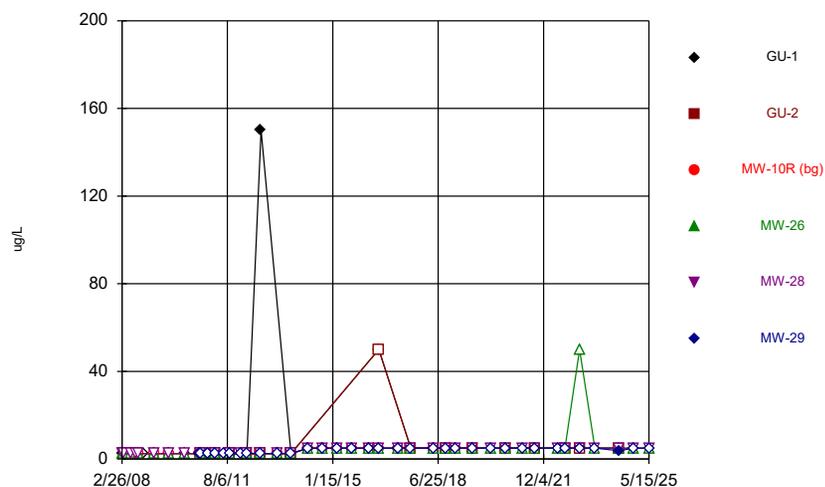
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



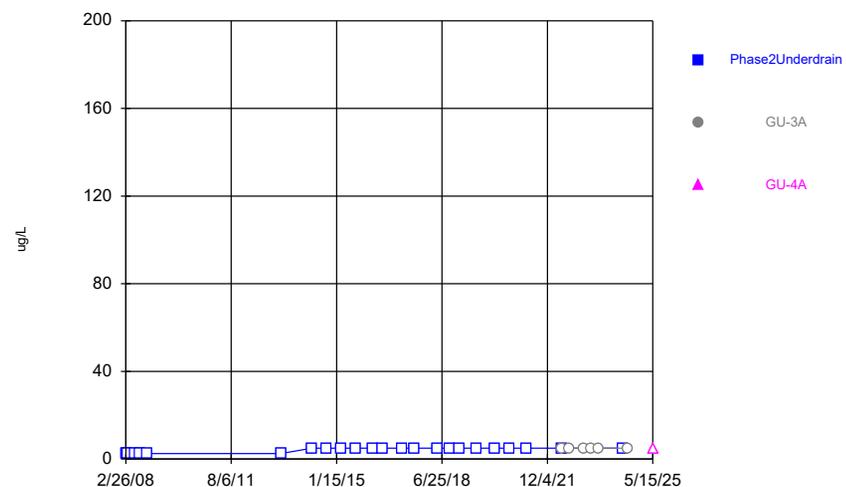
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



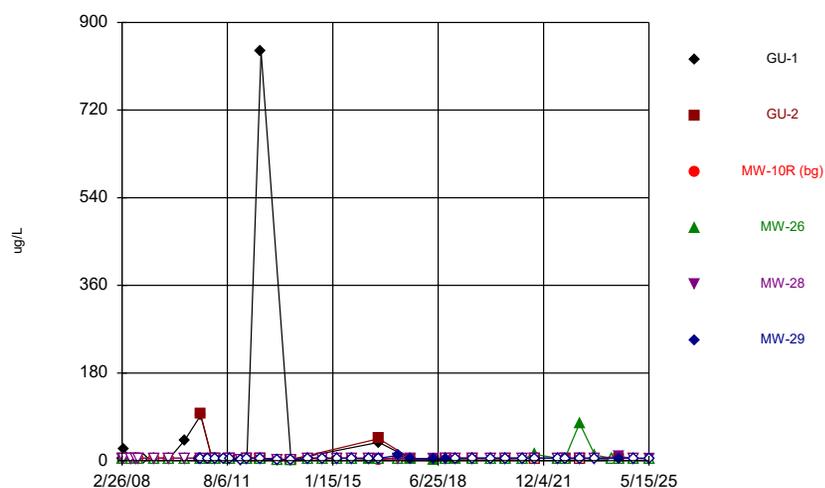
Constituent: 4-Methyl-2-pentanone Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



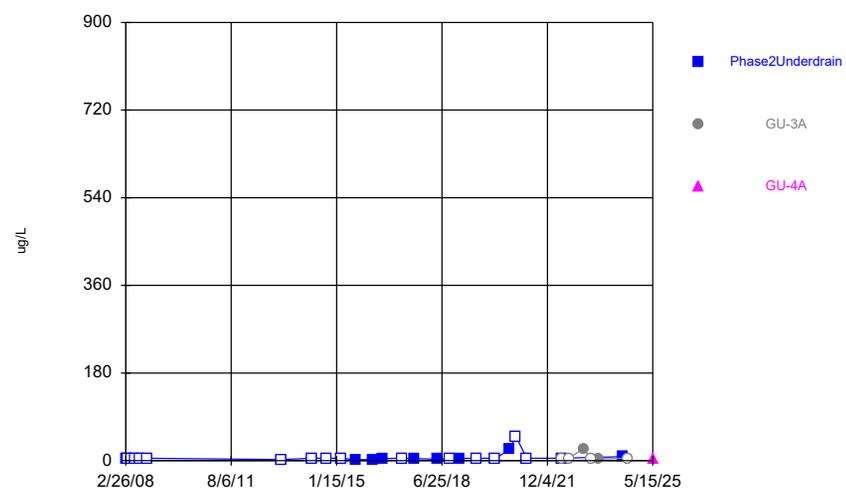
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### Time Series



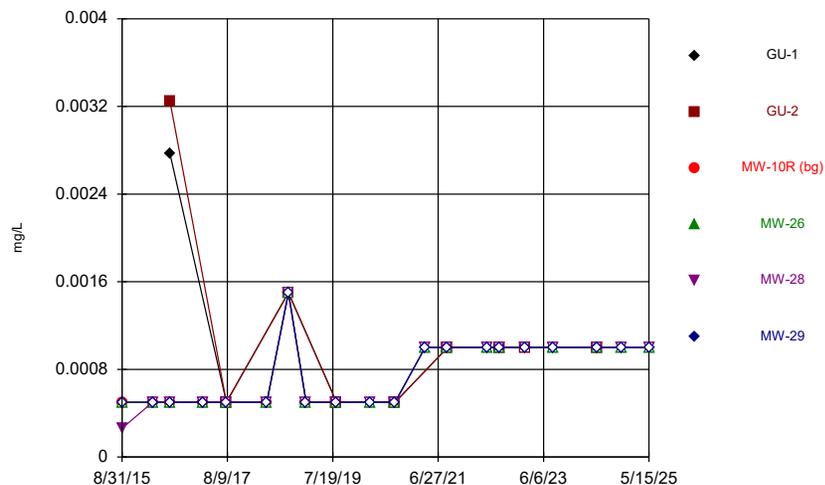
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### Time Series



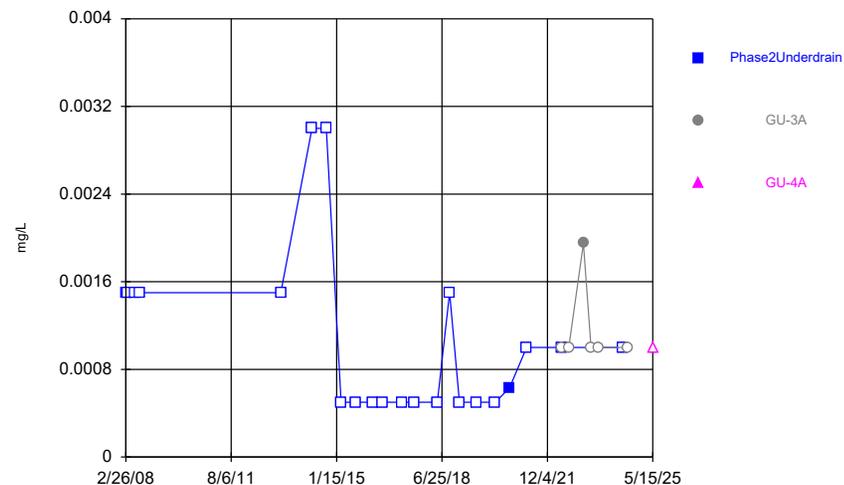
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### Time Series



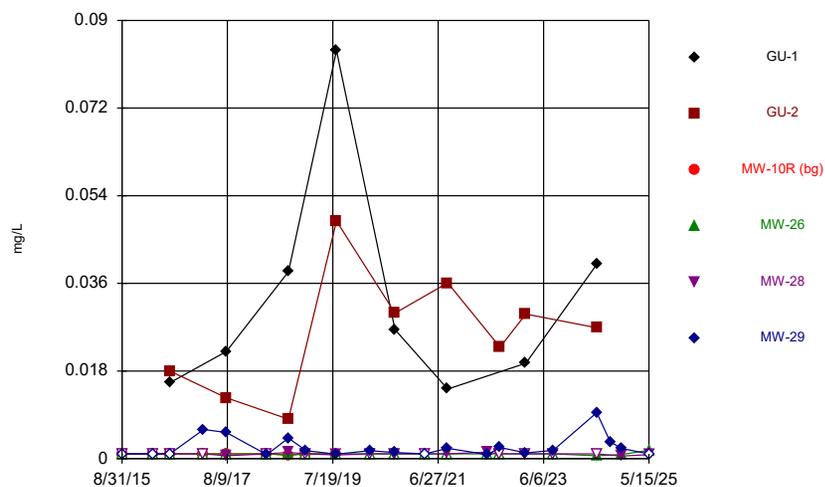
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



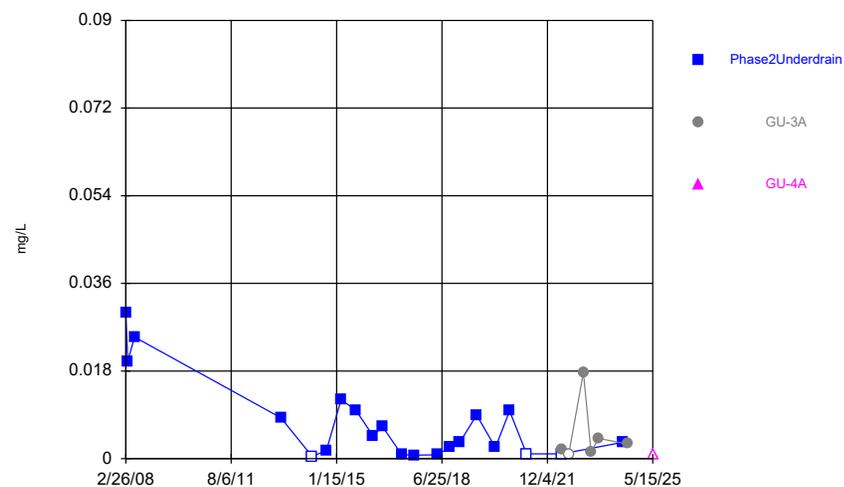
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



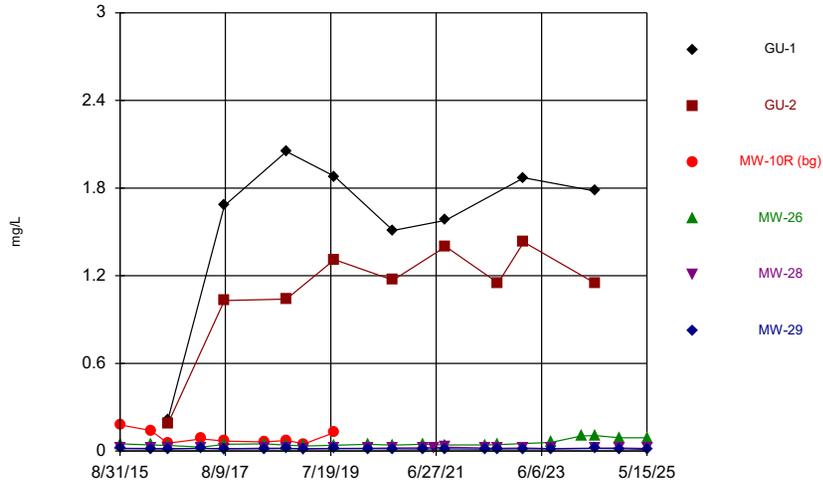
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



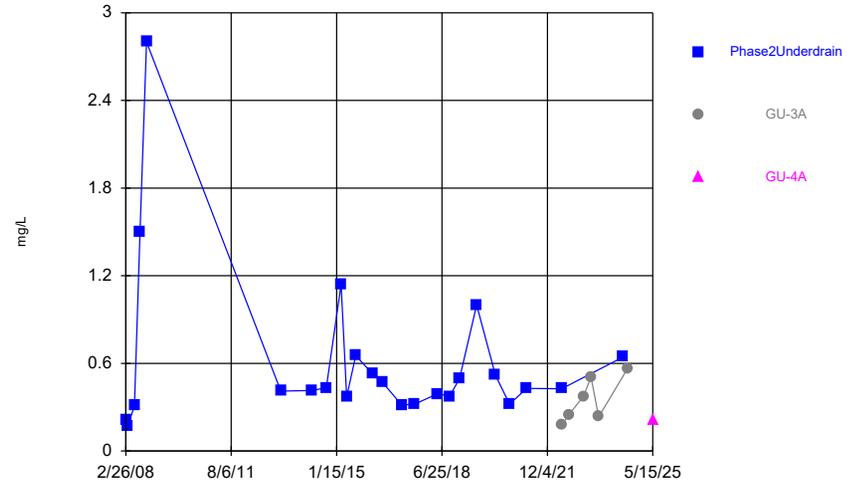
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



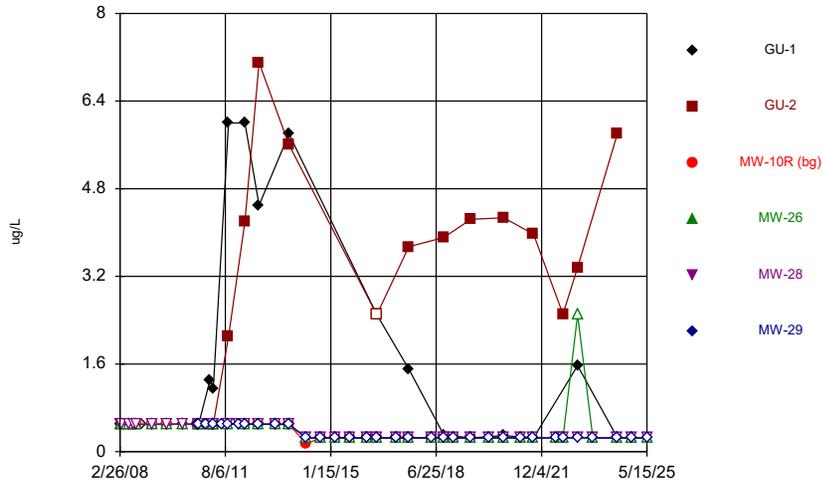
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



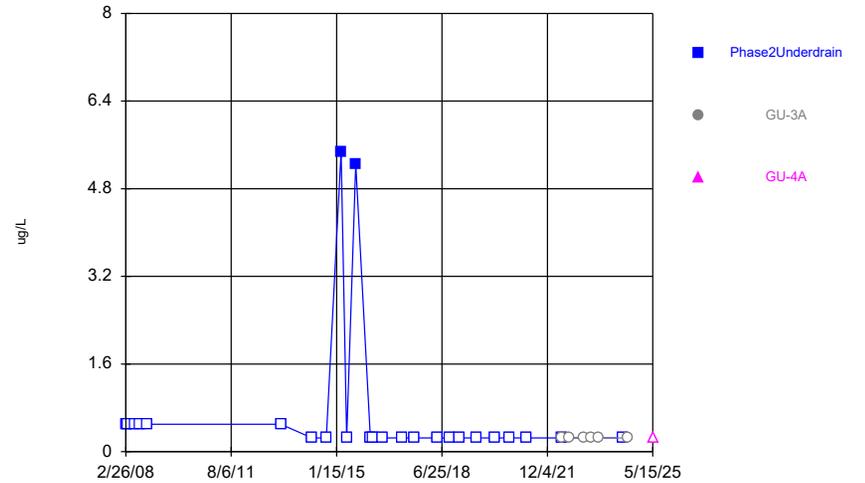
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



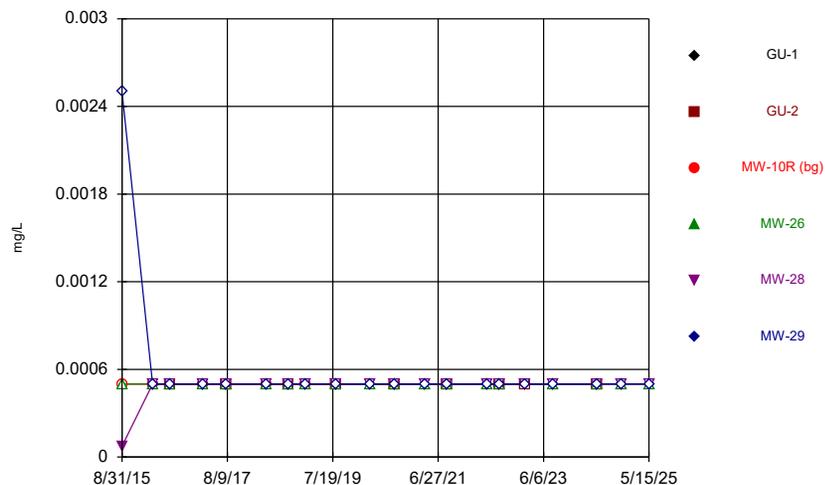
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



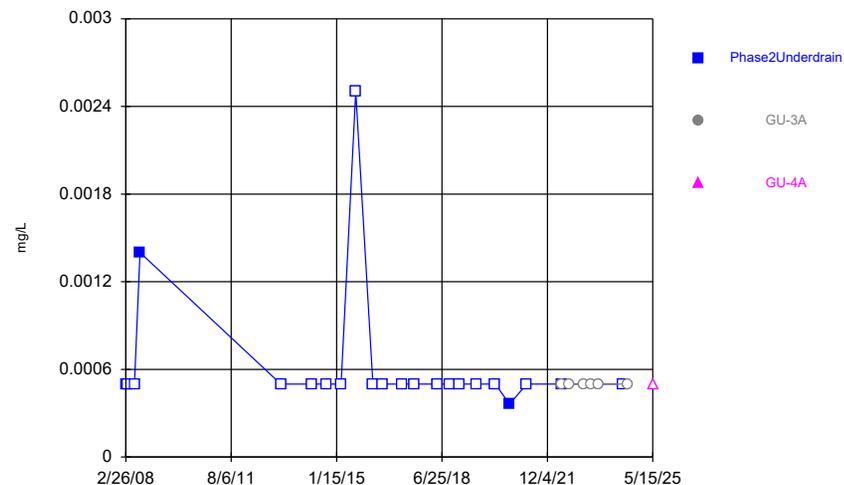
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### Time Series



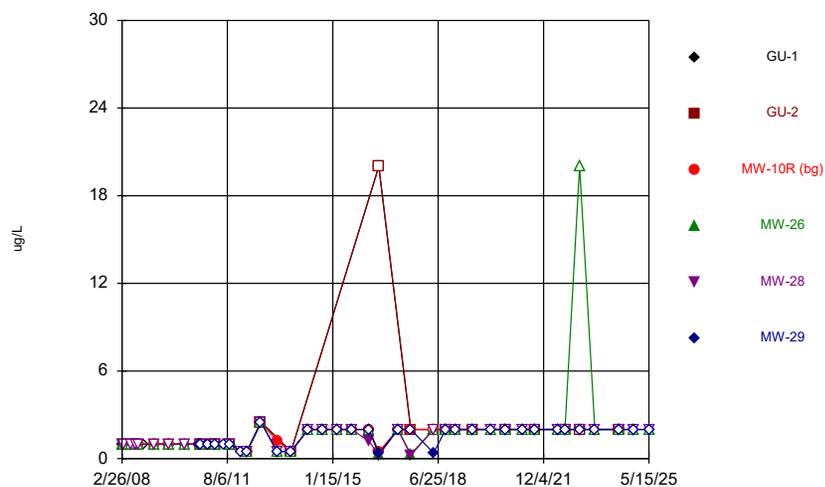
Constituent: Beryllium Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



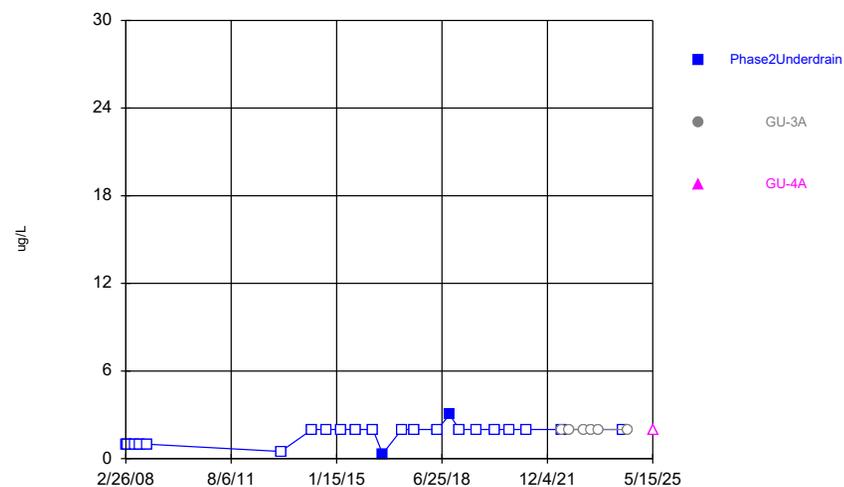
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

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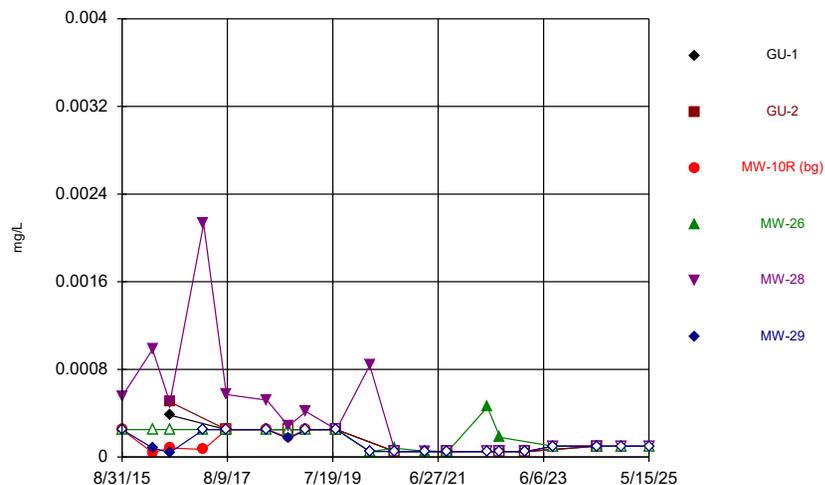
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

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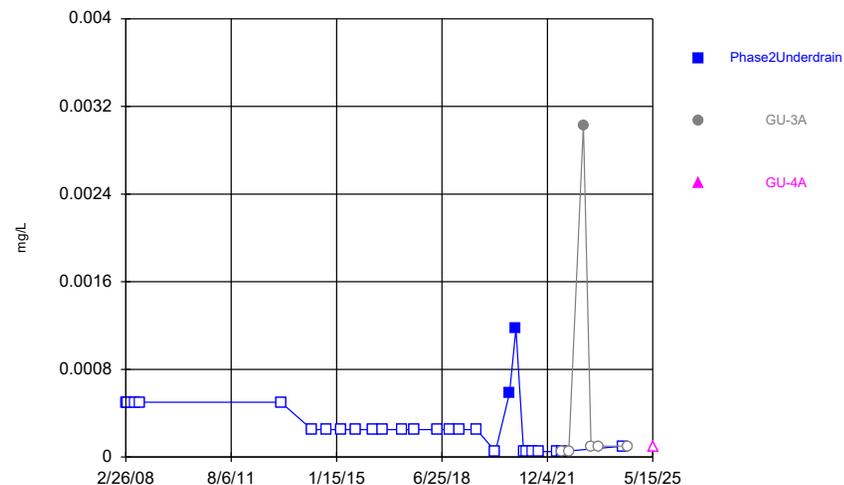
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### Time Series



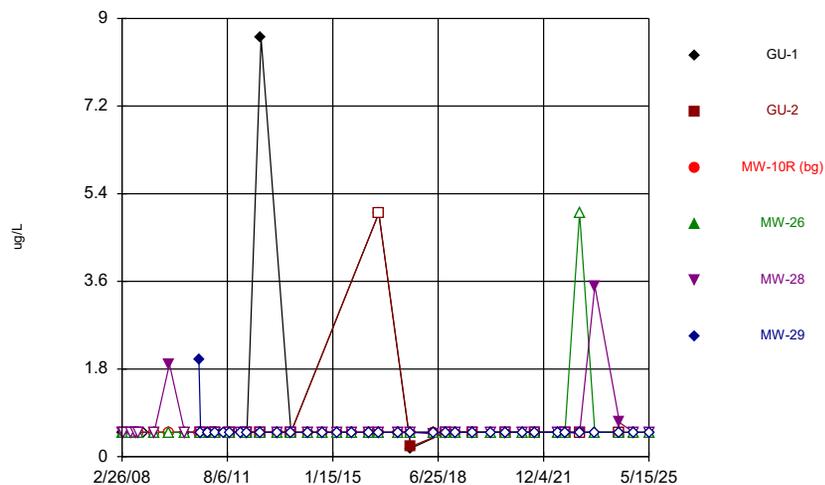
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



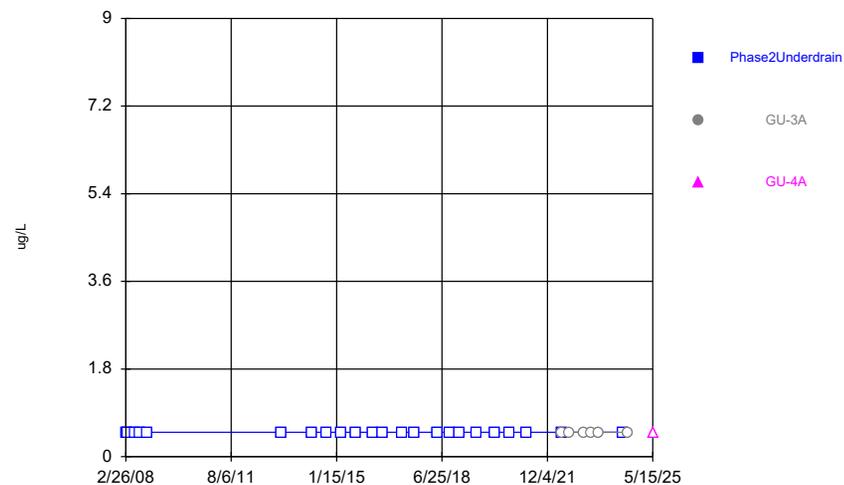
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



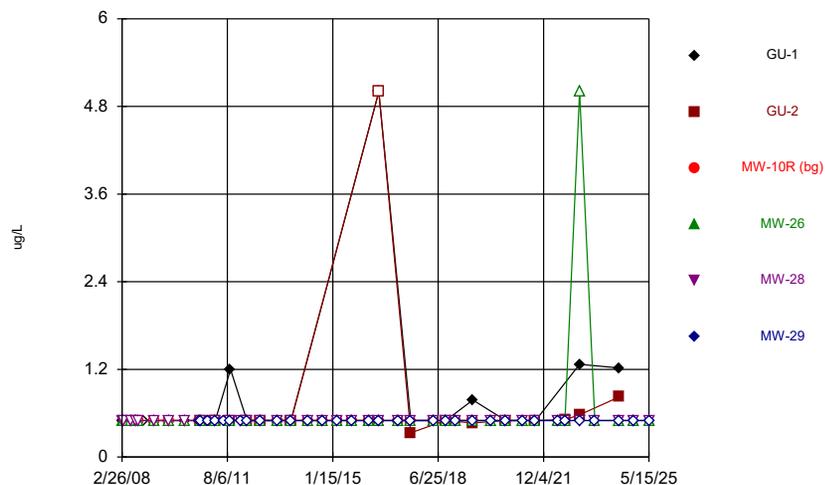
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



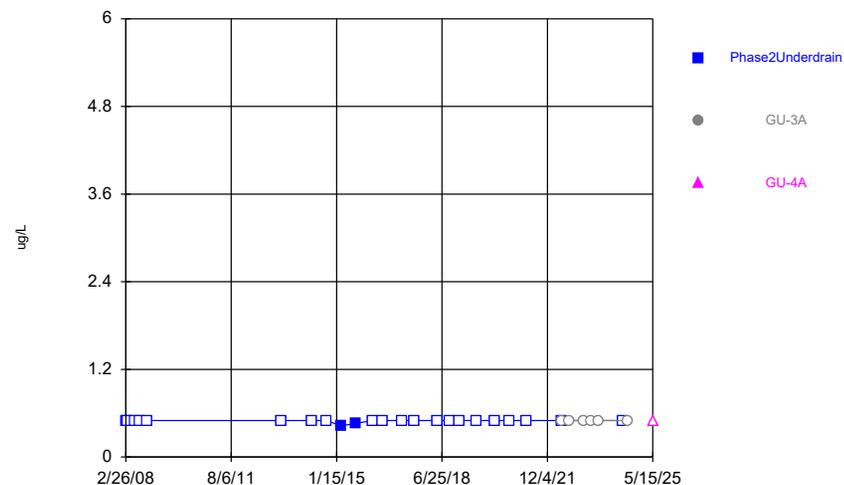
Constituent: Carbon disulfide Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



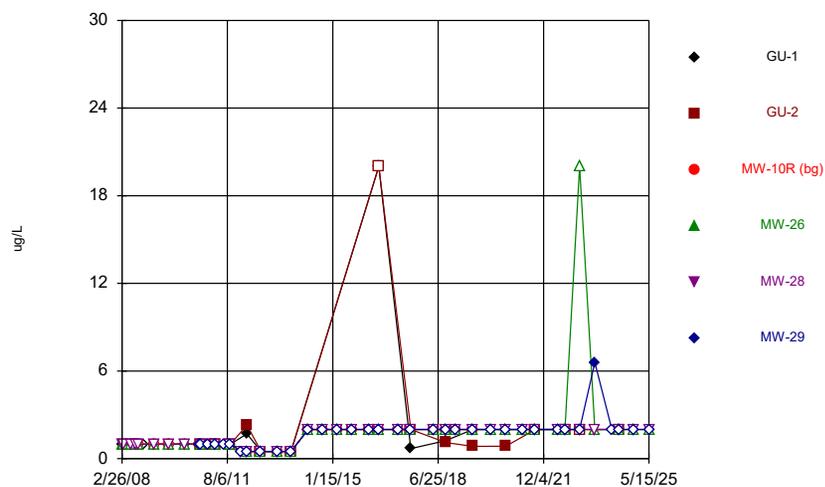
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



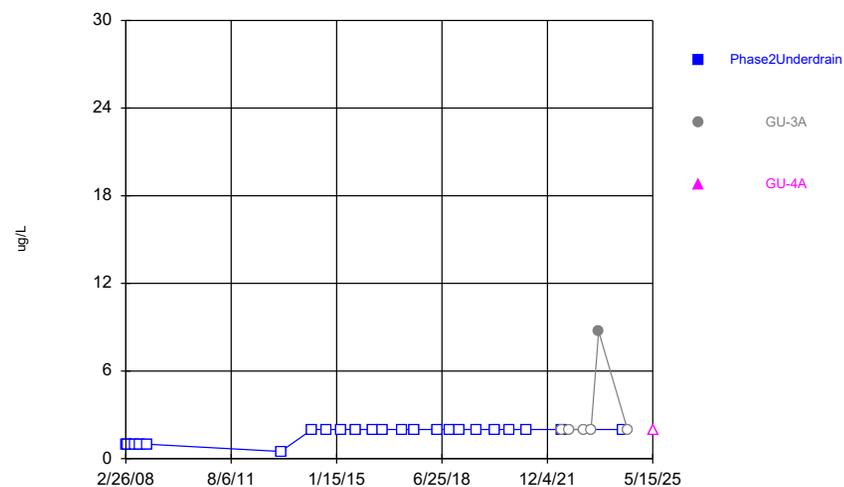
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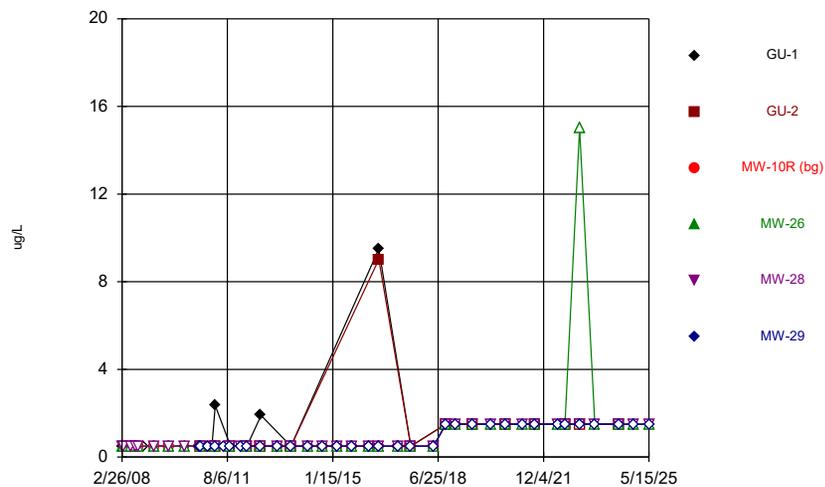
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### Time Series



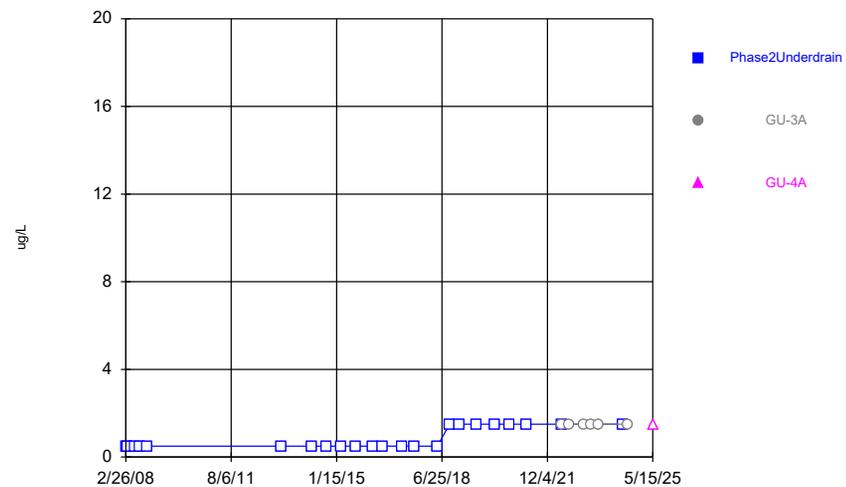
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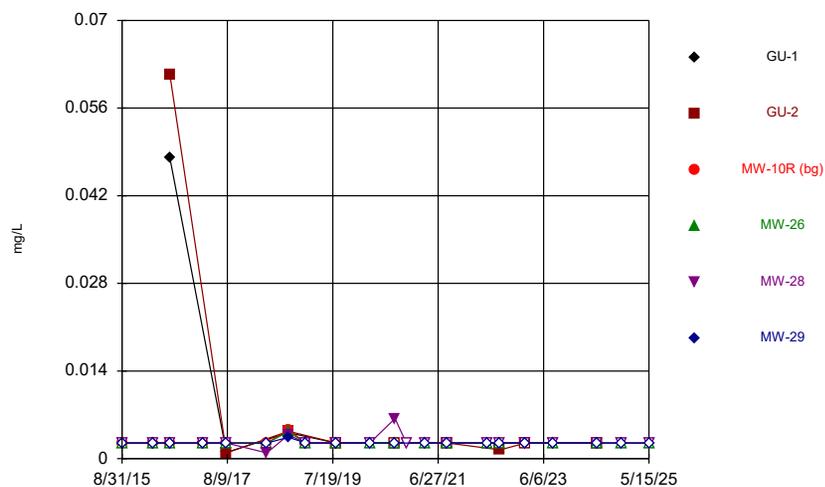
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



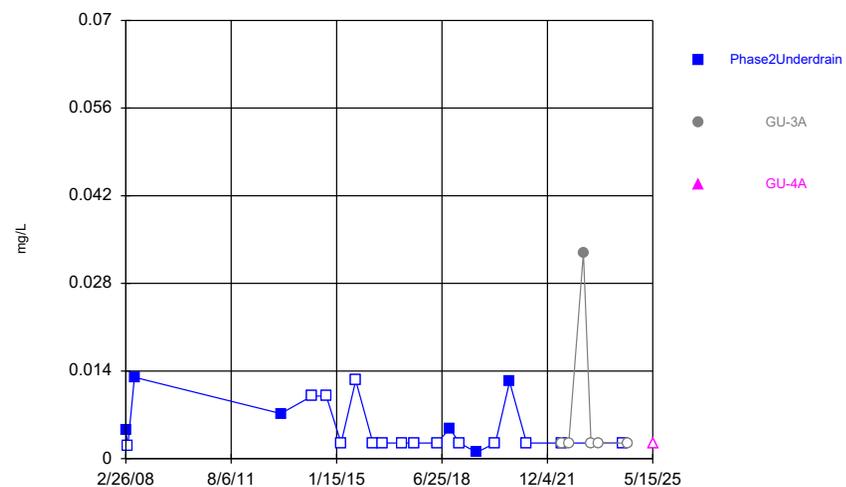
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### Time Series



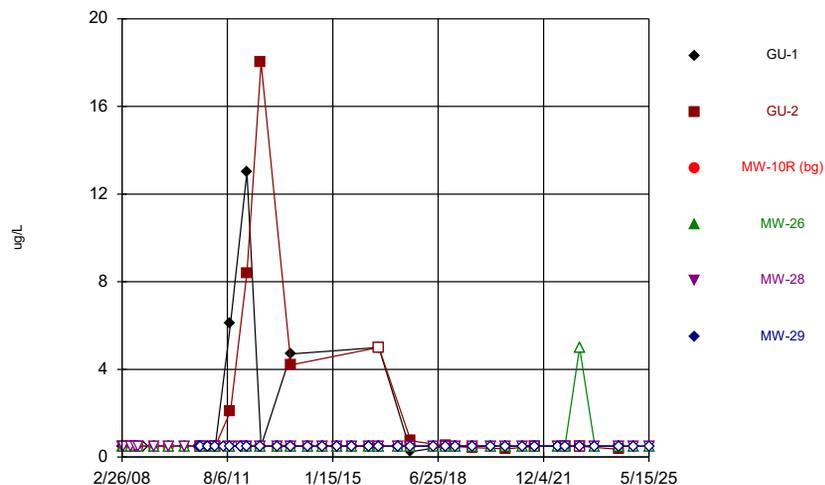
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



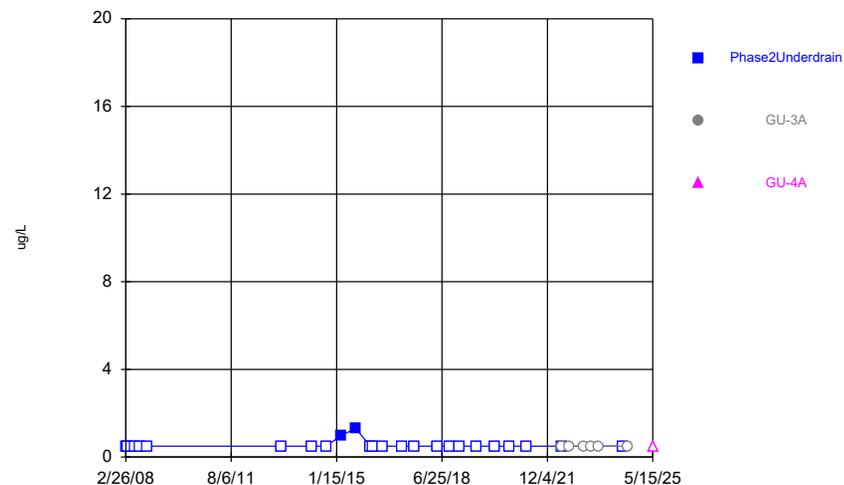
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



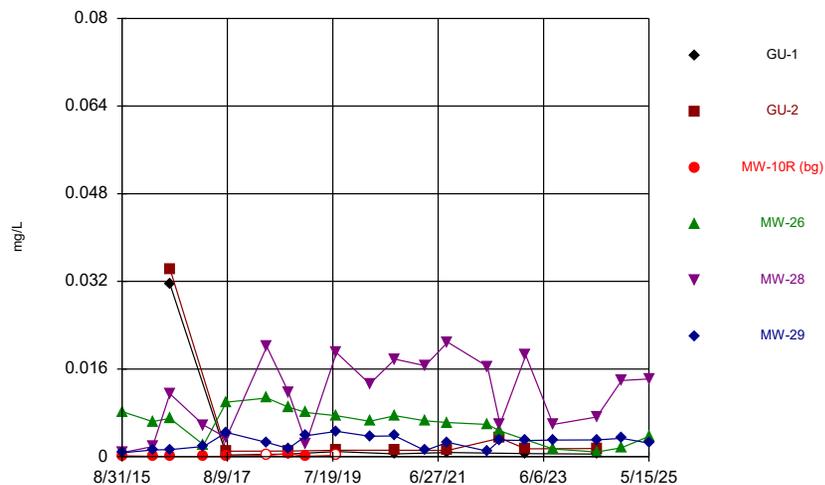
Constituent: cis-1,2-Dichloroethene Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
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### Time Series



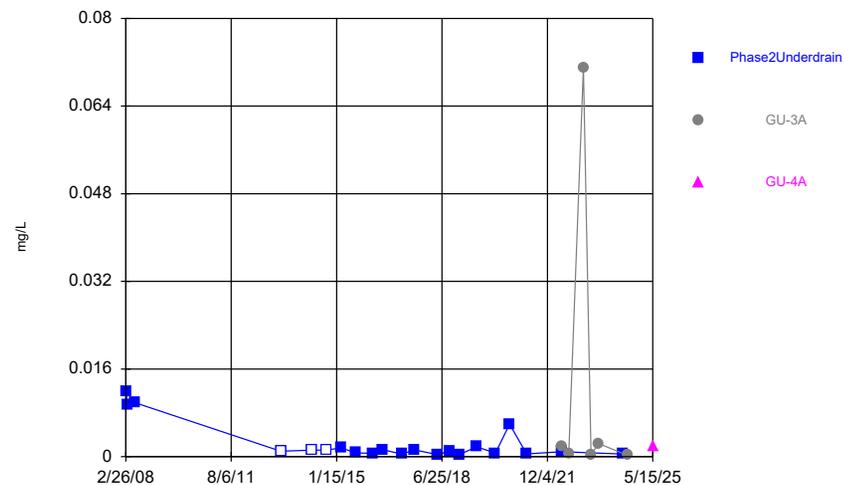
Constituent: cis-1,2-Dichloroethene Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



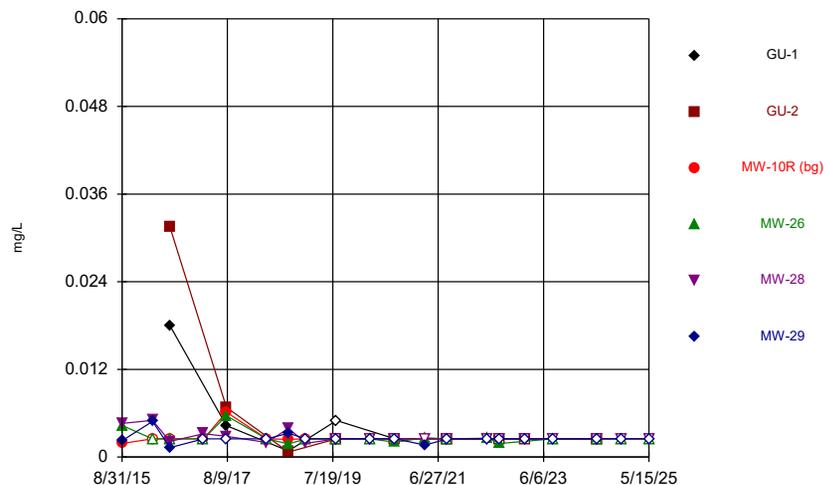
Constituent: Cobalt Analysis Run 7/17/2025 5:44 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



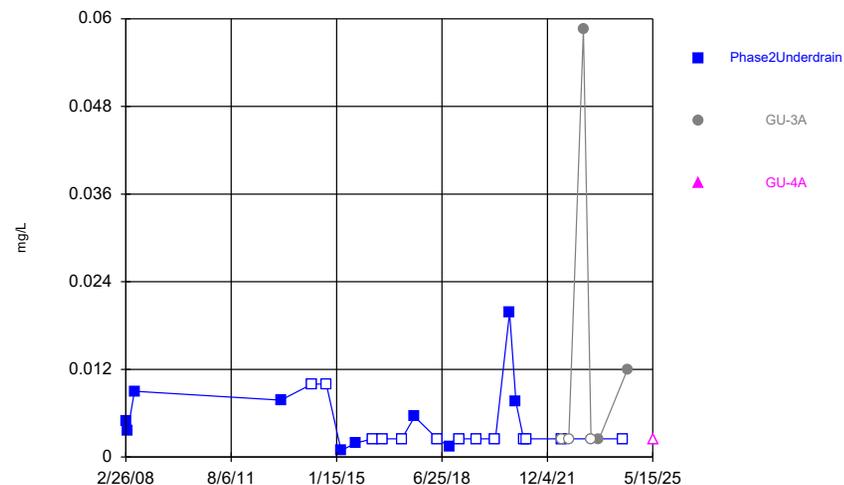
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



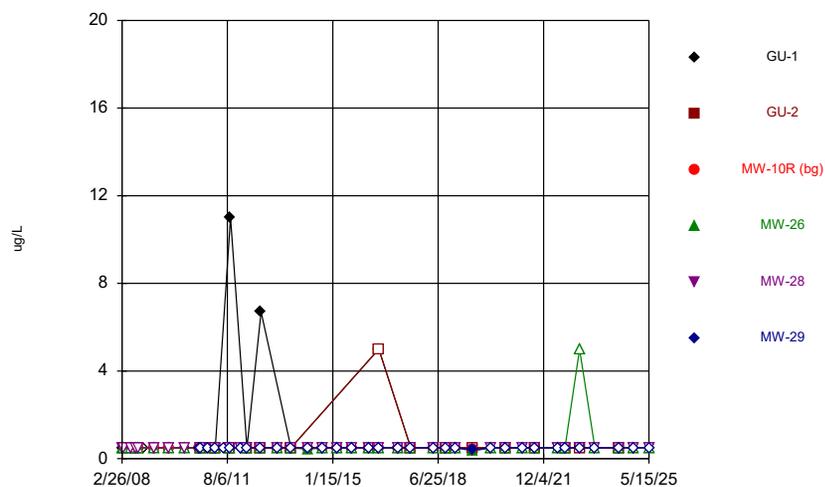
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



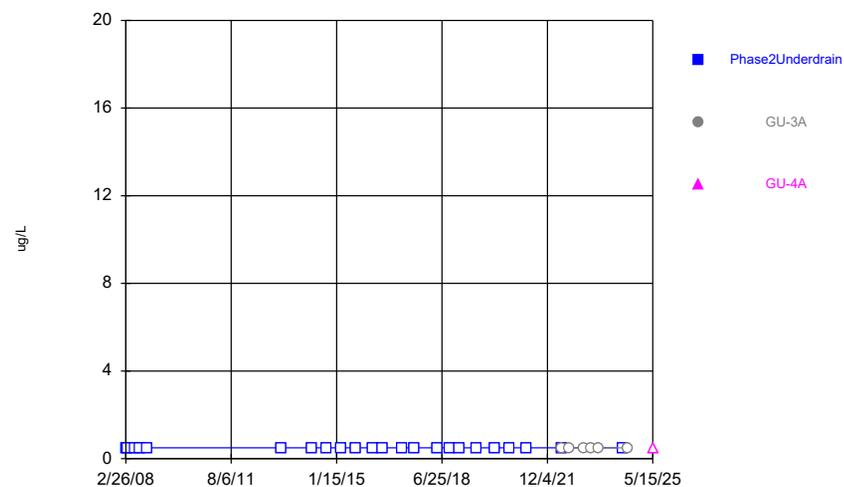
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



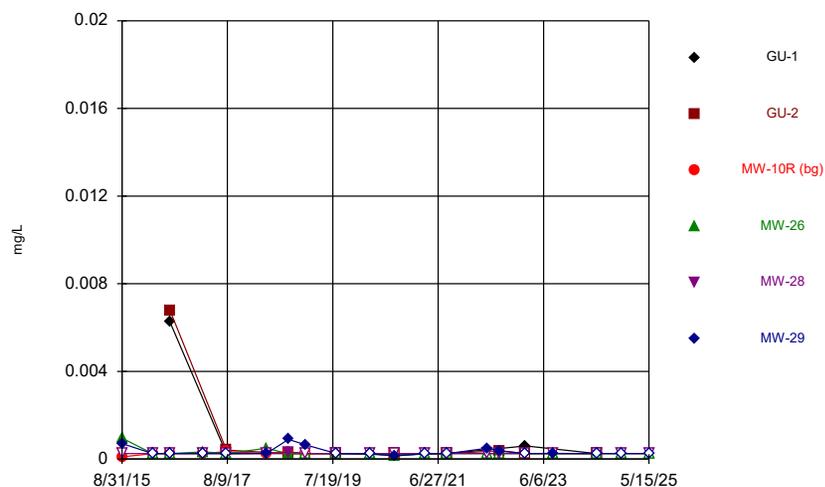
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



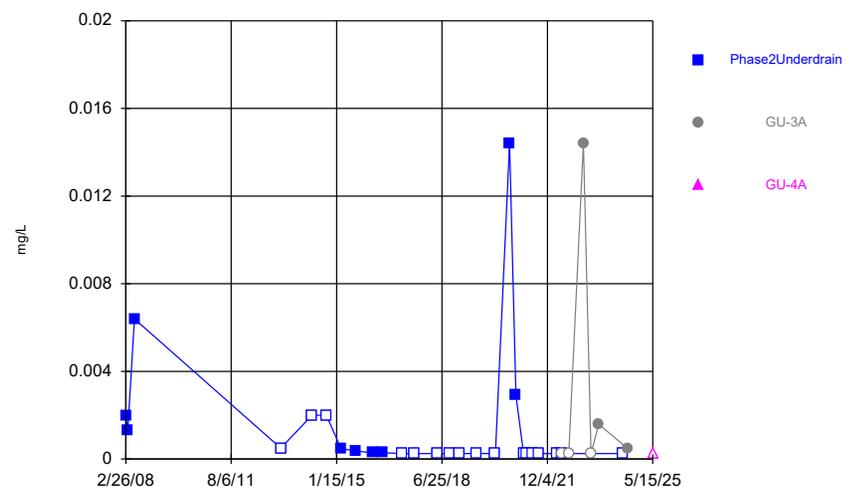
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### Time Series



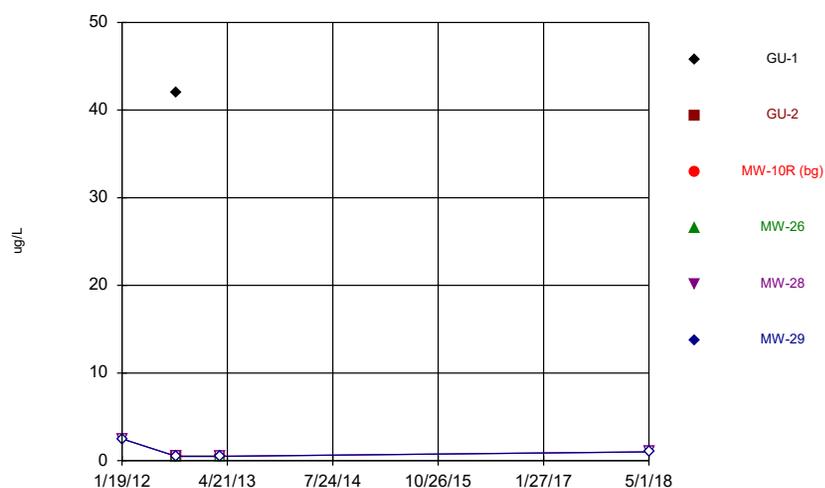
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



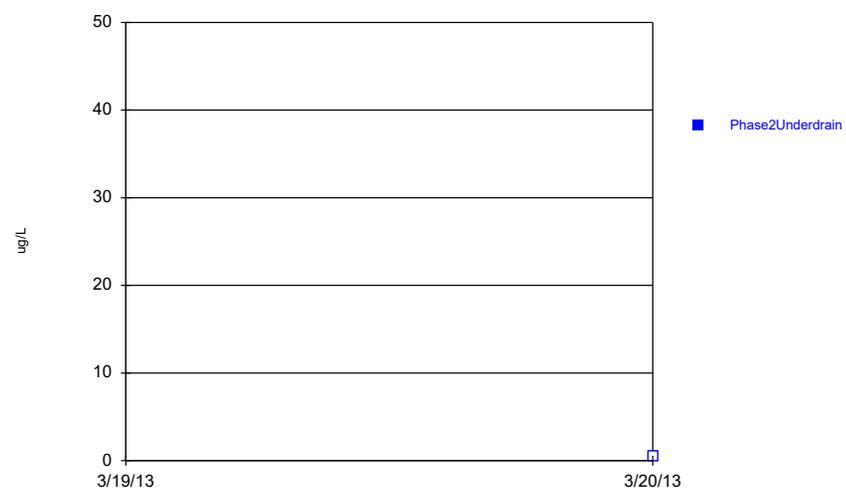
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



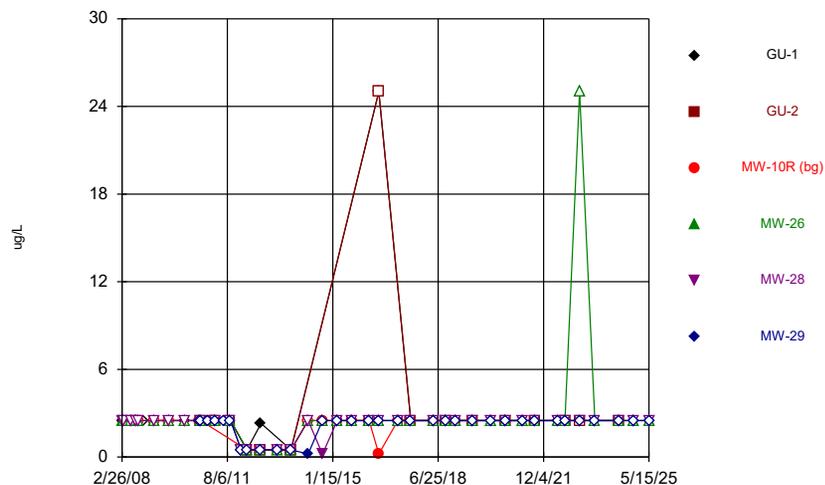
Constituent: M&P-Xylene Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



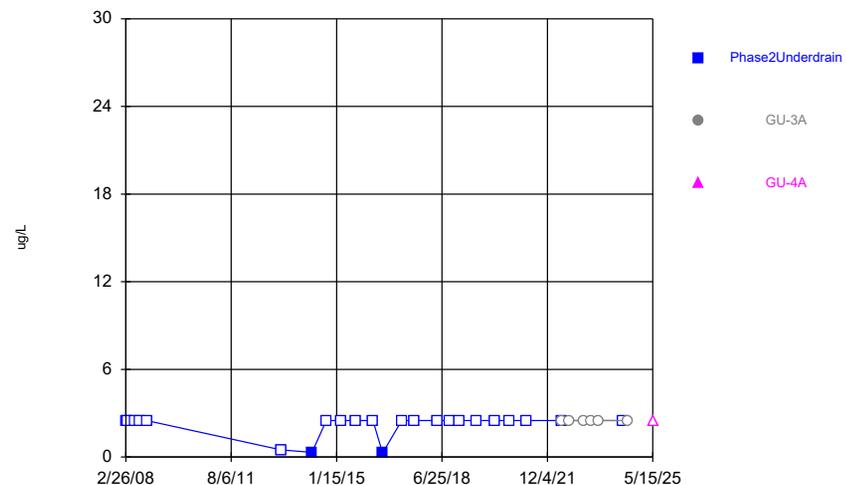
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

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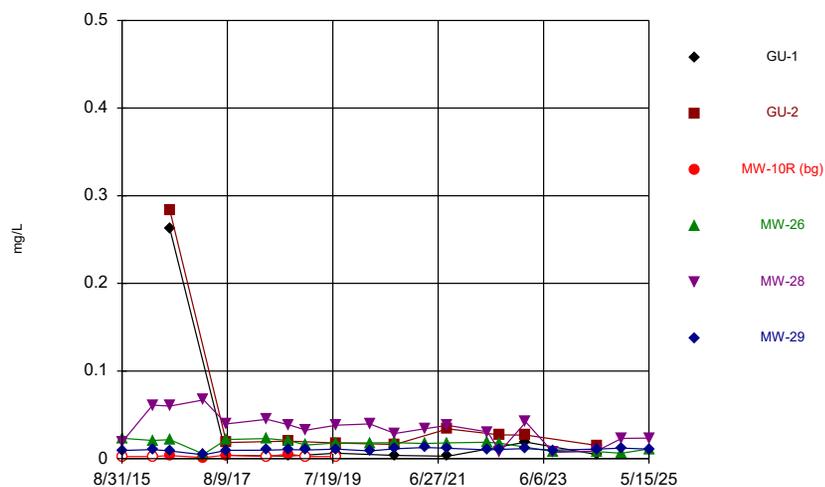
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



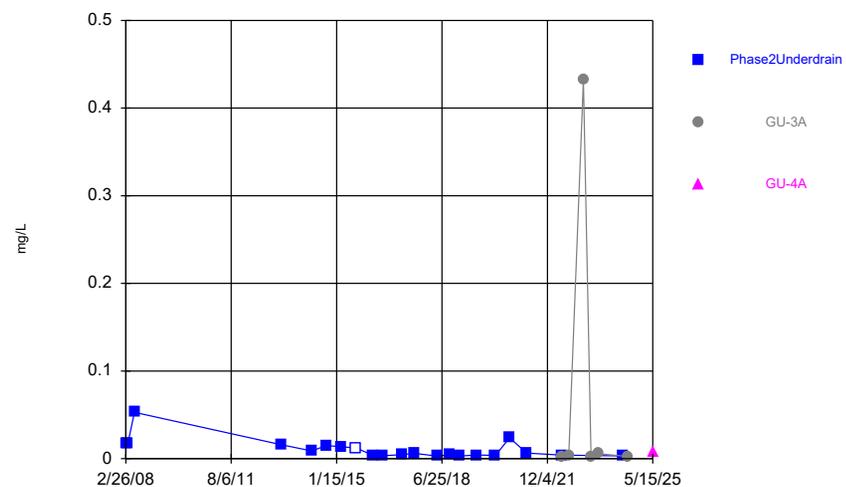
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



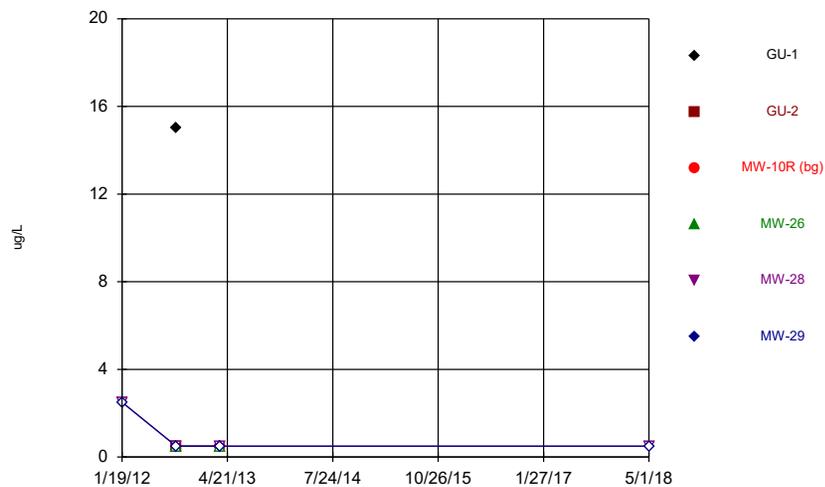
Constituent: Nickel Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



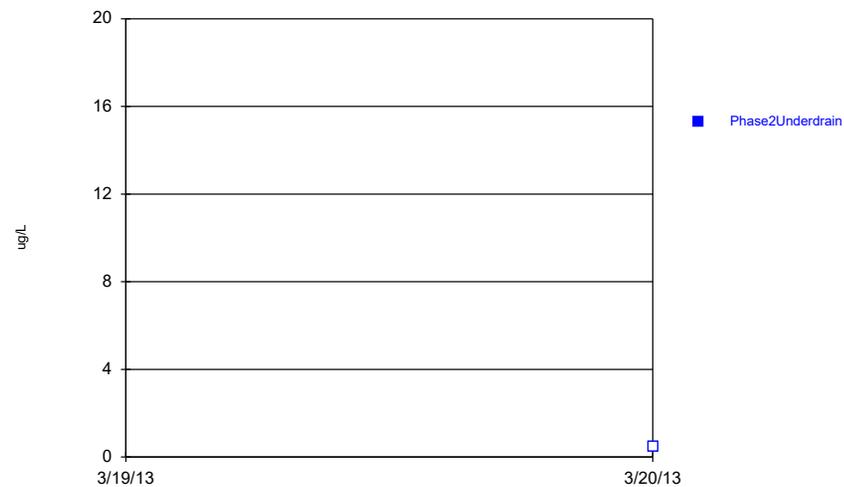
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



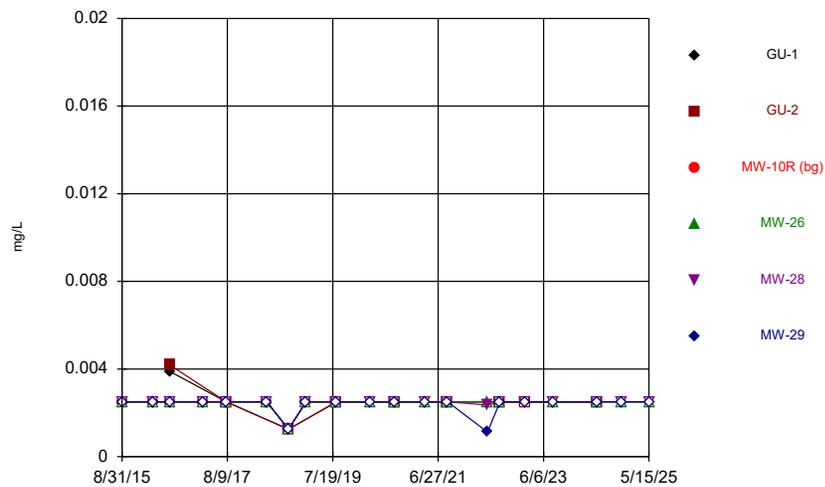
Constituent: O-Xylene Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
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### Time Series



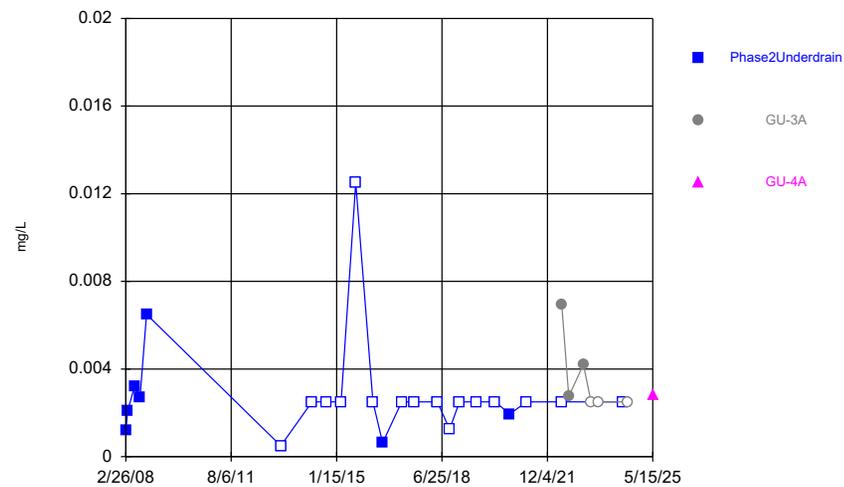
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



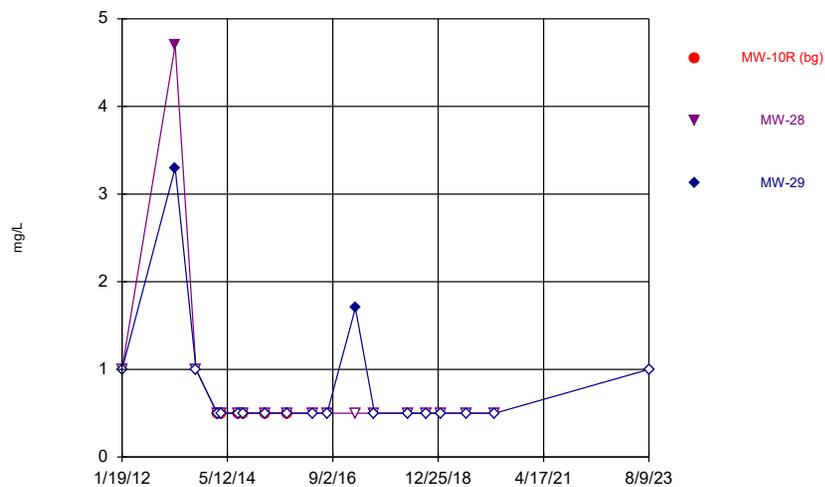
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



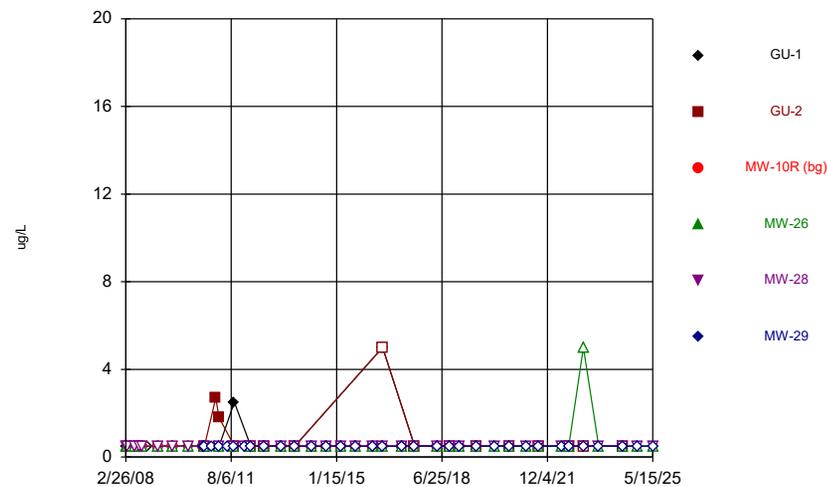
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



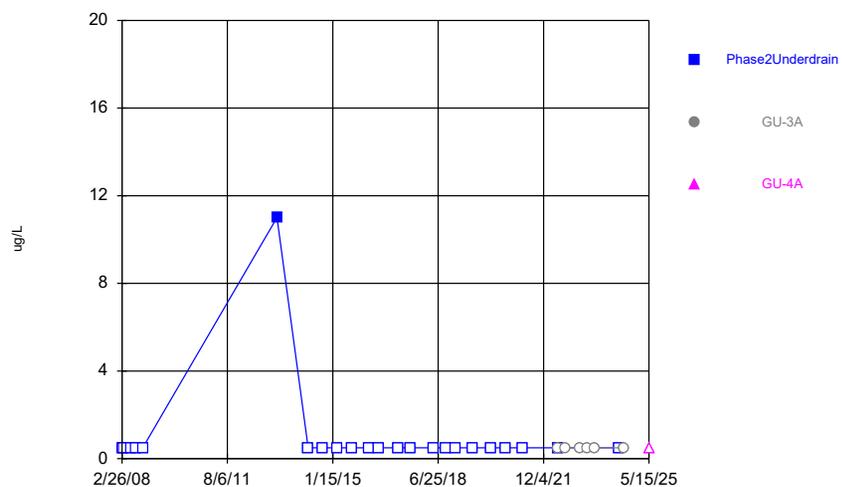
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



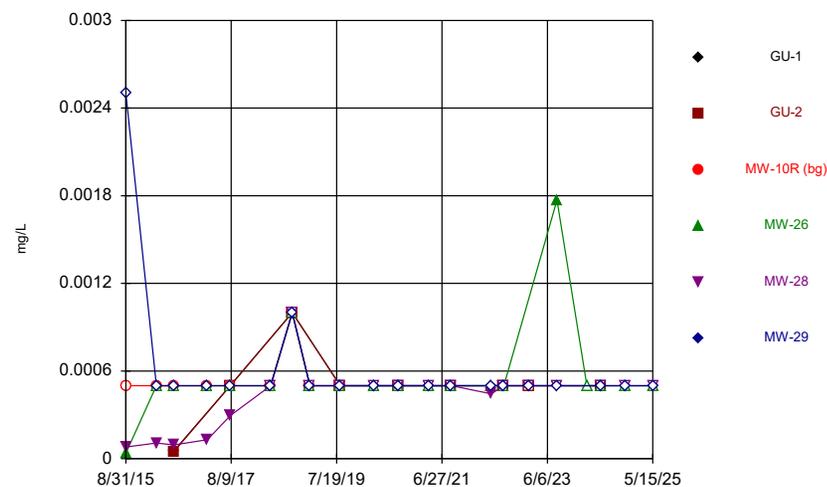
Constituent: Tetrachloroethene Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



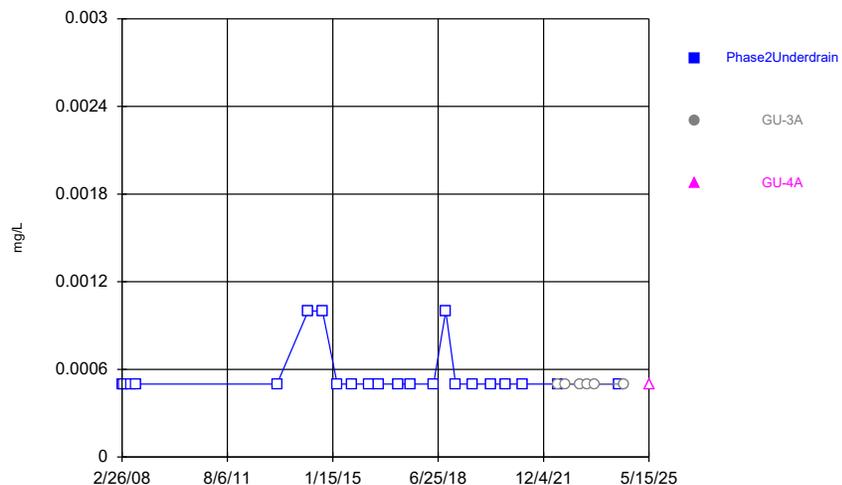
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



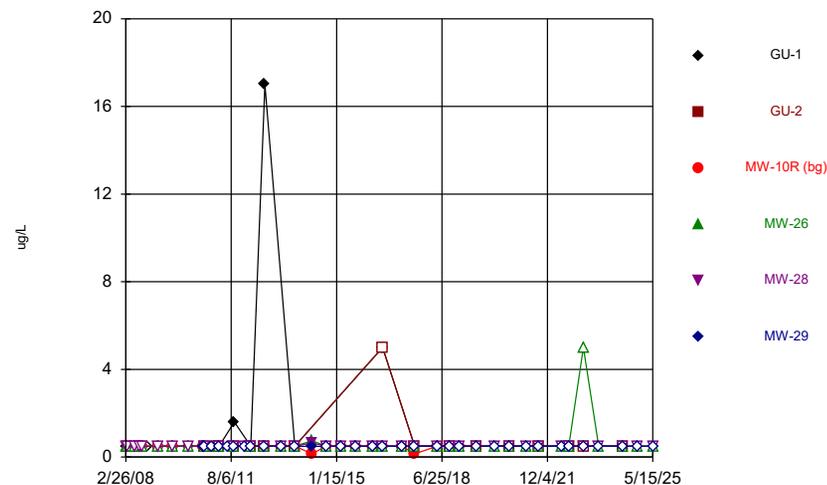
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### Time Series



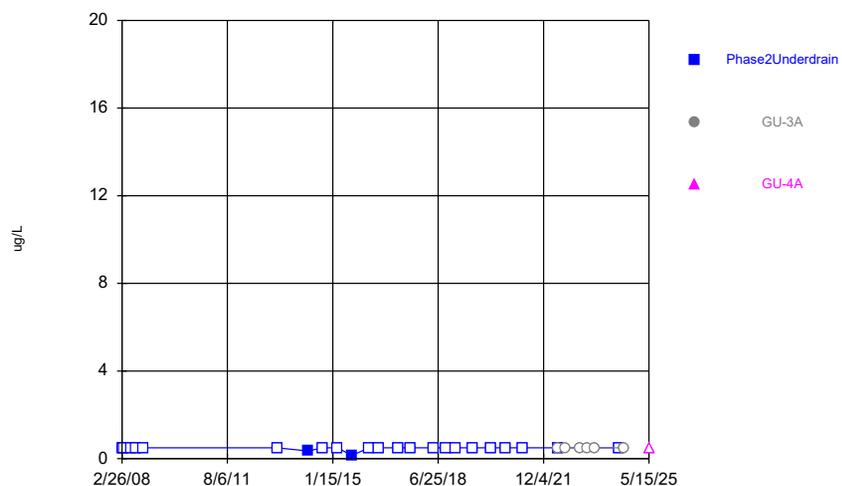
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### Time Series



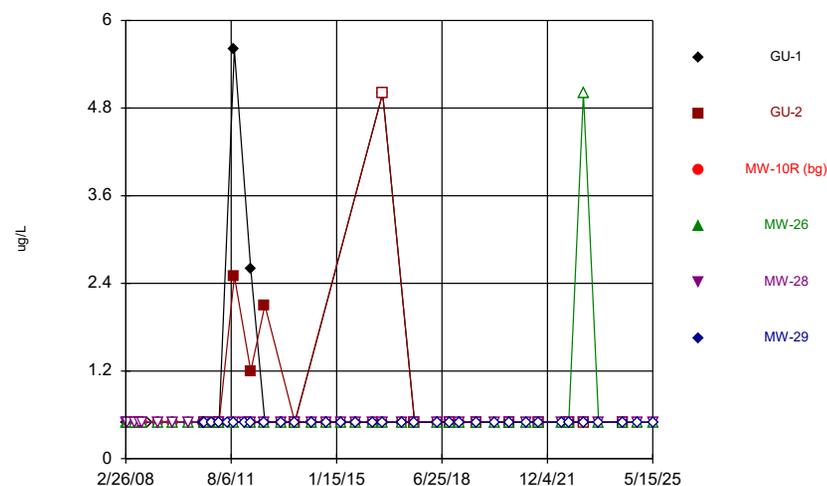
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



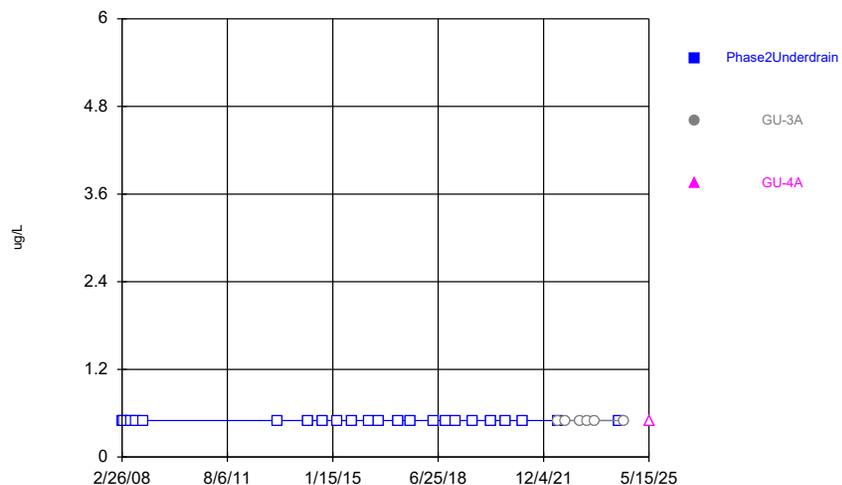
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### Time Series



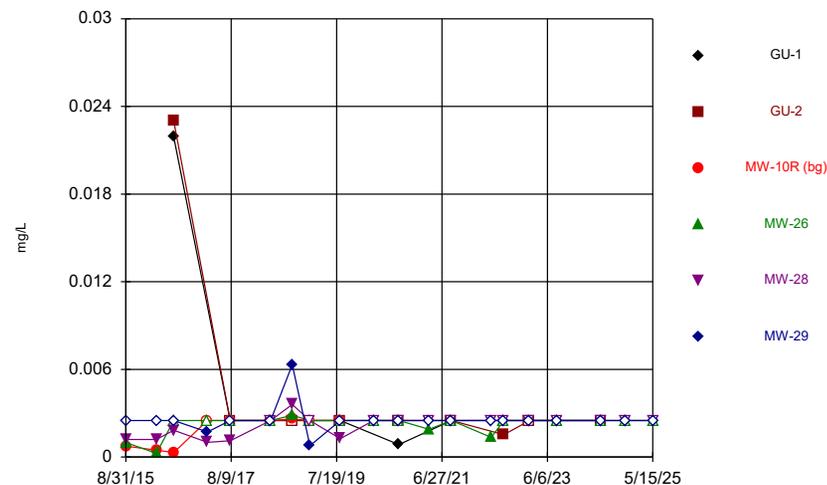
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### Time Series



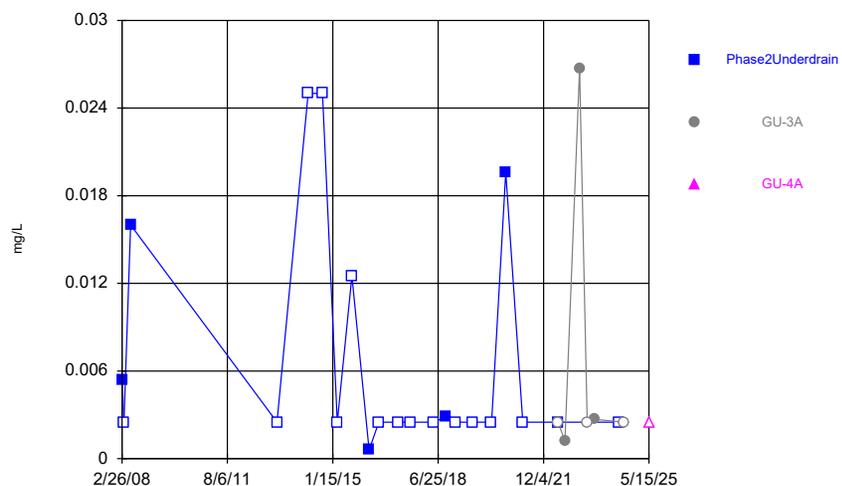
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### Time Series



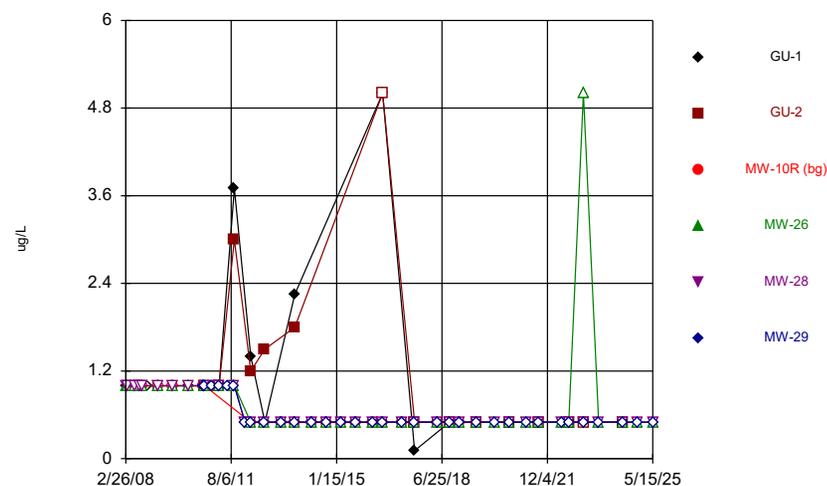
Constituent: Vanadium Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



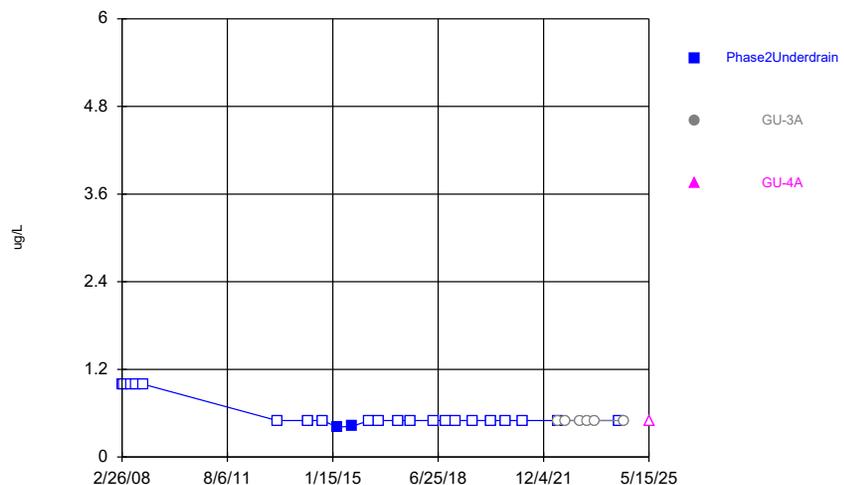
Constituent: Vanadium Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



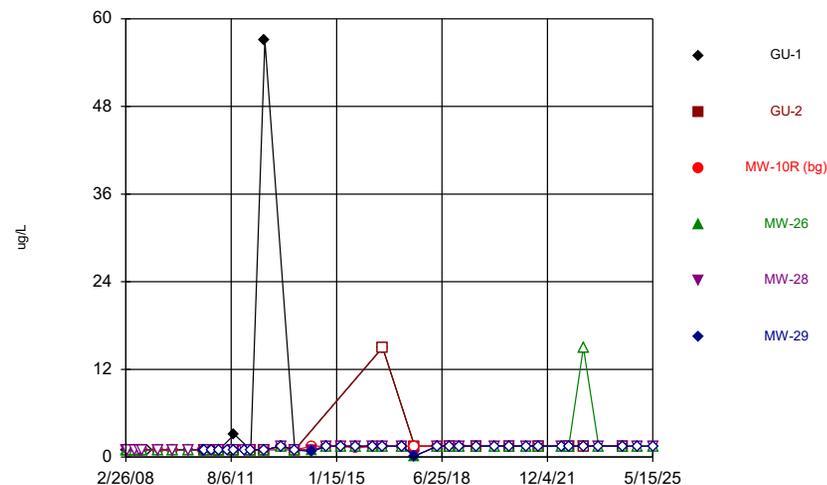
Constituent: Vinyl chloride Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



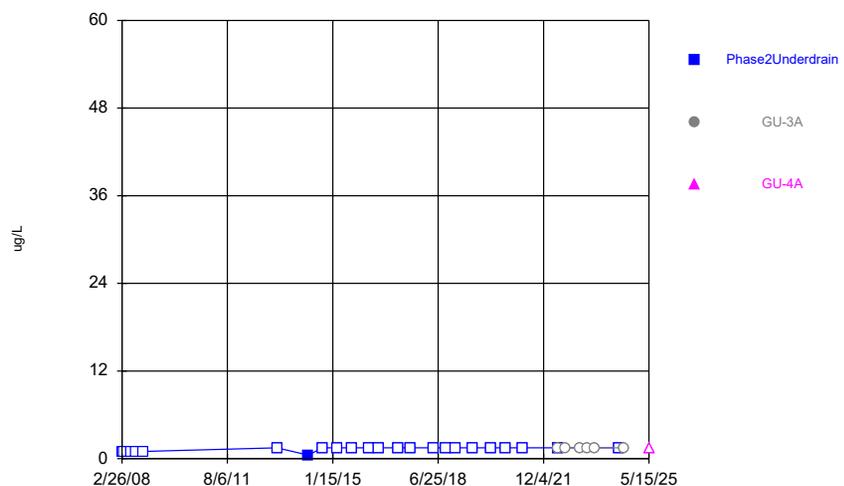
Constituent: Vinyl chloride Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



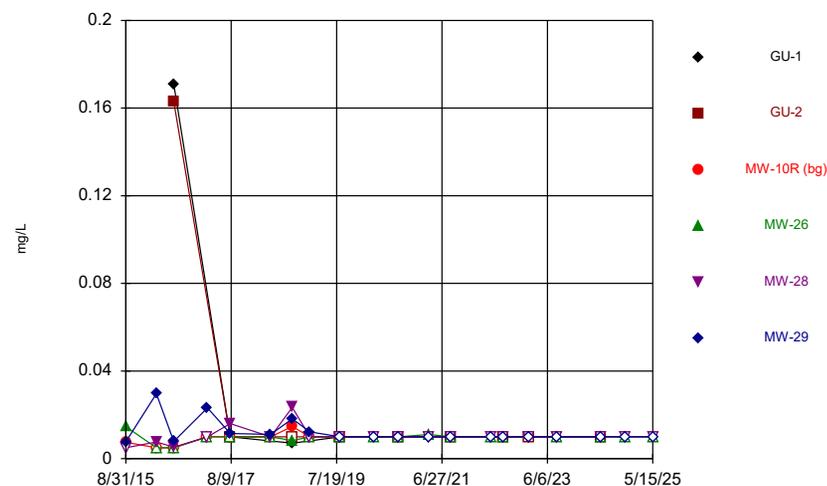
Constituent: Xylenes, total Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



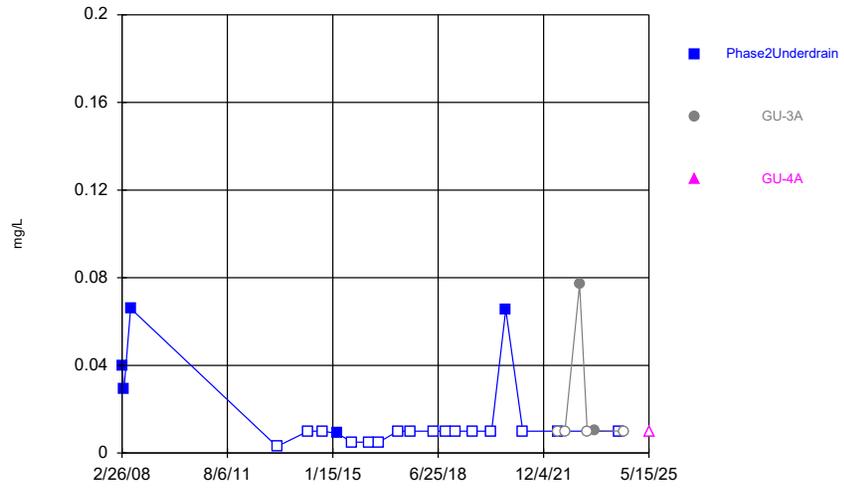
Constituent: Xylenes, total Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



Constituent: Zinc Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



Constituent: Zinc Analysis Run 7/17/2025 5:45 PM View: 2025\_SSN Time\_Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

## **Outlier Tests Summary Table and Graphs**

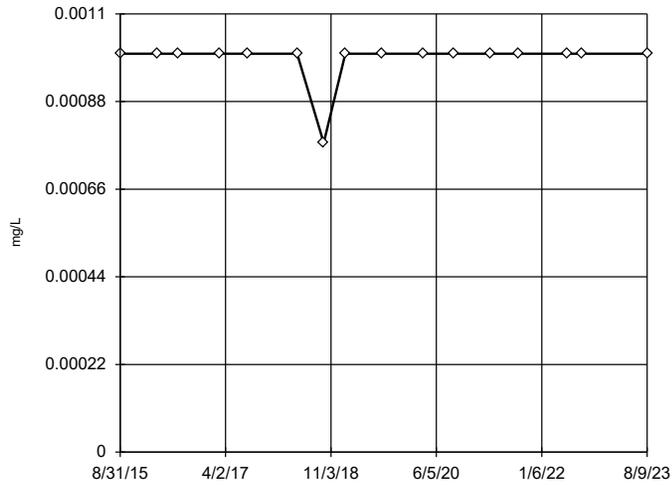
# Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/16/2025, 10:15 AM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Normality Test</u>
Arsenic (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.000986	n/a
<b>Barium (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.103,0.0268</b>	<b>2/27/2024,3/2/2017</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>17</b>	<b>0.04649</b>	<b>ShapiroWilk</b>
Cadmium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.0002013	n/a
Chromium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.002613	n/a
<b>Cobalt (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00217,0.0014</b>	<b>3/2/2017,8/9/2023</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>16</b>	<b>0.006735</b>	<b>ShapiroWilk</b>
<b>Copper (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00432,0.00565,0.00179,0.002025,0.00186</b>	<b>8/31/2015,8/2/2017,9/24/2018,9/10/2020,8/17/2022</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>16</b>	<b>0.002711</b>	<b>ShapiroWilk</b>
Lead (mg/L)	MW-26	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.000307	ShapiroWilk
<b>Nickel (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00825,0.005175</b>	<b>8/9/2023,3/2/2017</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>16</b>	<b>0.01791</b>	<b>ShapiroWilk</b>
Silver (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.0004864	n/a
Thallium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	17	0.0005769	n/a
Vanadium (mg/L)	MW-26	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002179	ShapiroWilk
Zinc (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.009618	n/a

### Ohio EPA 0715 Outlier Algorithm

MW-26

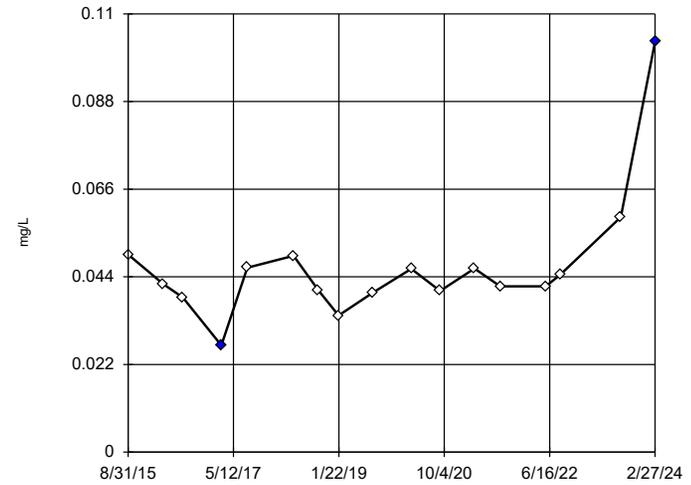


n = 16  
No statistical outliers.

Constituent: Arsenic Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

MW-26

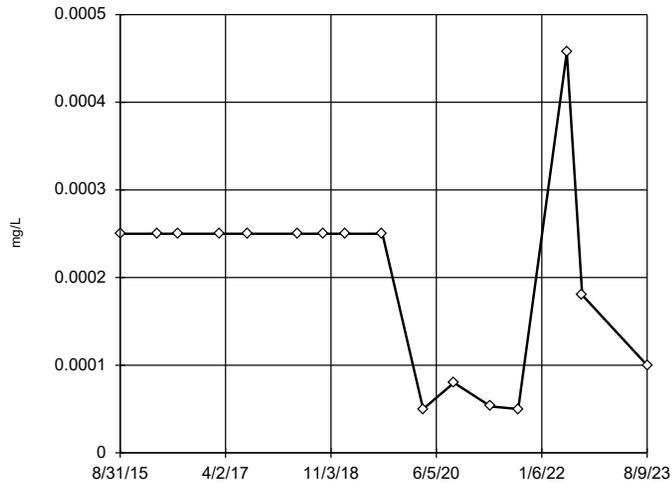


n = 17  
Statistical outliers are drawn as solid. Testing for 1 high and 1 low outliers. Mean = 0.04649. Std. Dev. = 0.0161. 0.103; c = 0.8318. tab1 = 0.49. 0.0268 (D); c = 0.5263. tab1 = 0.49. Alpha = 0.05.  
Normality test used: Shapiro Wilk@alpha = 0.1 Calculated = 0.9259 Critical = 0.901 The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Barium Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

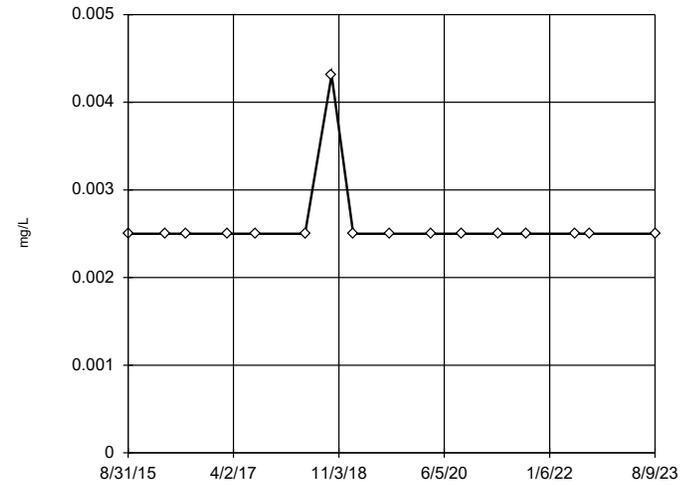


n = 16  
No statistical outliers.  
Normality test used: Shapiro Wilk@alpha = 0.1 Calculated = 0.9259 Critical = 0.901 The distribution was found to be normally distributed.

Constituent: Cadmium Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

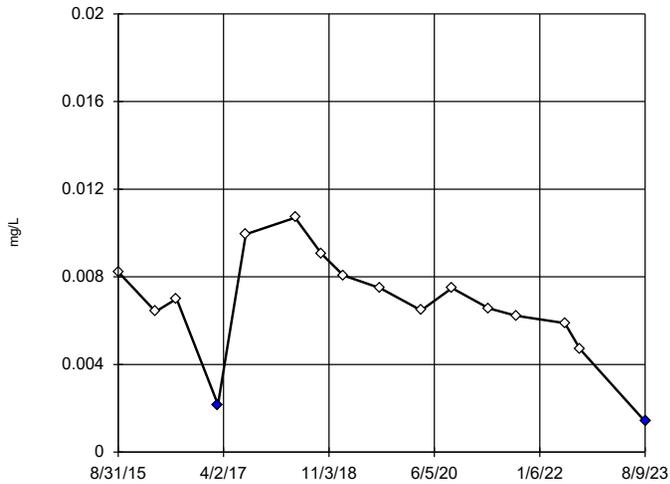


n = 16  
No statistical outliers.

Constituent: Chromium Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

MW-26

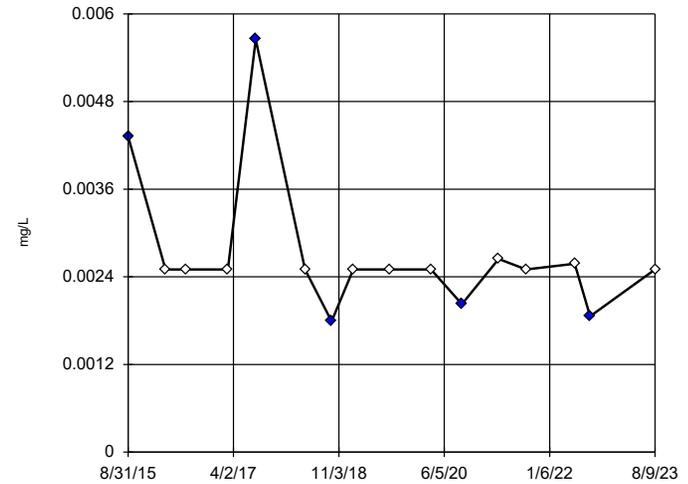


n = 16  
 Statistical outliers are drawn as solid.  
 Testing for 2 low outliers.  
 Mean = 0.006735,  
 Std. Dev. = 0.002465,  
 0.00217 (D); c = 0.5415  
 tab1 = 0.507,  
 Alpha = 0.05.  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9639  
 Critical = 0.895  
 The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Cobalt Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-26

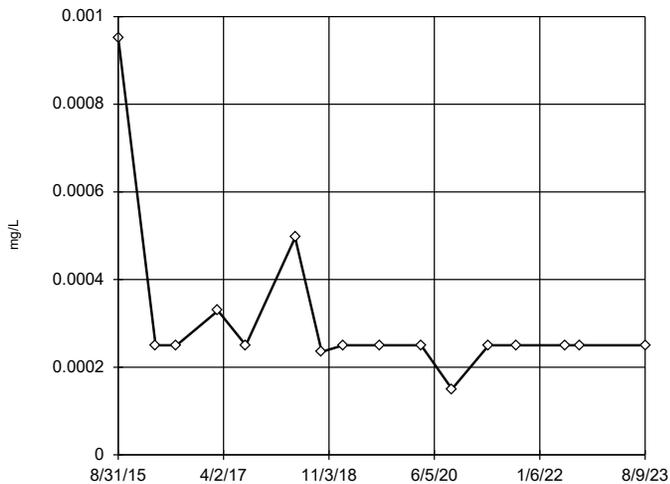


n = 16  
 Outliers are drawn as solid.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.002663,  
 low cutoff = 0.002385,  
 based on IQR multiplier of 3.

Constituent: Copper Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-26

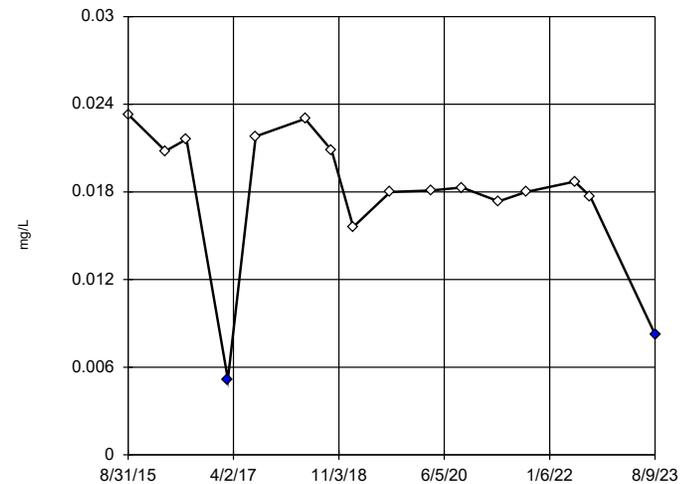


n = 16  
 No outliers found.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

MW-26

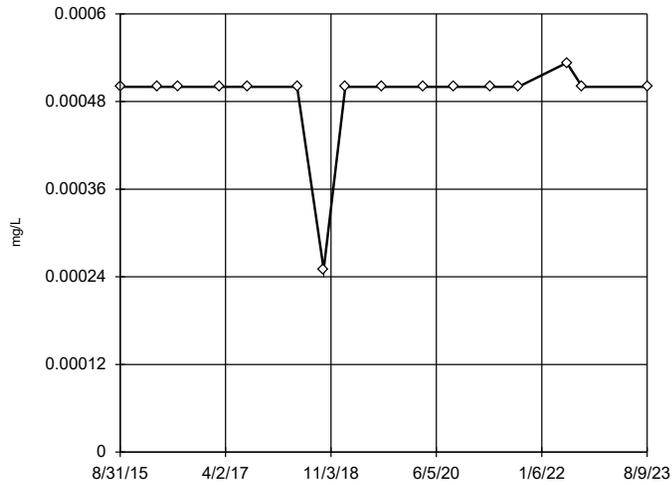


n = 16  
 Statistical outliers are drawn as solid.  
 Testing for 2 low outliers.  
 Mean = 0.01791,  
 Std. Dev. = 0.004917,  
 0.00825; c = 0.6716  
 tab1 = 0.507,  
 Alpha = 0.05.  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9253  
 Critical = 0.895  
 The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Nickel Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

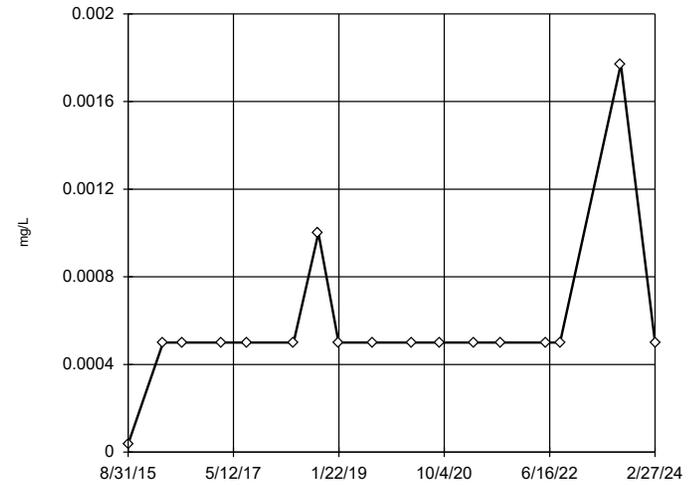


n = 16  
No statistical outliers.

Constituent: Silver Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

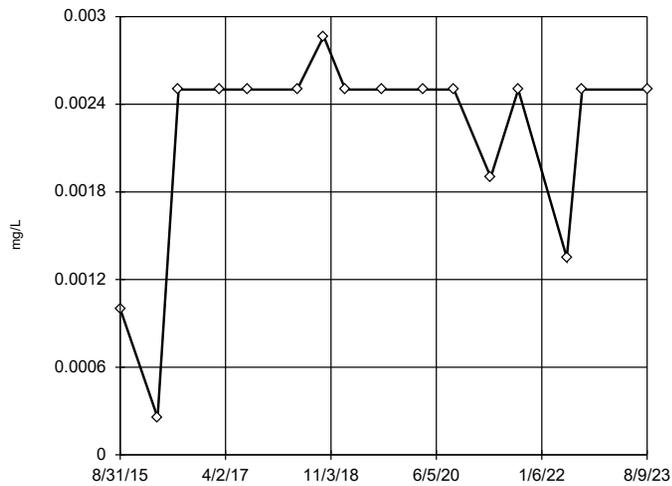


n = 17  
No statistical outliers.

Constituent: Thallium Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-26

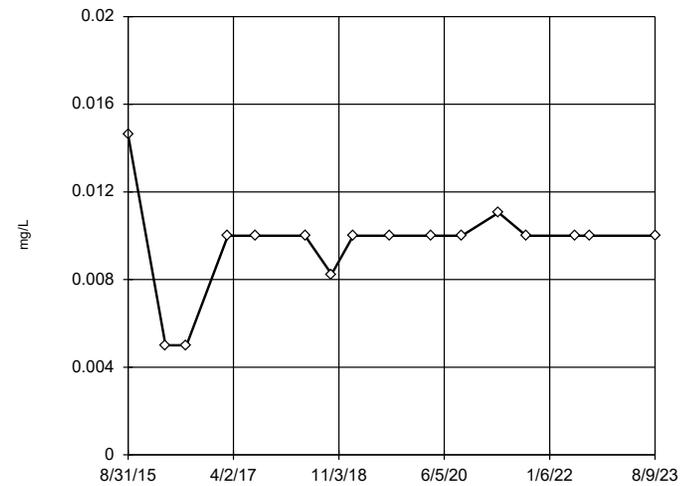


n = 16  
No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
Data were x<sup>5</sup> transformed to achieve best W statistic (graph shown in original units).  
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Vanadium Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26



n = 16  
No statistical outliers.

Constituent: Zinc Analysis Run 1/16/2025 10:04 AM View: 2023SSN - Outliers MW-26  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

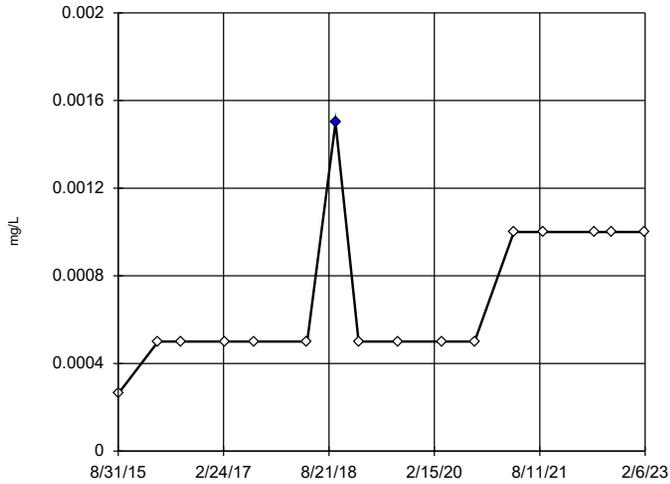
# Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/16/2025, 11:21 AM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Normality Test</u>
<b>Antimony (mg/L)</b>	<b>MW-28</b>	<b>Yes</b>	<b>0.0015</b>	<b>9/24/2018</b>	<b>OH</b>	<b>NaN</b>	<b>16</b>	<b>0.0007039</b>	<b>n/a</b>
Arsenic (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.001002	ShapiroWilk
Barium (mg/L)	MW-28	No	n/a	n/a	EPA/OH	0.05	17	0.01954	ShapiroWilk
Beryllium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	16	0.0004734	n/a
Cadmium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.0004586	ShapiroWilk
Chromium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	17	0.002715	n/a
Cobalt (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.01163	ShapiroWilk
Copper (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002851	ShapiroWilk
Lead (mg/L)	MW-28	No	n/a	n/a	OH	NaN	16	0.0002548	n/a
Nickel (mg/L)	MW-28	No	n/a	n/a	Dixon/OH	0.05	16	0.03895	ShapiroWilk
Selenium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	16	0.002413	n/a
Silver (mg/L)	MW-28	No	n/a	n/a	OH	NaN	16	0.0005088	n/a
Thallium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.0004156	ShapiroWilk
Vanadium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002108	ShapiroWilk
Zinc (mg/L)	MW-28	No	n/a	n/a	OH	NaN	16	0.01046	n/a

Ohio EPA 0715 Outlier Algorithm

MW-28

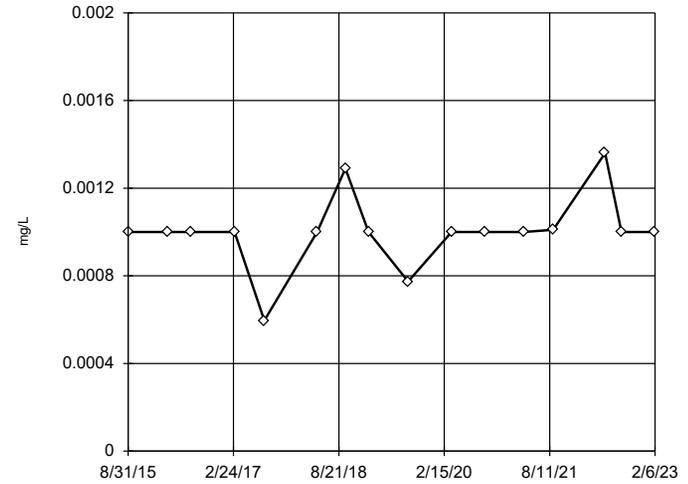


n = 16  
 Statistical outlier is drawn as solid.  
 Outlier per Ohio method.

Constituent: Antimony Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

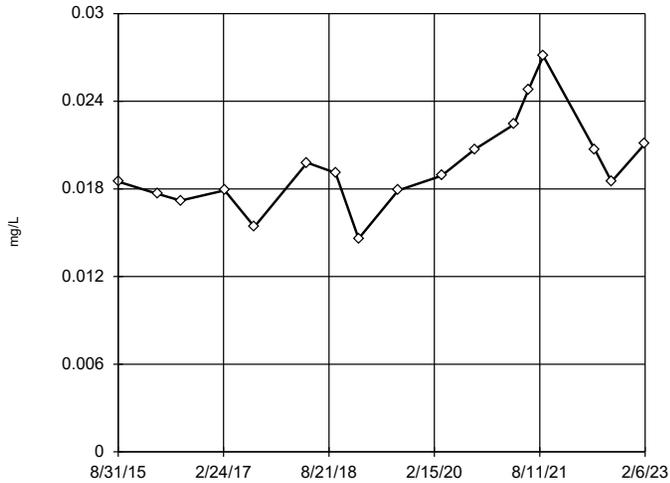


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

EPA Screening (suspected outliers for Dixon's Test)

MW-28

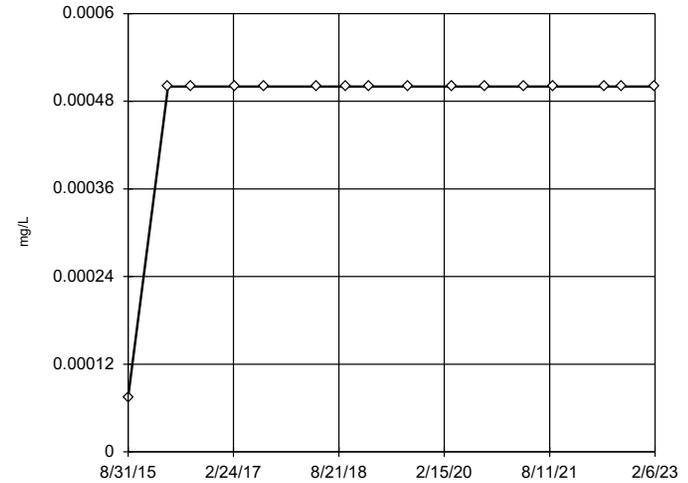


n = 17  
 Dixon's will not be run. No suspect values identified or unable to establish suspect values.  
 Ohio method in use. Mean 0.01954, std. dev. 0.003131, critical Tn 2.475  
 Normality test used: Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9399  
 Critical = 0.91  
 The distribution was found to be normally distributed.

Constituent: Barium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Ohio EPA 0715 Outlier Algorithm

MW-28

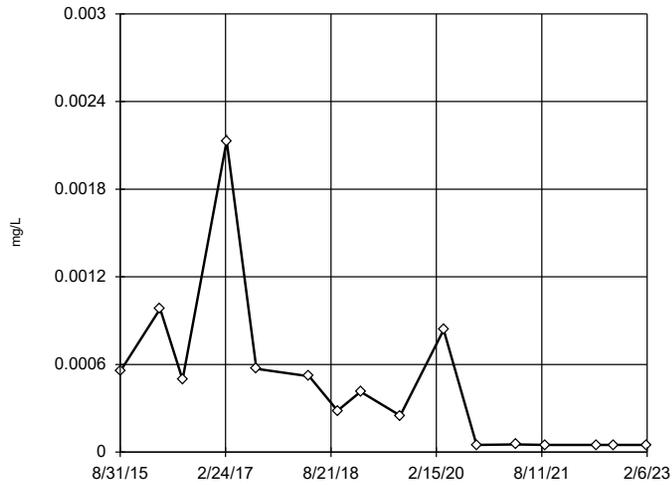


n = 16  
 No statistical outliers.

Constituent: Beryllium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

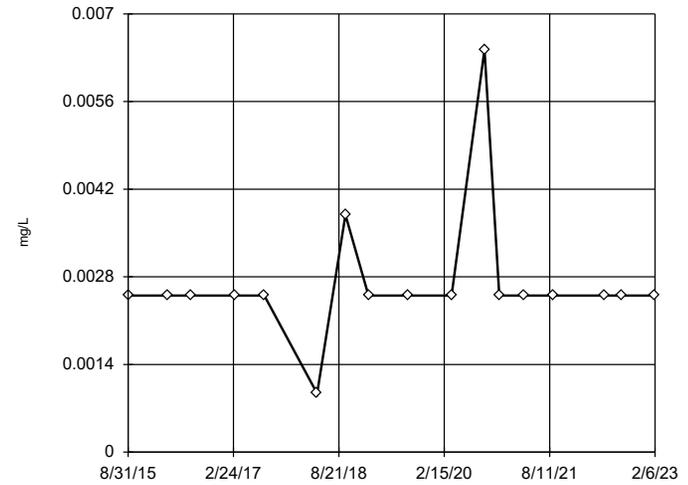


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were cube root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.01058, low cutoff = -0.001005, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Ohio EPA 0715 Outlier Algorithm

MW-28

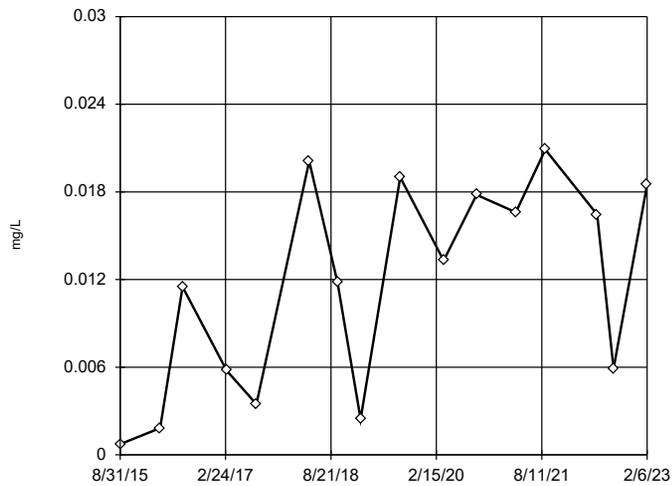


n = 17  
 No statistical outliers.

Constituent: Chromium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

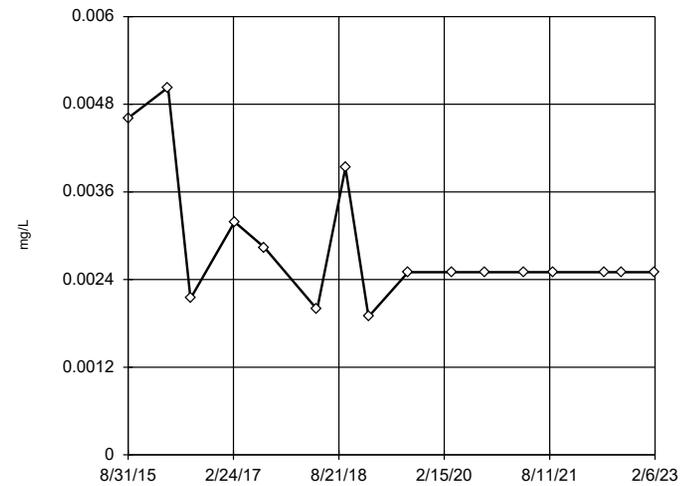


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 High cutoff = 0.05873, low cutoff = -0.03596, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

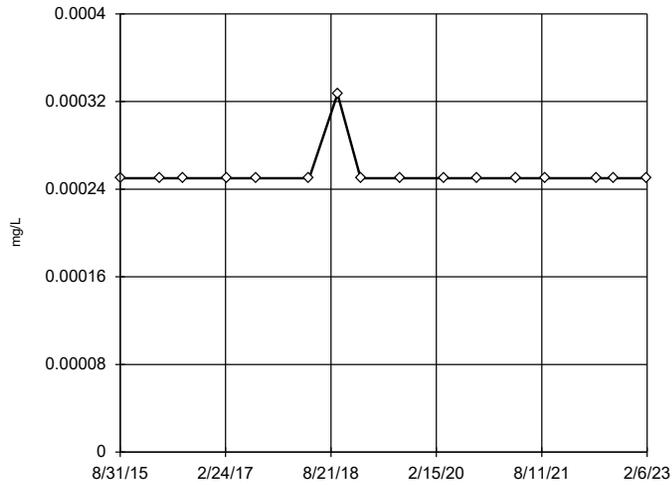


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.005253, low cutoff = 0.001433, based on IQR multiplier of 3.

Constituent: Copper Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

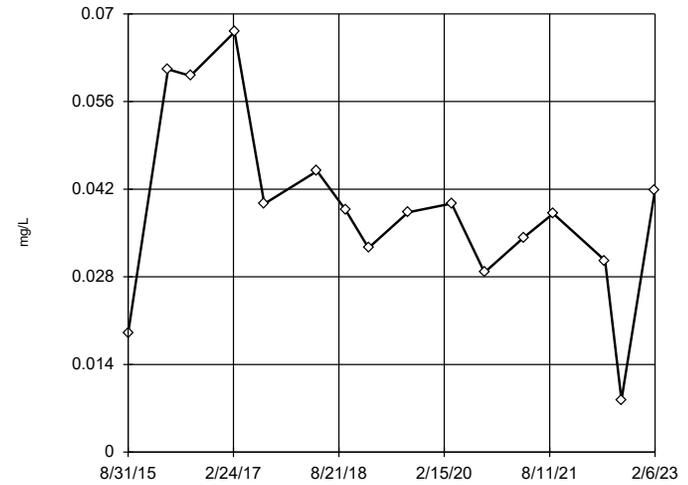


n = 16  
No statistical outliers.

Constituent: Lead Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

MW-28

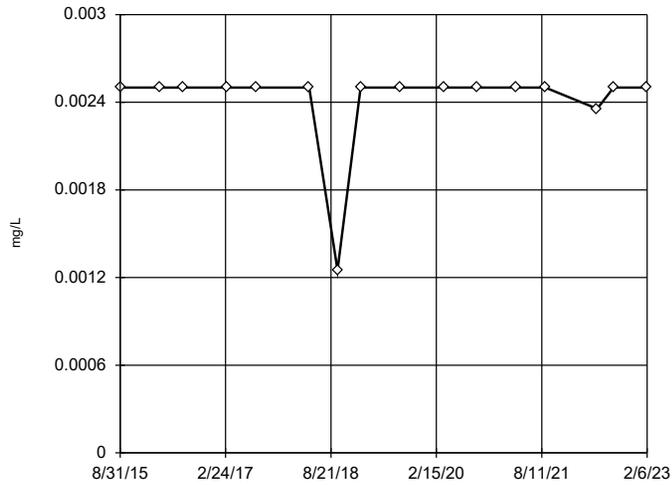


n = 16  
No statistical outliers.  
Testing for 1 low outlier.  
Mean = 0.03895.  
Std. Dev. = 0.01495.  
0.00833; c = 0.3935  
tab1 = 0.507.  
Alpha = 0.05.  
  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9155  
Critical = 0.901  
The distribution was found to be normally distributed.

Constituent: Nickel Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

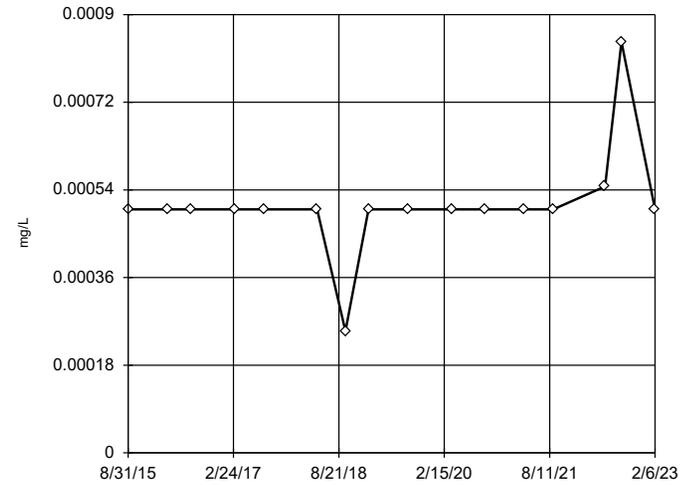


n = 16  
No statistical outliers.

Constituent: Selenium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

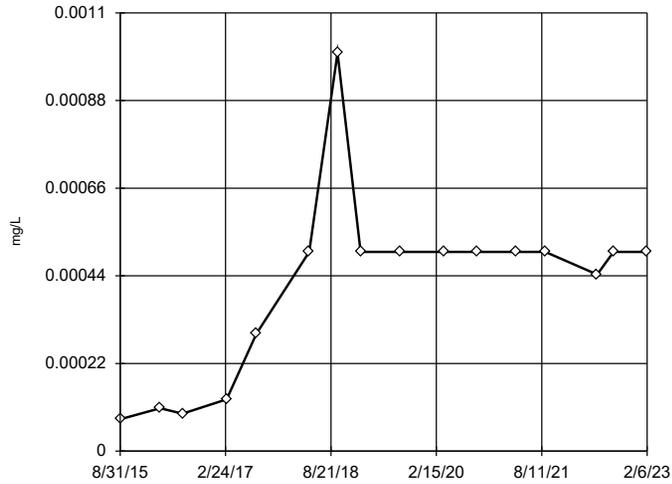


n = 16  
No statistical outliers.

Constituent: Silver Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

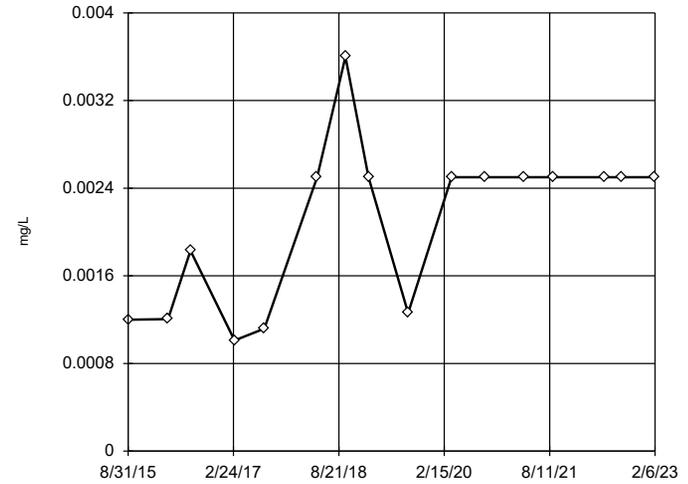


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were square root transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.002171, low cutoff = -0.00009913, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

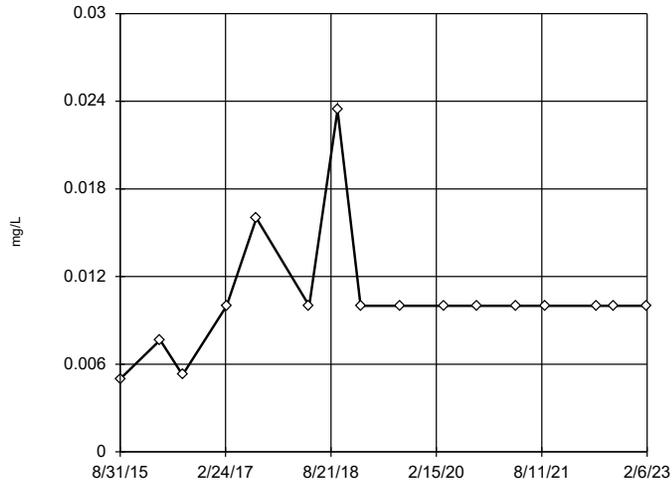


n = 16  
 No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 High cutoff = 0.006302, low cutoff = -0.00257, based on IQR multiplier of 3.

Constituent: Vanadium Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Ohio EPA 0715 Outlier Algorithm

MW-28



n = 16  
 No statistical outliers.  
 Normality test used: Shapiro Wilk@alpha = 0.05  
 Calculated = 0.8148  
 Critical = 0.887  
 The distribution was found to be normally distributed.

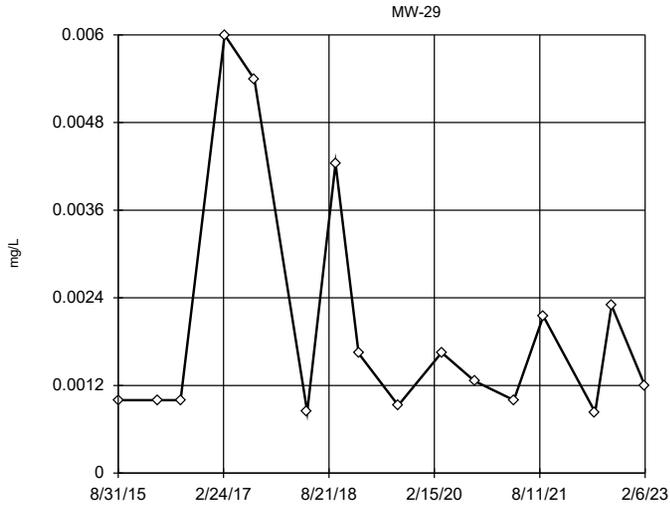
Constituent: Zinc Analysis Run 1/16/2025 11:20 AM View: 2024 AWQR Outliers MW-28  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/16/2025, 12:00 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Normality Test</u>
Arsenic (mg/L)	MW-29	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002026	ShapiroWilk
Barium (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	16	0.01602	ShapiroWilk
Cadmium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	16	0.0001339	n/a
Chromium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	16	0.002557	n/a
Cobalt (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	16	0.002521	ShapiroWilk
Copper (mg/L)	MW-29	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002552	ShapiroWilk
Lead (mg/L)	MW-29	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.0003605	ShapiroWilk
<b>Nickel (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.00439</b>	<b>3/2/2017</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>16</b>	<b>0.01003</b>	<b>ShapiroWilk</b>
Selenium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	16	0.002336	n/a
Vanadium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	16	0.002582	n/a
<b>Zinc (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0297,0.0232</b>	<b>3/24/2016,3/2/2017</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>16</b>	<b>0.01259</b>	<b>ShapiroWilk</b>

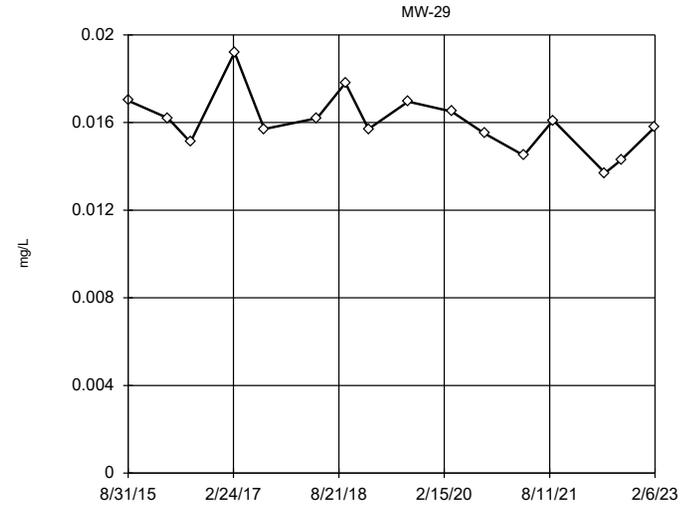
Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



n = 16  
 No outliers found.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.02435, low cutoff = 0.00009124, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

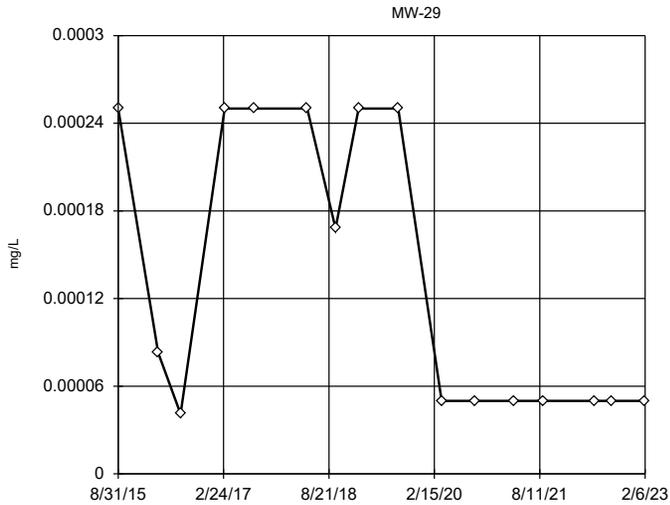
EPA Screening (suspected outliers for Dixon's Test)



n = 16  
 Dixon's will not be run.  
 No suspect values identified or unable to establish suspect values.  
 Ohio method in use.  
 Mean 0.01602, std. dev. 0.001352, critical Tn 2.443  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9676  
 Critical = 0.906  
 The distribution was found to be normally distributed.

Constituent: Barium Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

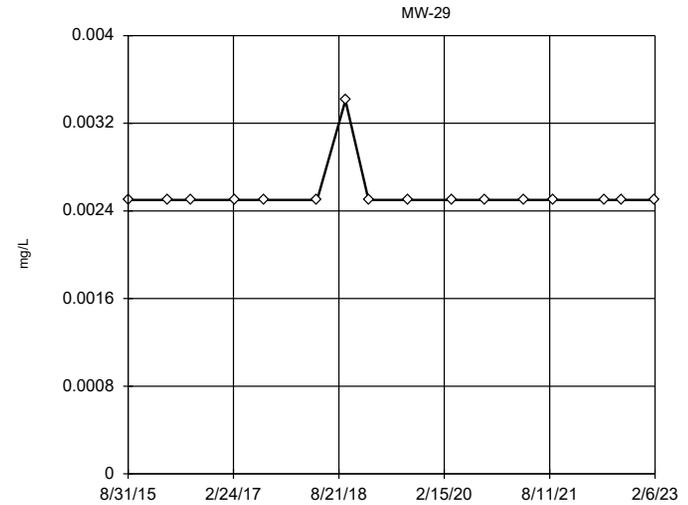
Ohio EPA 0715 Outlier Algorithm



n = 16  
 No statistical outliers.

Constituent: Cadmium Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

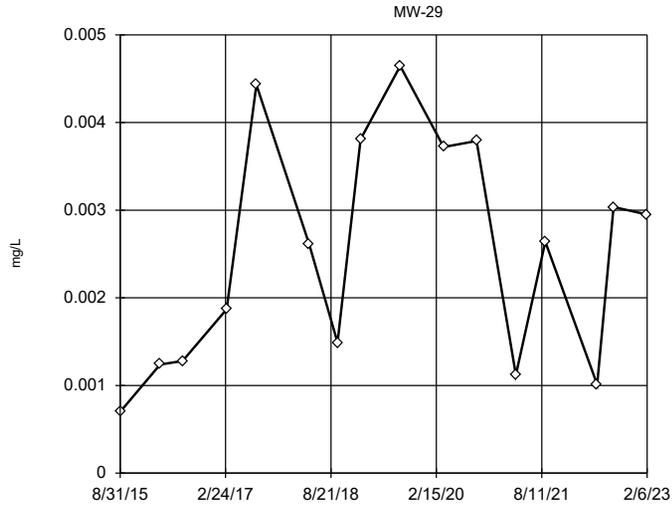
Ohio EPA 0715 Outlier Algorithm



n = 16  
 No statistical outliers.

Constituent: Chromium Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

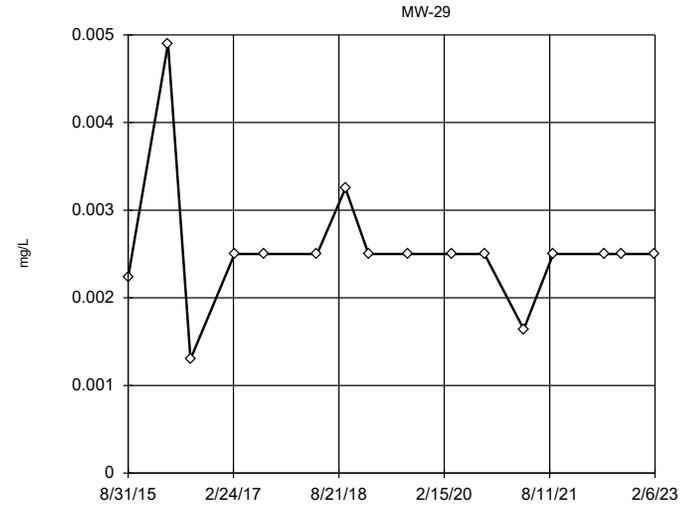
EPA Screening (suspected outliers for Dixon's Test)



n = 16  
 Dixon's will not be run.  
 No suspect values identified or unable to establish suspect values.  
 Ohio method in use.  
 Mean 0.002521, std. dev. 0.001306, critical Tn 2.443  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.926  
 Critical = 0.906  
 The distribution was found to be normally distributed.

Constituent: Cobalt Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

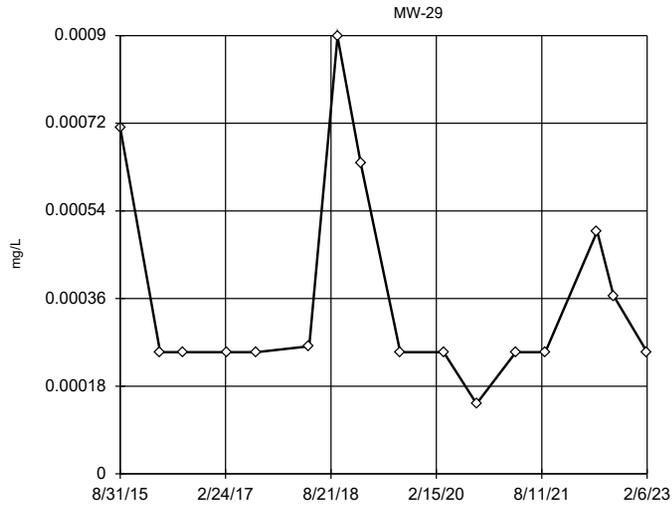
Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



n = 16  
 No outliers found.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Copper Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

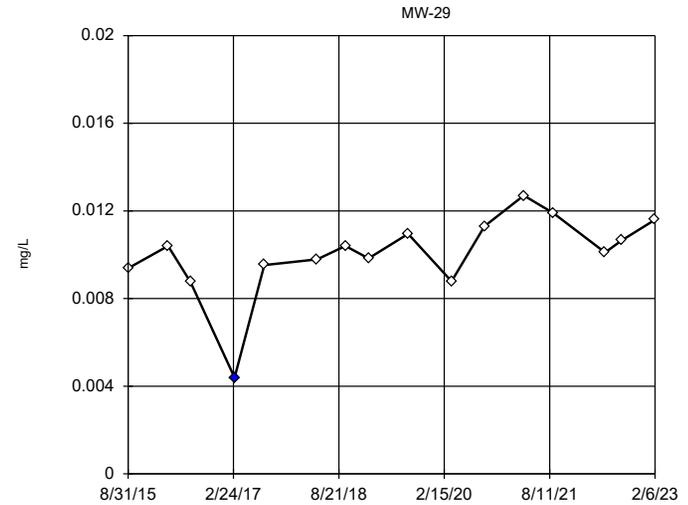
Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



n = 16  
 No outliers found.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.002126, low cutoff = 0.0000502, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm



n = 16  
 Statistical outlier is drawn as solid.  
 Testing for 1 low outlier.  
 Mean = 0.01003  
 Std. Dev. = 0.001861  
 0.00439 (L); c = 0.6103  
 tab1 = 0.507  
 Alpha = 0.05.  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9722  
 Critical = 0.901  
 The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Nickel Analysis Run 1/16/2025 11:58 AM View: 2024 AWQR Outliers MW-29  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master



## **Intrawell Prediction Limit Summary Tables and Graphs**

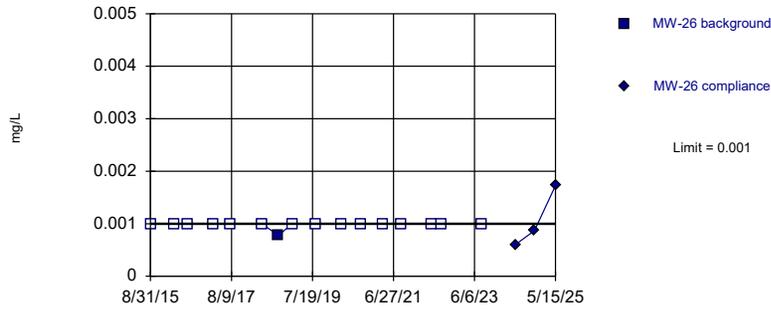
# Prediction Limit

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 7/18/2025, 9:33 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-26	0.001	n/a	5/15/2025	0.001725J	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Barium (mg/L)	MW-26	0.103	n/a	5/15/2025	0.0913	No	17	n/a	n/a	n/a	0	n/a	n/a	0.0009102	NP Intra (normality) ...
Cadmium (mg/L)	MW-26	0.000457	n/a	5/15/2025	0.0001ND	No	16	n/a	n/a	n/a	75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Chromium (mg/L)	MW-26	0.00431	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-26	0.01091	n/a	5/15/2025	0.00369	No	16	n/a	0.006735	0.002465	0	None	No	0.0007314	Param Intra 1 of 3
Copper (mg/L)	MW-26	0.00565	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	56.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Lead (mg/L)	MW-26	0.000952	n/a	5/15/2025	0.00025ND	No	16	n/a	n/a	n/a	68.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Nickel (mg/L)	MW-26	0.02424	n/a	5/15/2025	0.01108	No	16	n/a	0.0003434	0.0001444	0	None	x^2	0.0007314	Param Intra 1 of 3
Silver (mg/L)	MW-26	0.000533	n/a	5/15/2025	0.0005ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Thallium (mg/L)	MW-26	0.00177	n/a	5/15/2025	0.0005ND	No	17	n/a	n/a	n/a	88.24	n/a	n/a	0.0009102	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-26	0.002865	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	68.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Zinc (mg/L)	MW-26	0.0146	n/a	5/15/2025	0.01ND	No	16	n/a	n/a	n/a	81.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3

Within Limit

Prediction Limit  
Intrawell Non-parametric

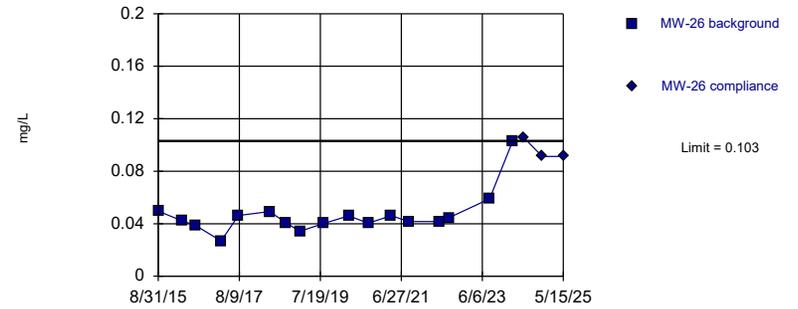


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Arsenic Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

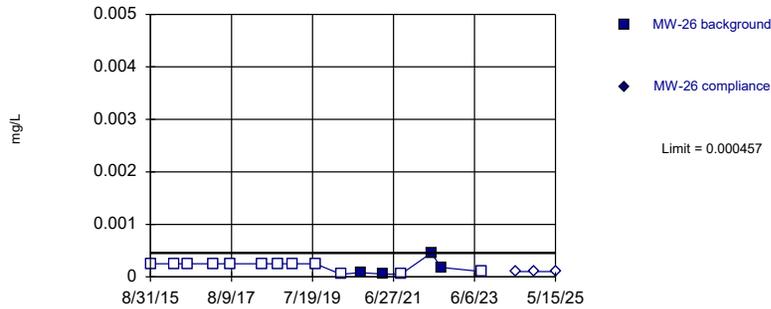


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 17 background values. Well-constituent pair annual alpha = 0.00182. Individual comparison alpha = 0.0009102 (1 of 3).

Constituent: Barium Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

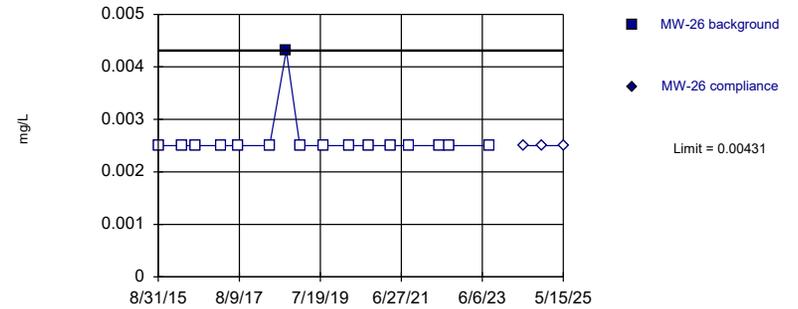


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Cadmium Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

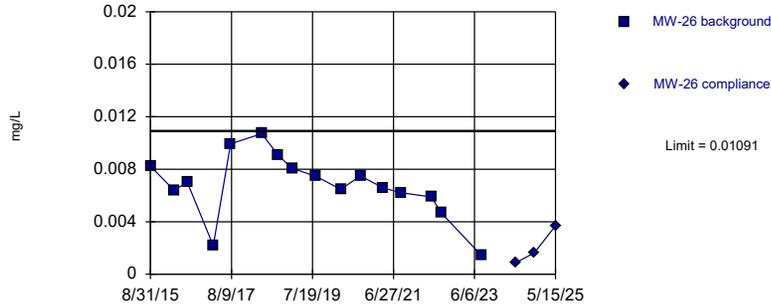


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Chromium Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Parametric

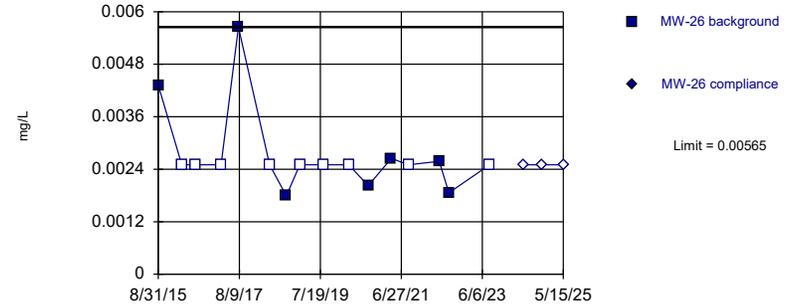


Background Data Summary: Mean=0.006735, Std. Dev.=0.002465, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.939, critical = 0.844. Kappa = 1.692 (c=12, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007314.

Constituent: Cobalt Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

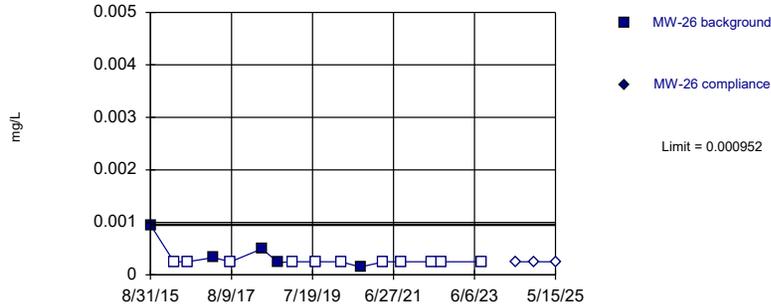


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 56.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Copper Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

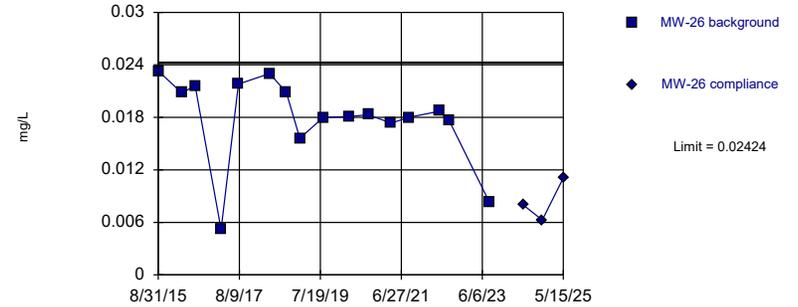


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Lead Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Parametric

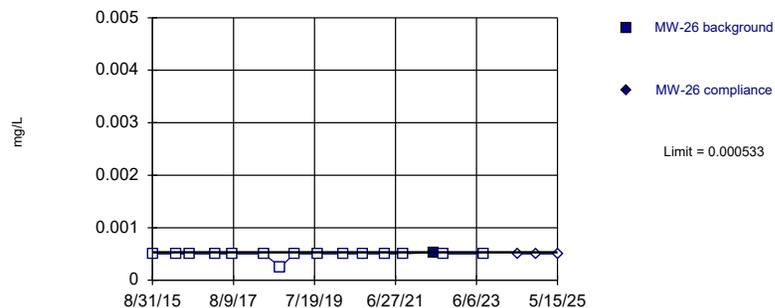


Background Data Summary (based on square transformation): Mean=0.0003434, Std. Dev.=0.0001444, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9087, critical = 0.844. Kappa = 1.692 (c=12, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007314.

Constituent: Nickel Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

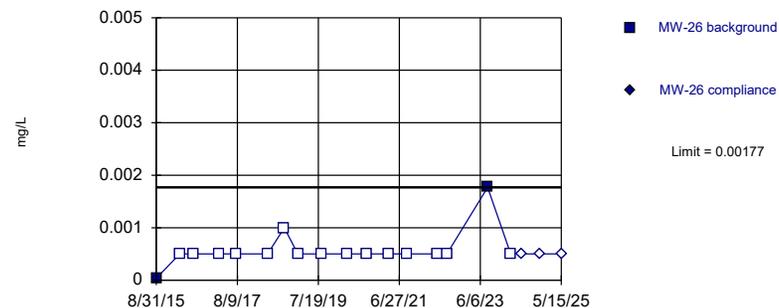


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Silver Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

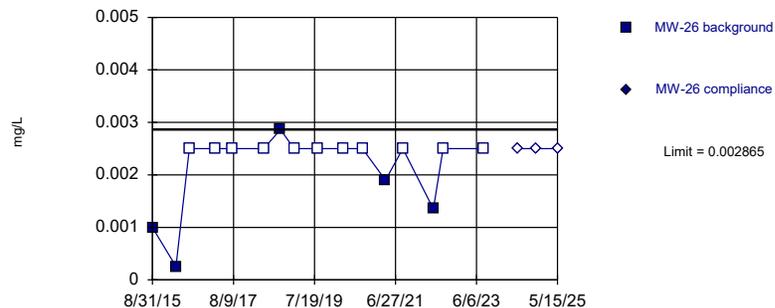


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 17 background values. 88.24% NDs. Well-constituent pair annual alpha = 0.00182. Individual comparison alpha = 0.0009102 (1 of 3).

Constituent: Thallium Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

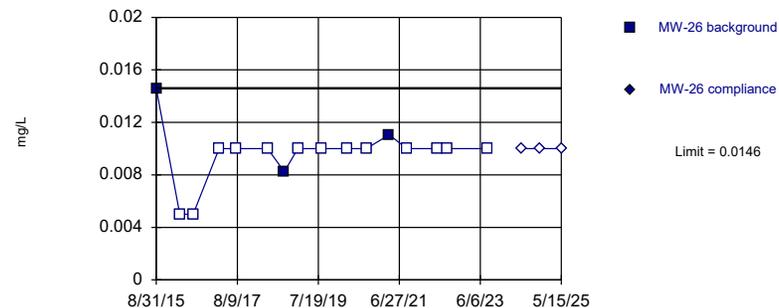


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Vanadium Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 81.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Zinc Analysis Run 7/18/2025 9:29 AM View: 2025\_SSN MW-26 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# Prediction Limit

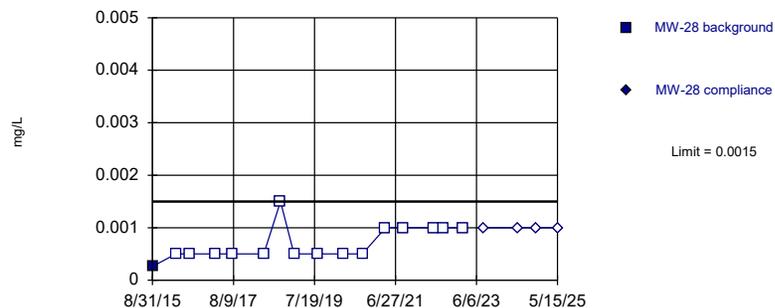
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 7/18/2025, 9:49 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	MW-28	0.0015	n/a	5/15/2025	0.001ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Arsenic (mg/L)	MW-28	0.00136	n/a	5/15/2025	0.000819J	No	16	n/a	n/a	n/a	68.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Barium (mg/L)	MW-28	0.02495	n/a	5/15/2025	0.0175	No	17	n/a	0.01954	0.003131	0	None	No	0.0005852	Param Intra 1 of 3
Beryllium (mg/L)	MW-28	0.0005	n/a	5/15/2025	0.0005ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Cadmium (mg/L)	MW-28	0.001416	n/a	5/15/2025	0.0001ND	No	16	n/a	0.0182	0.0111	37.5	Kaplan-Meier	sqrt(x)	0.0005852	Param Intra 1 of 3
Chromium (mg/L)	MW-28	0.00643	n/a	5/15/2025	0.0025ND	No	17	n/a	n/a	n/a	82.35	n/a	n/a	0.0009102	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-28	0.02426	n/a	5/15/2025	0.0142	No	16	n/a	0.01163	0.007214	0	None	No	0.0005852	Param Intra 1 of 3
Copper (mg/L)	MW-28	0.00503	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	50	n/a	n/a	0.001026	NP Intra (normality) ...
Lead (mg/L)	MW-28	0.000327	n/a	5/15/2025	0.00025ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Nickel (mg/L)	MW-28	0.0651	n/a	5/15/2025	0.0235	No	16	n/a	0.03895	0.01495	0	None	No	0.0005852	Param Intra 1 of 3
Selenium (mg/L)	MW-28	0.0025	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Silver (mg/L)	MW-28	0.000844	n/a	5/15/2025	0.0005ND	No	16	n/a	n/a	n/a	87.5	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Thallium (mg/L)	MW-28	0.001	n/a	5/15/2025	0.0005ND	No	16	n/a	n/a	n/a	62.5	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-28	0.0036	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	56.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Zinc (mg/L)	MW-28	0.0234	n/a	5/15/2025	0.01ND	No	16	n/a	n/a	n/a	75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3

Within Limit

### Prediction Limit

Intrawell Non-parametric



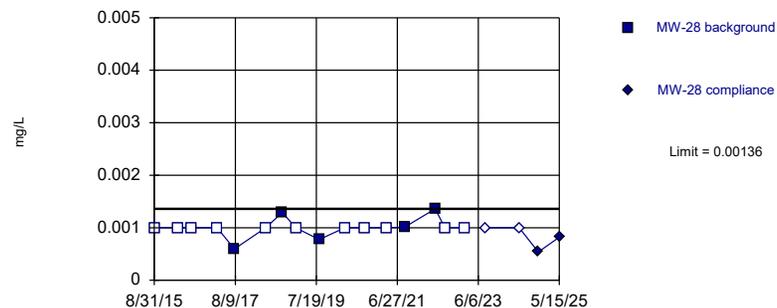
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Antimony Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



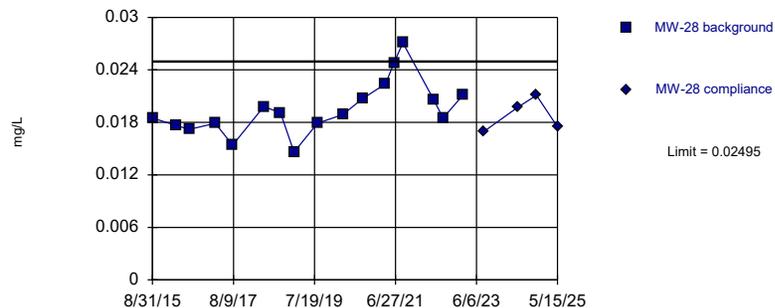
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Arsenic Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



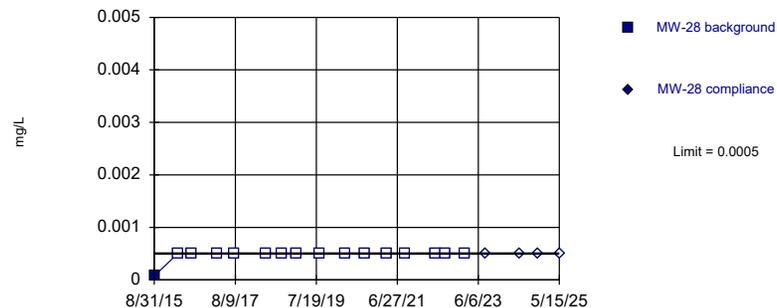
Background Data Summary: Mean=0.01954, Std. Dev.=0.003131, n=17. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9399, critical = 0.851. Kappa = 1.728 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Barium Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



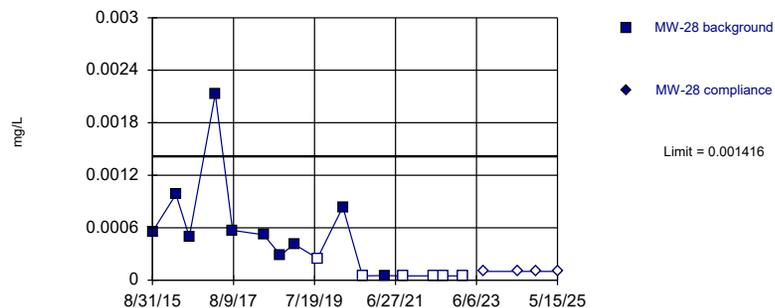
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Beryllium Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



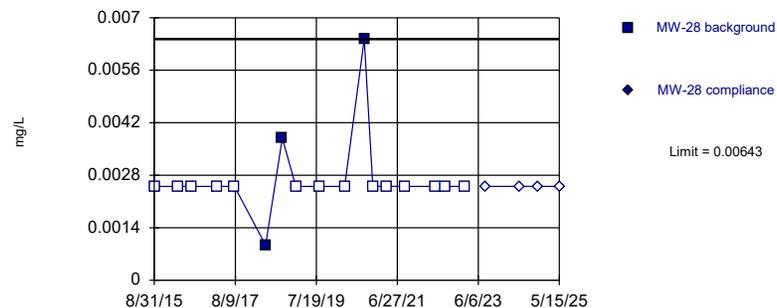
Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.0182, Std. Dev.=0.0111, n=16, 37.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8727, critical = 0.844. Kappa = 1.75 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Cadmium Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



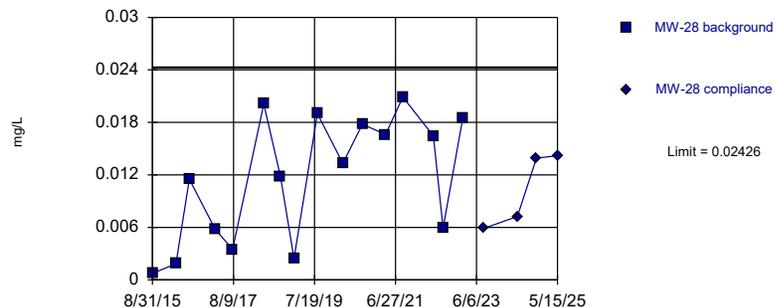
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 17 background values. 82.35% NDs. Well-constituent pair annual alpha = 0.00182. Individual comparison alpha = 0.0009102 (1 of 3).

Constituent: Chromium Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



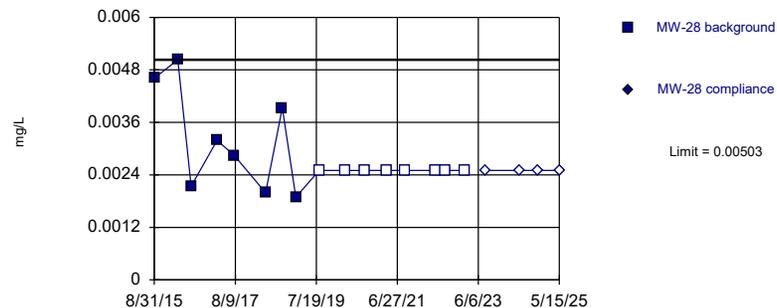
Background Data Summary: Mean=0.01163, Std. Dev.=0.007214, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8949, critical = 0.844. Kappa = 1.75 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Cobalt Analysis Run 7/18/2025 9:47 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric

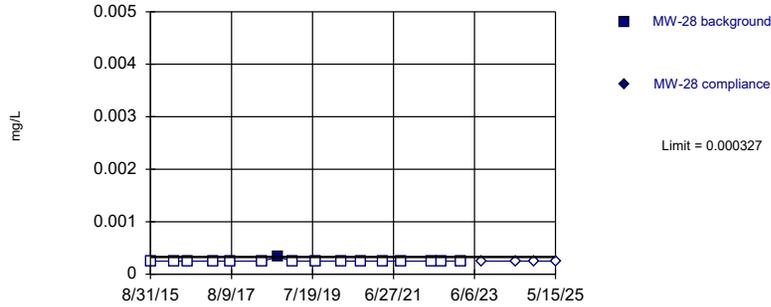


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 16 background values. 50% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Copper Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

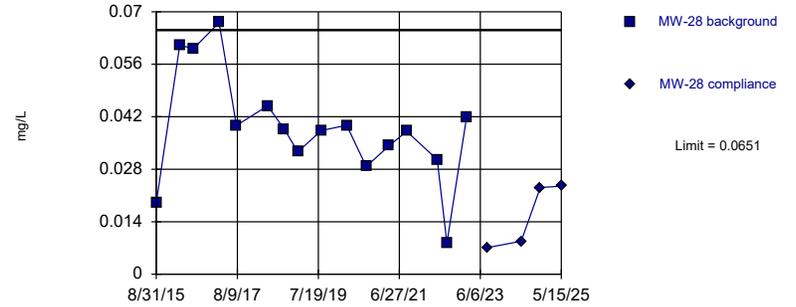


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Lead Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Parametric

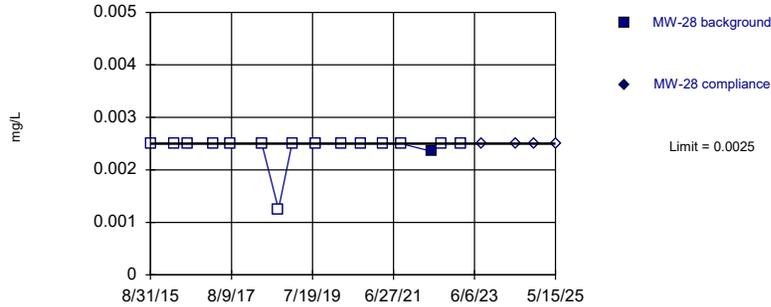


Background Data Summary: Mean=0.03895, Std. Dev.=0.01495, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.844. Kappa = 1.75 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Nickel Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

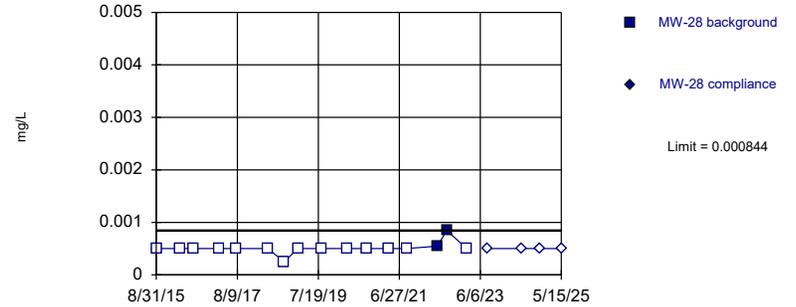


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Selenium Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric



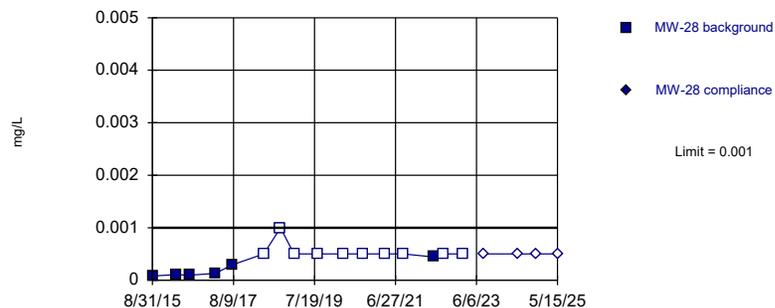
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Silver Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



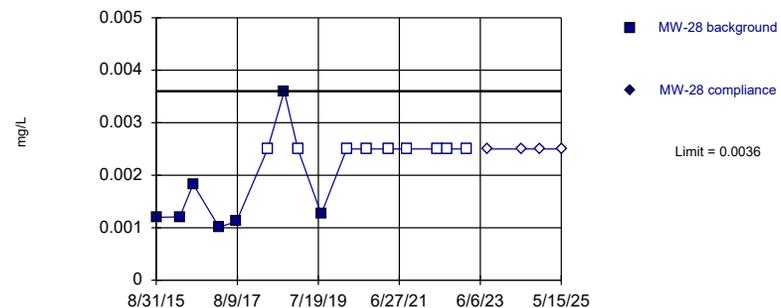
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 62.5% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Thallium Analysis Run 7/18/2025 9:48 AM View: 2025\_SSN MW-28 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



# Prediction Limit

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 7/18/2025, 10:02 AM

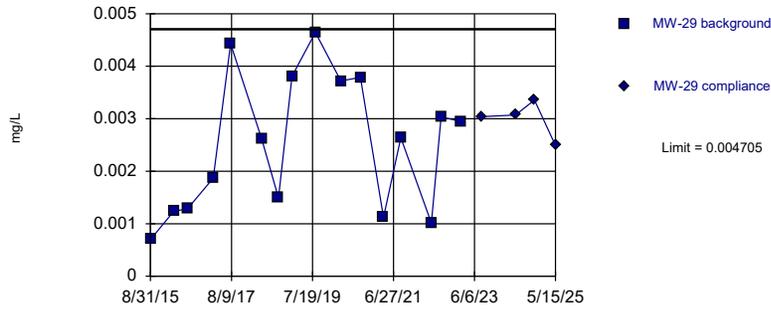
<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-29	0.006	n/a	5/15/2025	0.001ND	No	16	n/a	n/a	n/a	25	n/a	n/a	0.001026	NP Intra (normality) ...
Barium (mg/L)	MW-29	0.01828	n/a	5/15/2025	0.0117	No	16	n/a	0.01602	0.001352	0	None	No	0.0007979	Param Intra 1 of 3
Cadmium (mg/L)	MW-29	0.00025	n/a	5/15/2025	0.0001ND	No	16	n/a	n/a	n/a	81.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Chromium (mg/L)	MW-29	0.00341	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-29	0.004705	n/a	5/15/2025	0.00249	No	16	n/a	0.002521	0.001306	0	None	No	0.0007979	Param Intra 1 of 3
Copper (mg/L)	MW-29	0.0049	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	68.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Lead (mg/L)	MW-29	0.000898	n/a	5/15/2025	0.00025ND	No	16	n/a	n/a	n/a	56.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Nickel (mg/L)	MW-29	0.01314	n/a	5/15/2025	0.0109	No	16	n/a	0.01003	0.001861	0	None	No	0.0007979	Param Intra 1 of 3
Selenium (mg/L)	MW-29	0.0025	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	93.75	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-29	0.00632	n/a	5/15/2025	0.0025ND	No	16	n/a	n/a	n/a	81.25	n/a	n/a	0.001026	NP Intra (NDs) 1 of 3
Zinc (mg/L)	MW-29	0.0297	n/a	5/15/2025	0.01ND	No	16	n/a	n/a	n/a	50	n/a	n/a	0.001026	NP Intra (normality) ...



Within Limit

Prediction Limit

Intrawell Parametric



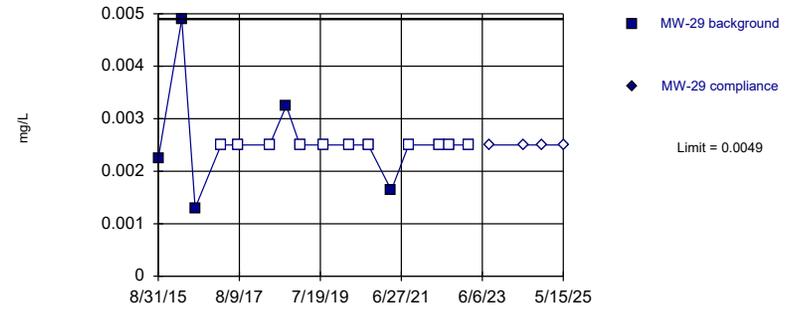
Background Data Summary: Mean=0.002521, Std. Dev.=0.001306, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.926, critical = 0.844. Kappa = 1.673 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Cobalt Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit

Intrawell Non-parametric



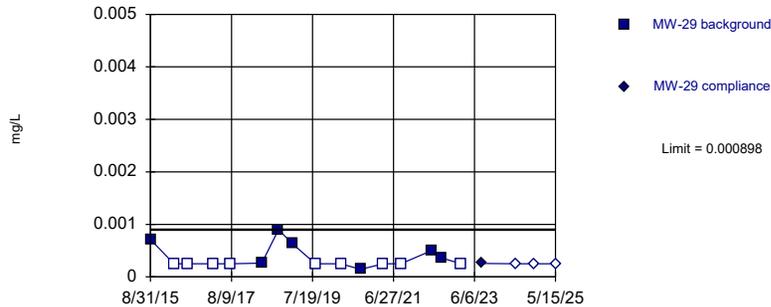
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Copper Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit

Intrawell Non-parametric



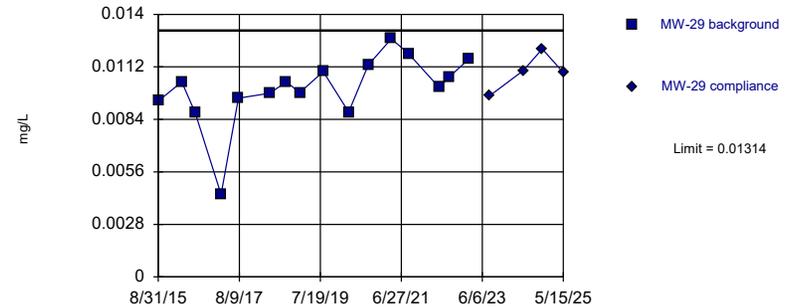
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 56.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Lead Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit

Intrawell Parametric



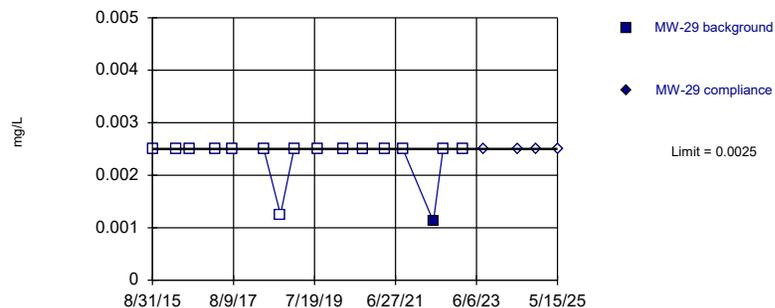
Background Data Summary: Mean=0.01003, Std. Dev.=0.001861, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8506, critical = 0.844. Kappa = 1.673 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Nickel Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



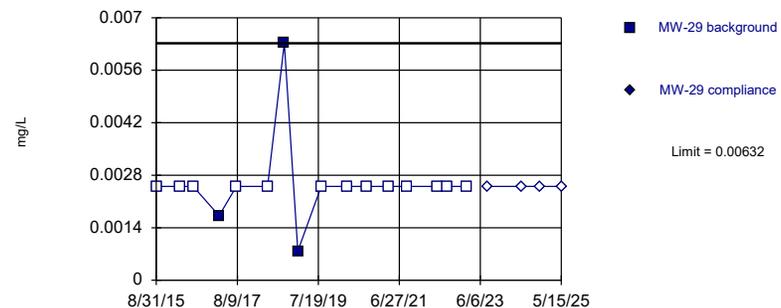
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Selenium Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



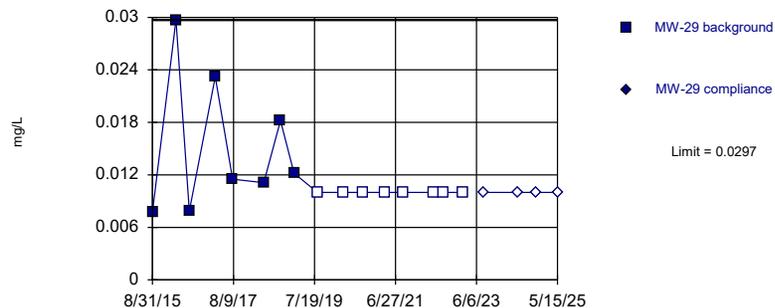
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 81.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Vanadium Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 16 background values. 50% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Zinc Analysis Run 7/18/2025 10:01 AM View: 2025\_SSN MW-29 IntraPL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

**MW-28 Background Update**

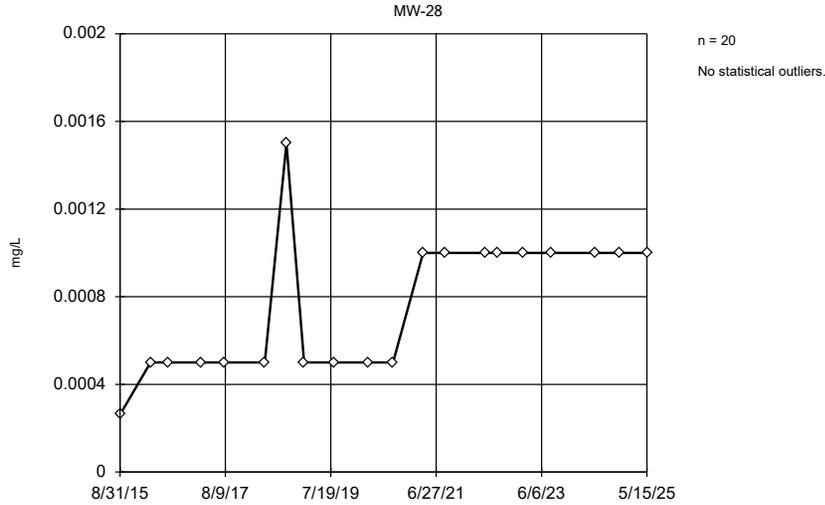
**Outliers, Trends, and Welch's T-Test/Mann-Whitney Summary Table and Graphs**

# BG Outlier Analysis

Great River SLF    Client: SCS Engineers    Data: Sanitas GRRWA Ph2-master    Printed 7/18/2025, 11:33 AM

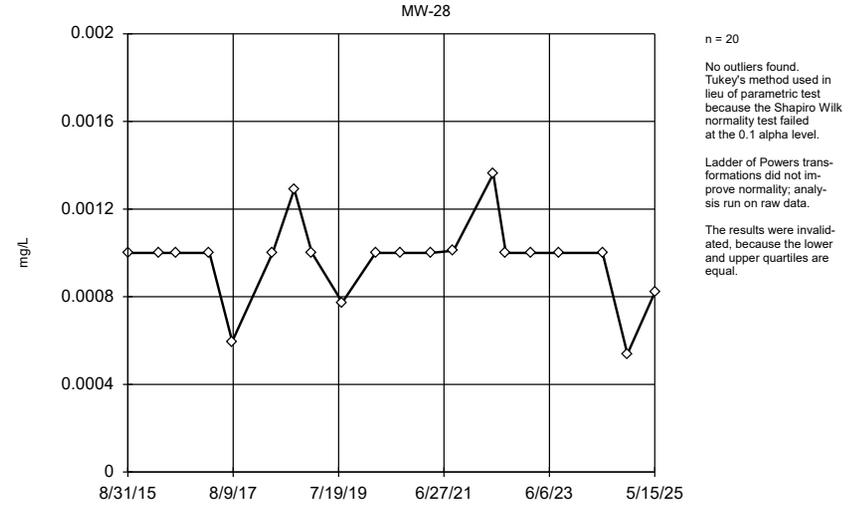
<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Antimony (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0007631	0.0003181	n/a	n/a
Arsenic (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.0009694	0.0001856	unknown	ShapiroWilk
Barium (mg/L)	MW-28	No	n/a	n/a	EPA/OH	0.05	21	0.0194	0.002913	normal	ShapiroWilk
Beryllium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0004788	0.00009503	n/a	n/a
Cadmium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.0003869	0.0004986	unknown	ShapiroWilk
Chromium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	21	0.002674	0.0009725	n/a	n/a
Cobalt (mg/L)	MW-28	No	n/a	n/a	Dixon/OH	0.05	20	0.01137	0.006662	normal	ShapiroWilk
<b>Copper (mg/L)</b>	<b>MW-28</b>	<b>Yes</b>	<b>0.00461,0.00503,0.00199,0.00393,0.00189</b>	<b>8/31/2015,3/24/2016,5/1/2018,9/24/201...</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.002781</b>	<b>0.0008167</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Lead (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0002539	0.00001722	n/a	n/a
Nickel (mg/L)	MW-28	No	n/a	n/a	EPA/OH	0.05	20	0.03428	0.01675	normal	ShapiroWilk
Selenium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.00243	0.0002797	n/a	n/a
Silver (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0005071	0.00009789	n/a	n/a
<b>Thallium (mg/L)</b>	<b>MW-28</b>	<b>Yes</b>	<b>0.001</b>	<b>9/24/2018</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.0004325</b>	<b>0.0002098</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Vanadium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.002186	0.0006776	unknown	ShapiroWilk
Zinc (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.01037	0.00374	n/a	n/a

### Ohio EPA 0715 Outlier Algorithm



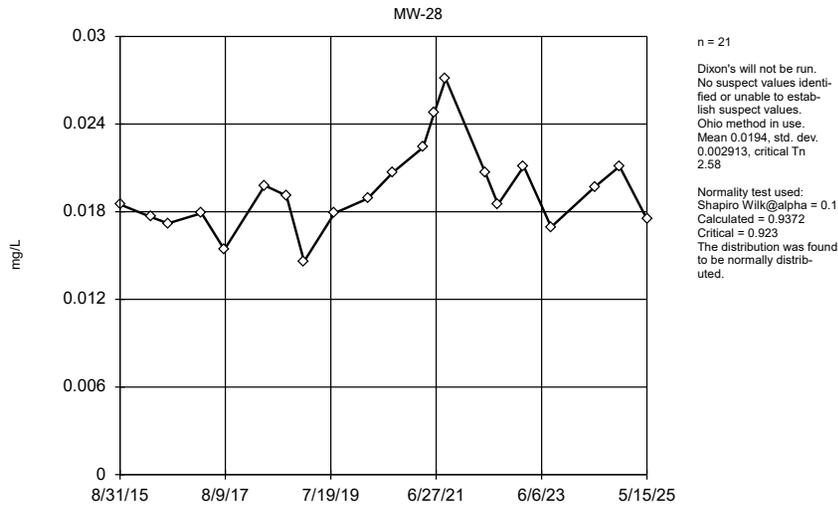
Constituent: Antimony Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

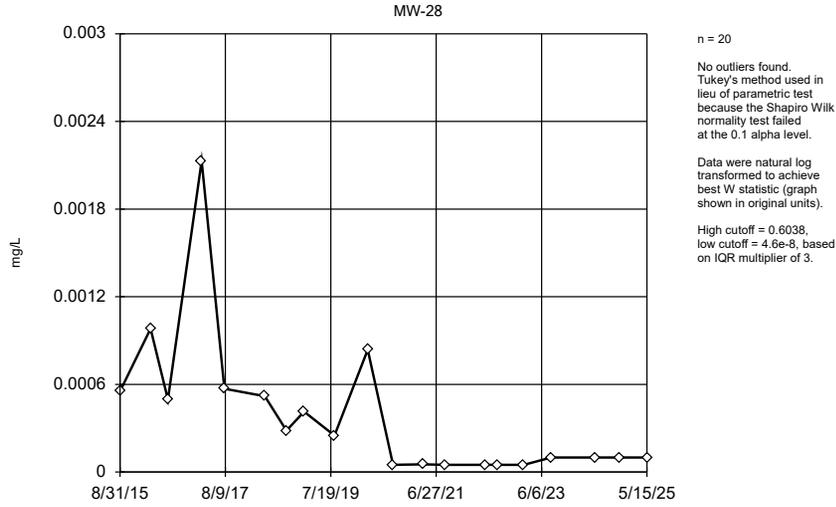


Constituent: Arsenic Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### EPA Screening (suspected outliers for Dixon's Test)

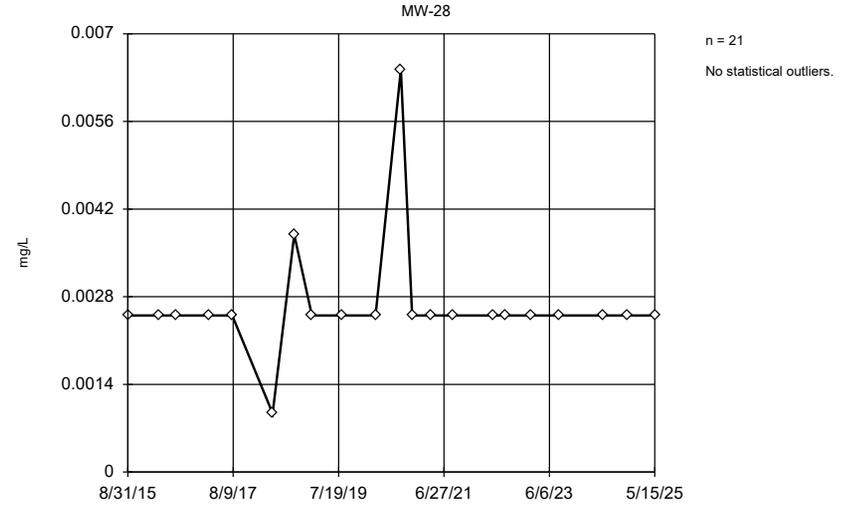


### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



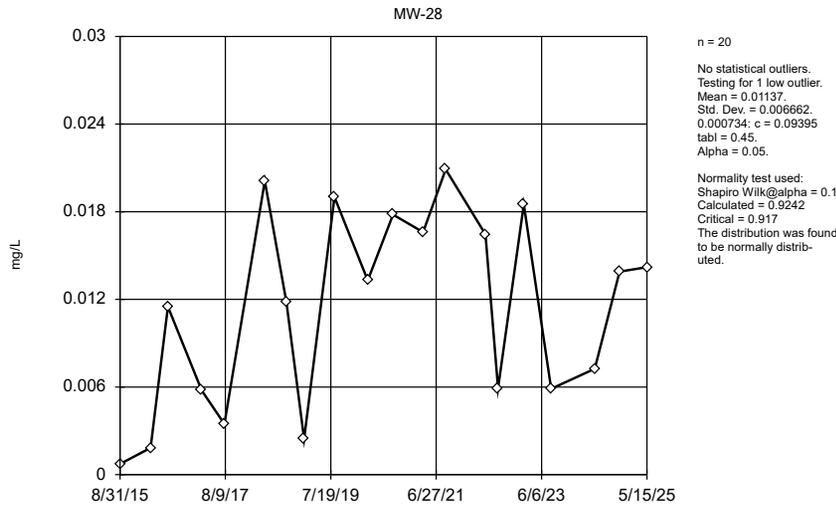
Constituent: Cadmium Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



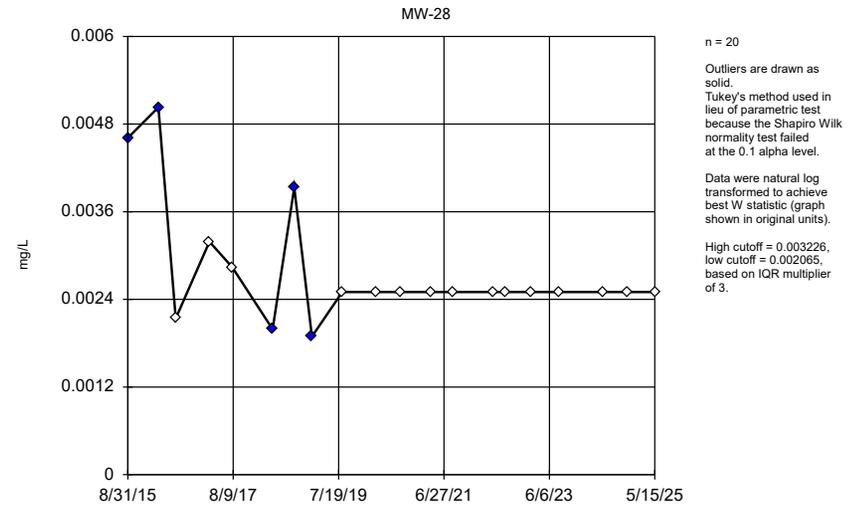
Constituent: Chromium Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm



Constituent: Cobalt Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

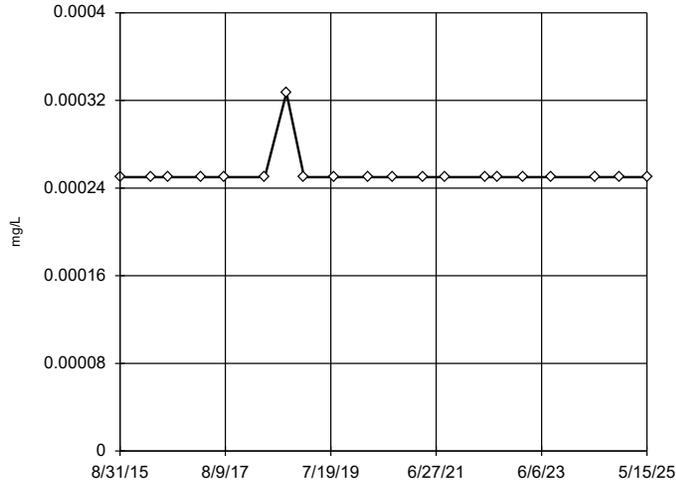
### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



Constituent: Copper Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

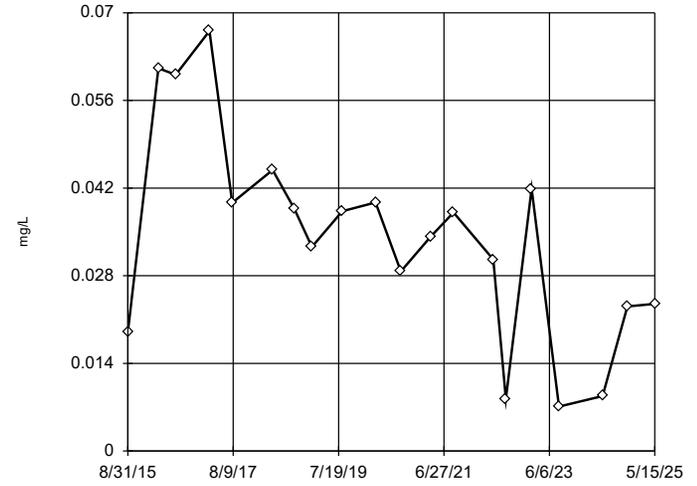


n = 20  
No statistical outliers.

Constituent: Lead Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### EPA Screening (suspected outliers for Dixon's Test)

MW-28

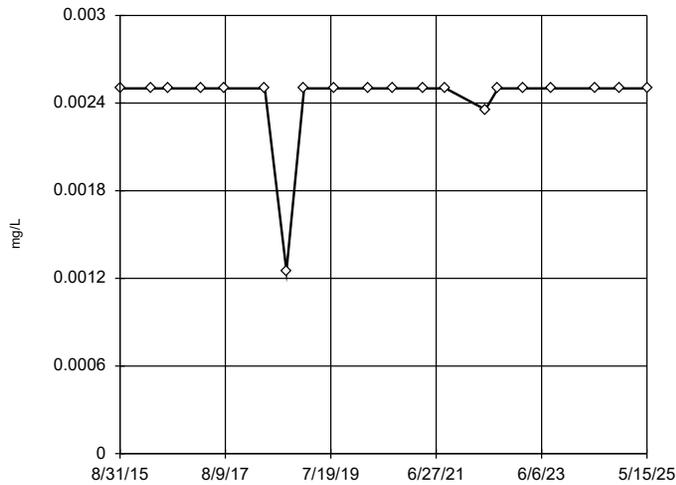


n = 20  
Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Ohio method in use.  
Mean 0.03428, std. dev. 0.01675, critical Tn 2.557  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9522  
Critical = 0.92  
The distribution was found to be normally distributed.

Constituent: Nickel Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

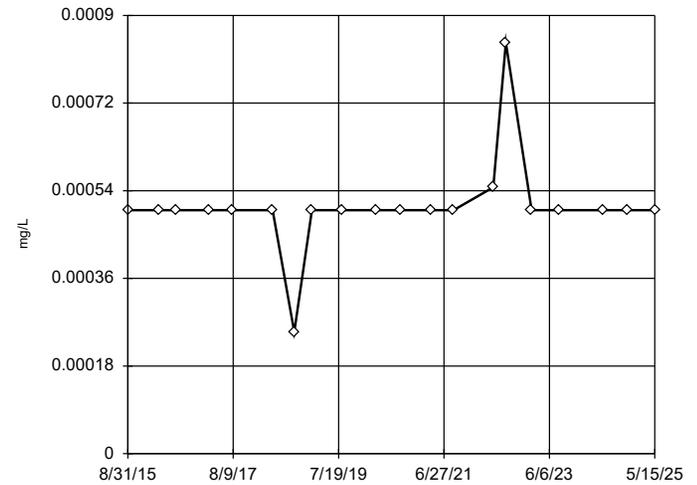


n = 20  
No statistical outliers.

Constituent: Selenium Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

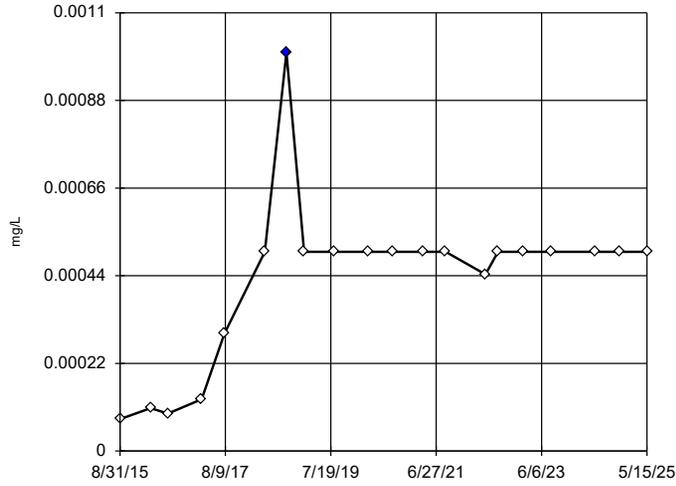


n = 20  
No statistical outliers.

Constituent: Silver Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28

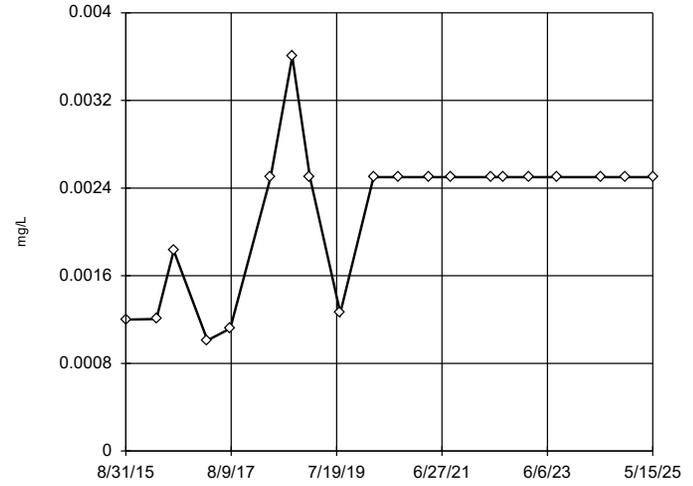


n = 20  
 Outlier is drawn as solid. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Ladder of Powers transformations did not improve normality; analysis run on raw data.  
 High cutoff = 0.000893, low cutoff = -0.000024, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 7/18/2025 11:24 AM View: 2025\_SSN MW-28\_BG\_Update  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-28



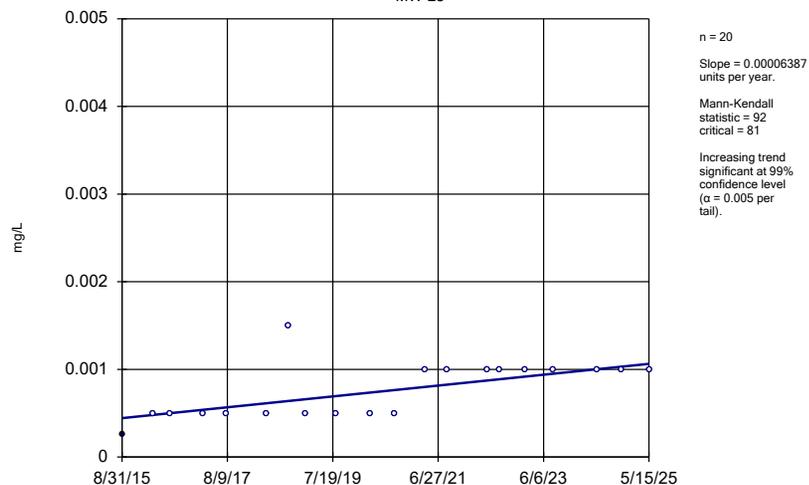
# Trend Test

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 7/18/2025, 11:49 AM

<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>Antimony (mg/L)</b>	<b>MW-28</b>	<b>0.00006387</b>	<b>92</b>	<b>81</b>	<b>Yes</b>	<b>20</b>	<b>95</b>	<b>0.01</b>	<b>NP</b>
Arsenic (mg/L)	MW-28	0	-12	-81	No	20	65	0.01	NP
Barium (mg/L)	MW-28	0.0003118	53	87	No	21	0	0.01	NP
Beryllium (mg/L)	MW-28	0	19	81	No	20	95	0.01	NP
<b>Cadmium (mg/L)</b>	<b>MW-28</b>	<b>-0.0000678</b>	<b>-94</b>	<b>-81</b>	<b>Yes</b>	<b>20</b>	<b>50</b>	<b>0.01</b>	<b>NP</b>
Chromium (mg/L)	MW-28	0	1	87	No	21	85.71	0.01	NP
Cobalt (mg/L)	MW-28	0.0007534	52	81	No	20	0	0.01	NP
Copper (mg/L)	MW-28	0	-38	-81	No	20	60	0.01	NP
Lead (mg/L)	MW-28	0	-7	-81	No	20	95	0.01	NP
<b>Nickel (mg/L)</b>	<b>MW-28</b>	<b>-0.003605</b>	<b>-92</b>	<b>-81</b>	<b>Yes</b>	<b>20</b>	<b>0</b>	<b>0.01</b>	<b>NP</b>
Selenium (mg/L)	MW-28	0	1	81	No	20	95	0.01	NP
Silver (mg/L)	MW-28	0	22	81	No	20	90	0.01	NP
Thallium (mg/L)	MW-28	0	70	81	No	20	70	0.01	NP
Vanadium (mg/L)	MW-28	0	68	81	No	20	65	0.01	NP
Zinc (mg/L)	MW-28	0	29	81	No	20	80	0.01	NP

### Sen's Slope Estimator

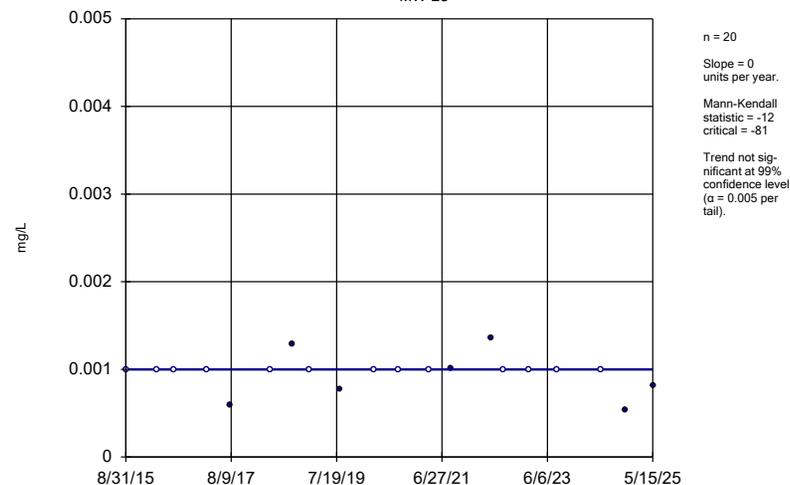
MW-28



Constituent: Antimony Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

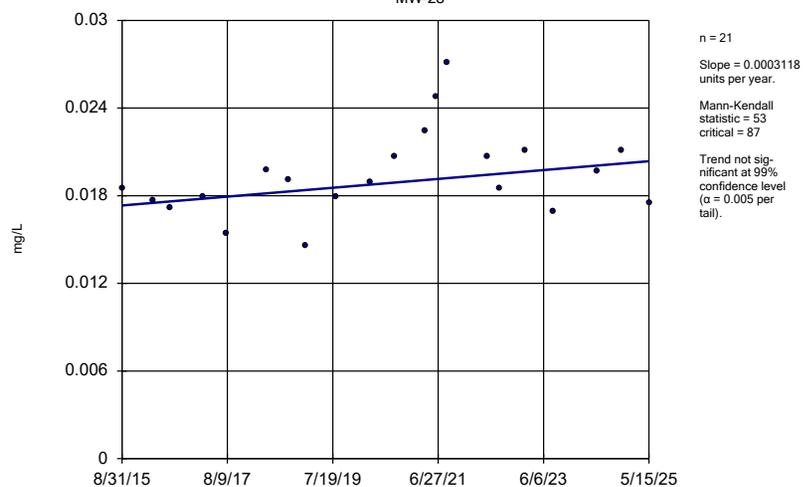
MW-28



Constituent: Arsenic Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

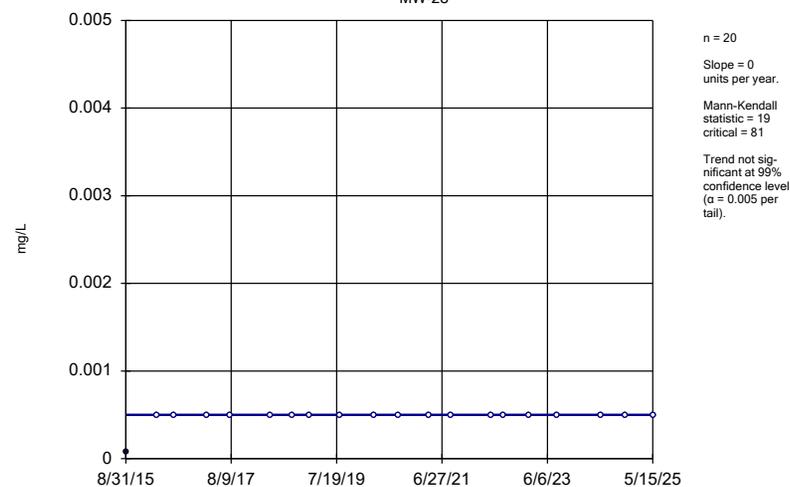
MW-28



Constituent: Barium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

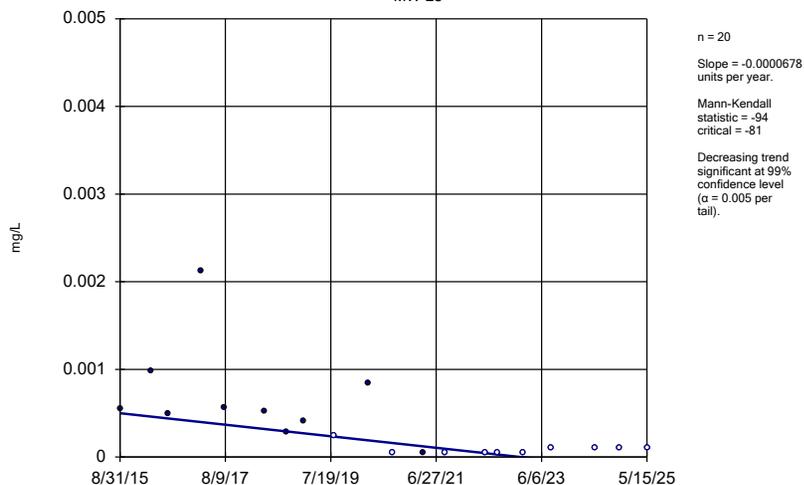
MW-28



Constituent: Beryllium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

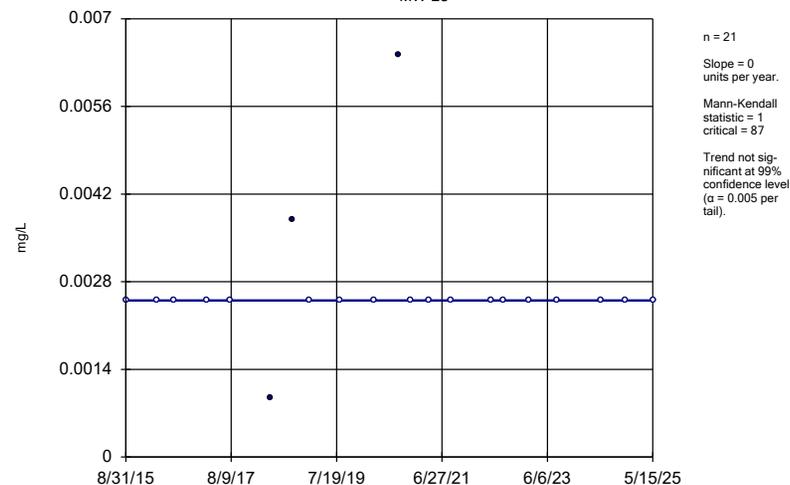
MW-28



Constituent: Cadmium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

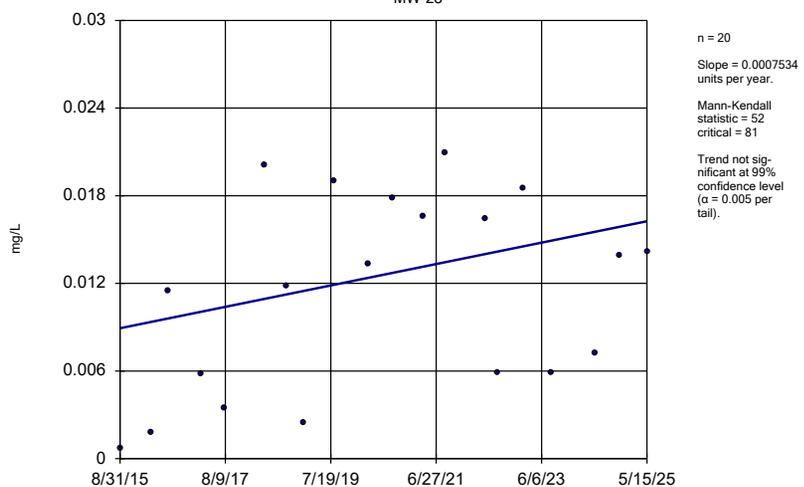
MW-28



Constituent: Chromium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

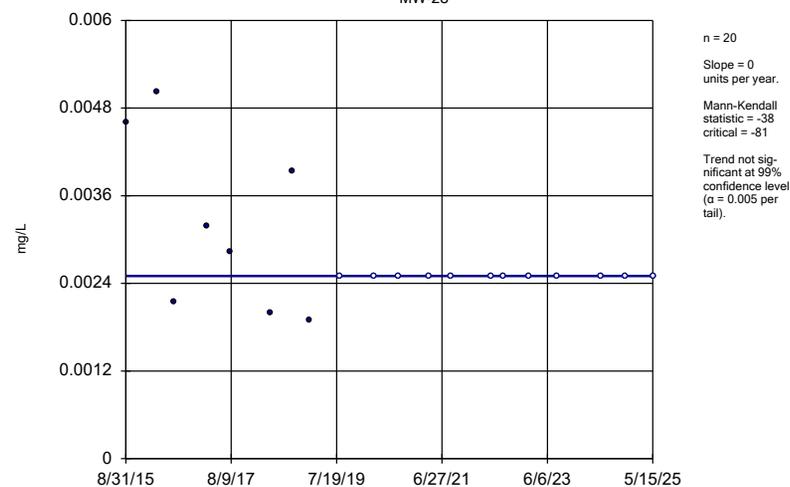
MW-28



Constituent: Cobalt Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

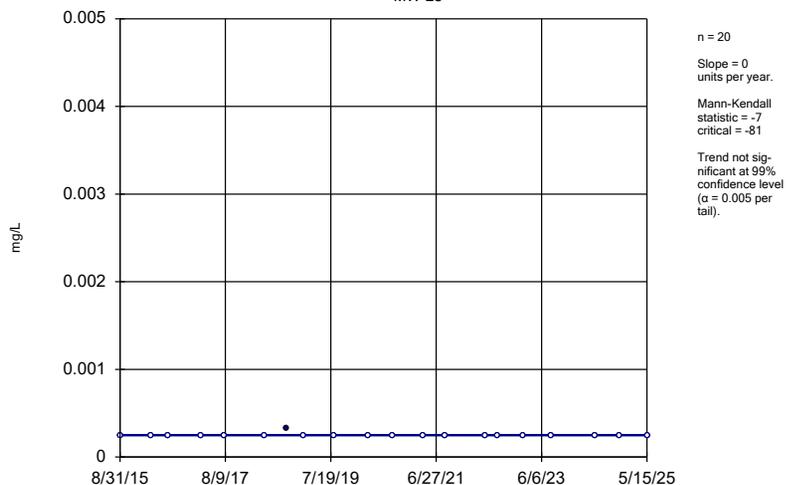
MW-28



Constituent: Copper Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

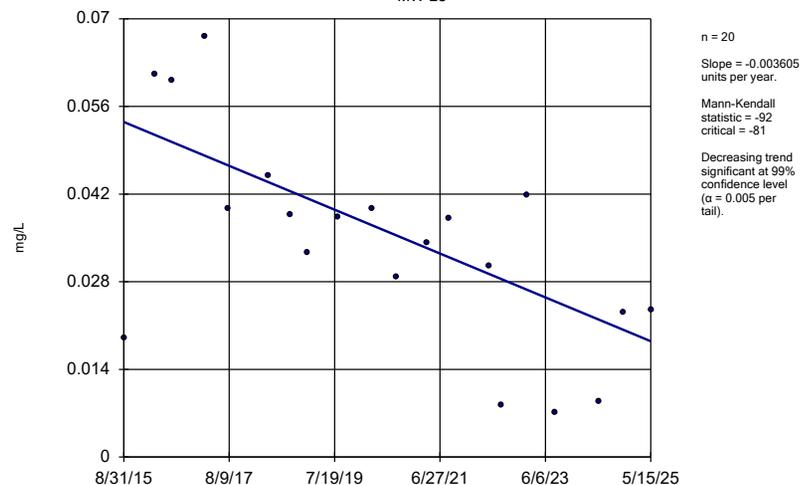
MW-28



Constituent: Lead Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

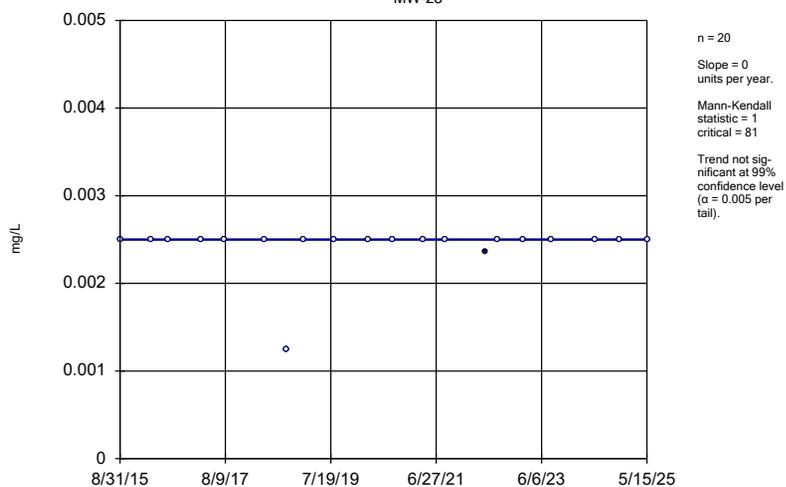
MW-28



Constituent: Nickel Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

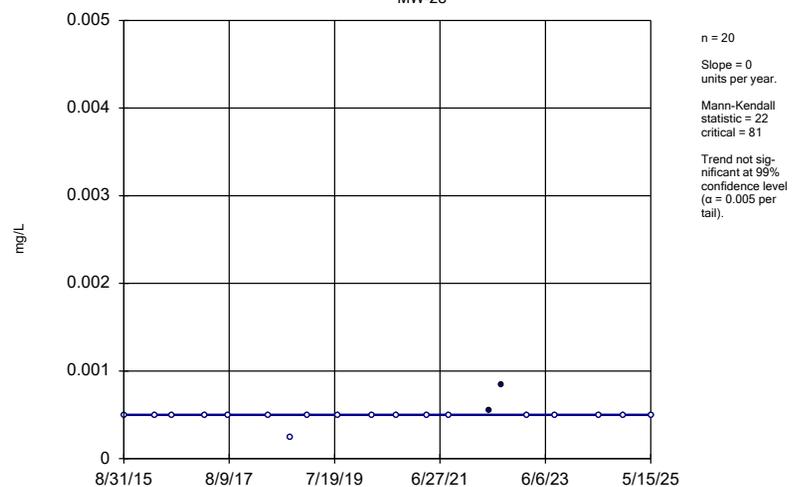
MW-28



Constituent: Selenium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

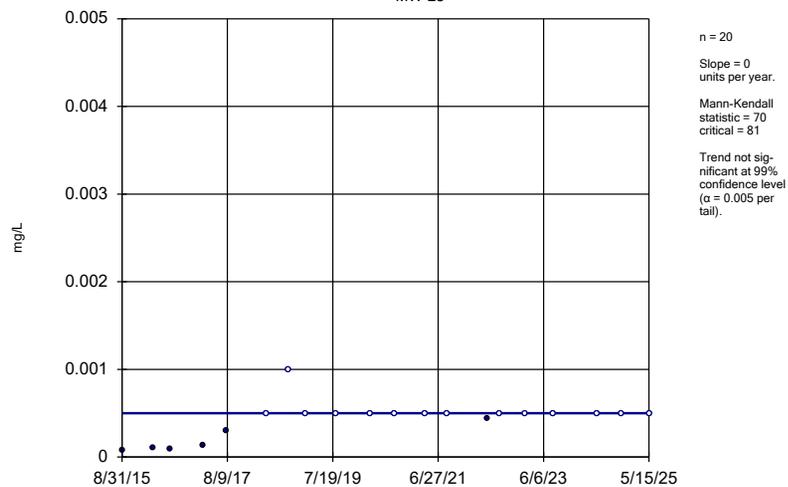
MW-28



Constituent: Silver Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

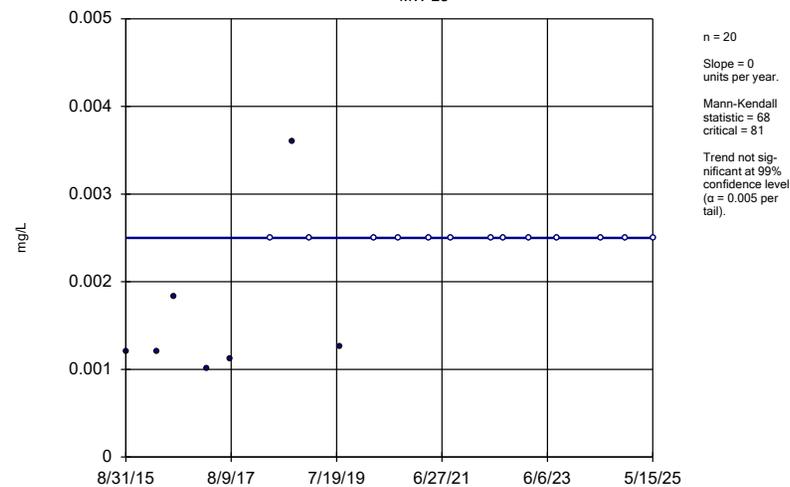
MW-28



Constituent: Thallium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

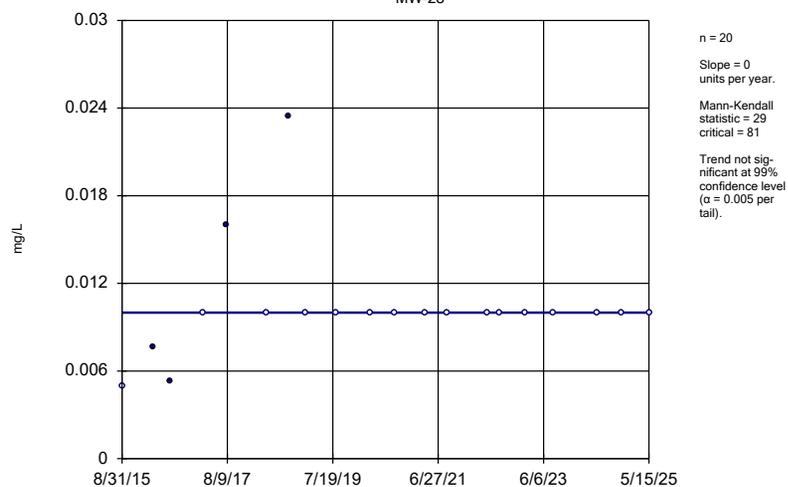
MW-28



Constituent: Vanadium Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

MW-28



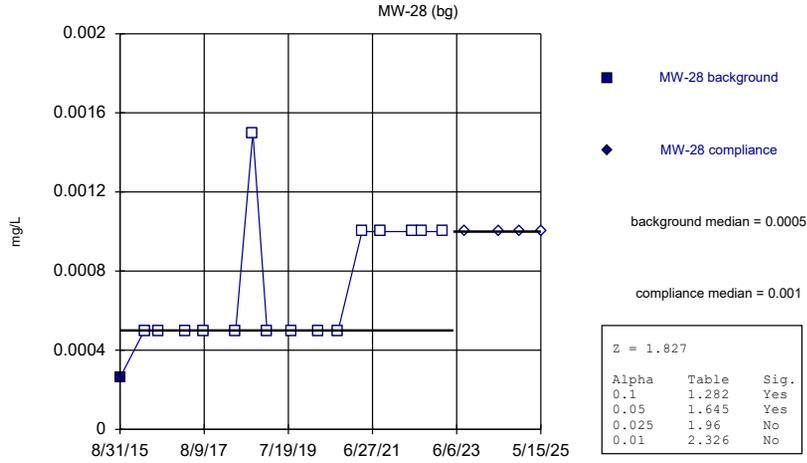
Constituent: Zinc Analysis Run 7/18/2025 11:47 AM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# Welch's t-test/Mann-Whitney

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 7/18/2025, 3:13 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Method</u>
Antimony (mg/L)	MW-28 (bg)	1.827	No	Mann-W (NDs)
Arsenic (mg/L)	MW-28 (bg)	-1.719	No	Mann-W (normality)
Barium (mg/L)	MW-28	-0.5928	No	Welch's
Beryllium (mg/L)	MW-28 (bg)	0.375	No	Mann-W (NDs)
Cadmium (mg/L)	MW-28 (bg)	-0.8124	No	Mann-W (normality)
Chromium (mg/L)	MW-28 (bg)	-0.3677	No	Mann-W (NDs)
Cobalt (mg/L)	MW-28	-0.4684	No	Welch's
Copper (mg/L)	MW-28 (bg)	-0.4799	No	Mann-W (normality)
Lead (mg/L)	MW-28 (bg)	-0.625	No	Mann-W (NDs)
Nickel (mg/L)	MW-28	-4.016	No	Welch's
Selenium (mg/L)	MW-28 (bg)	0.6348	No	Mann-W (NDs)
Silver (mg/L)	MW-28 (bg)	-0.38	No	Mann-W (NDs)
Thallium (mg/L)	MW-28 (bg)	1.053	No	Mann-W (normality)
Vanadium (mg/L)	MW-28 (bg)	1.053	No	Mann-W (normality)
Zinc (mg/L)	MW-28 (bg)	0.1863	No	Mann-W (normality)

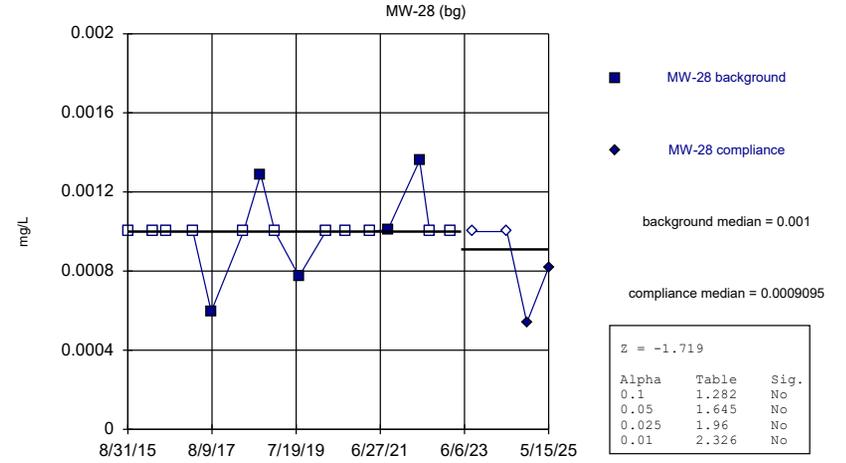
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Antimony Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

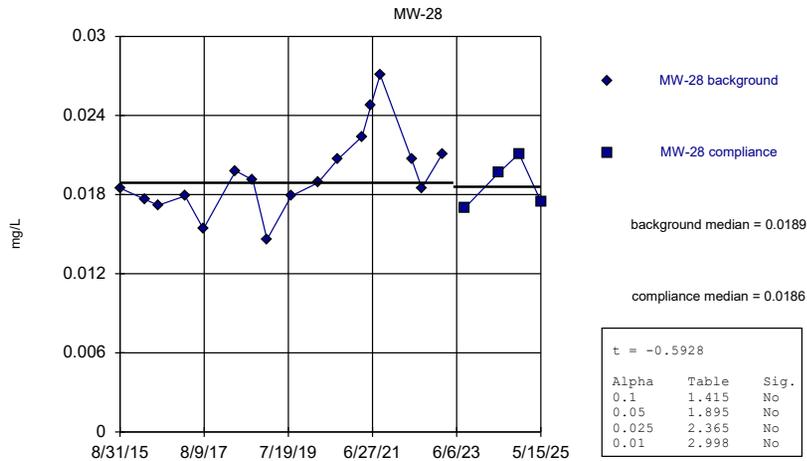
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Arsenic Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

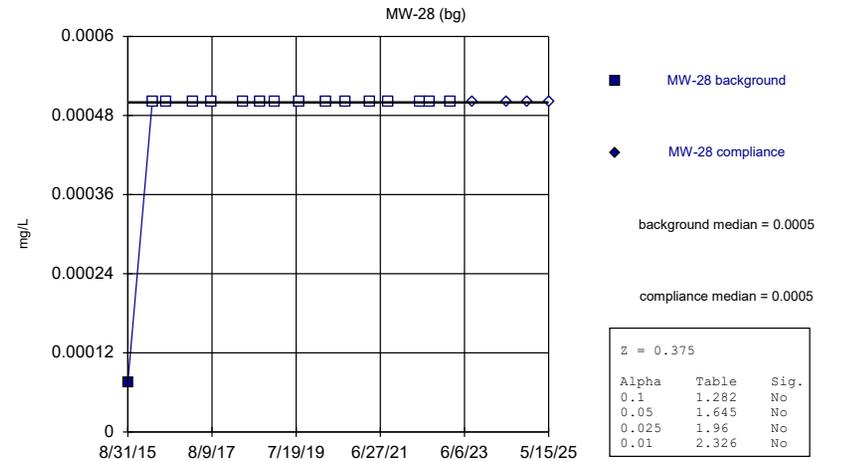
### Welch's t-test



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9399, critical = 0.892.

Constituent: Barium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

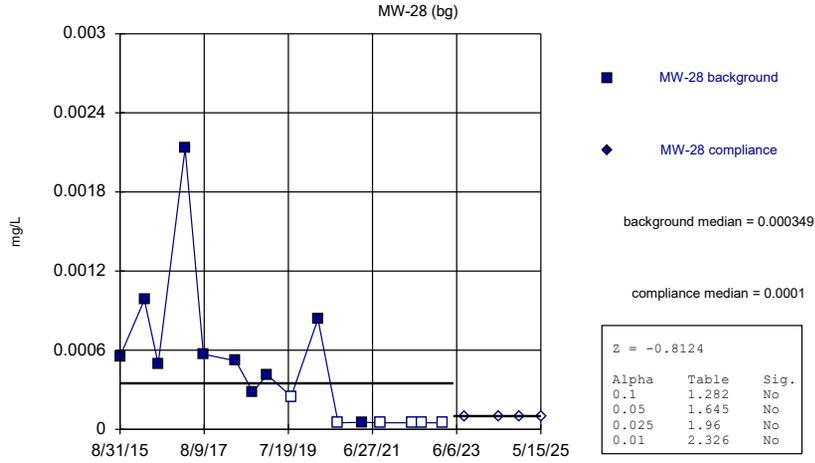
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Beryllium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

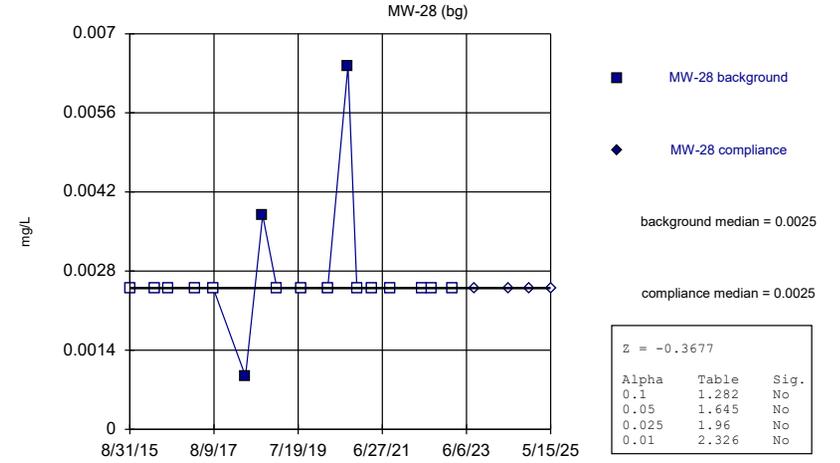
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Cadmium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

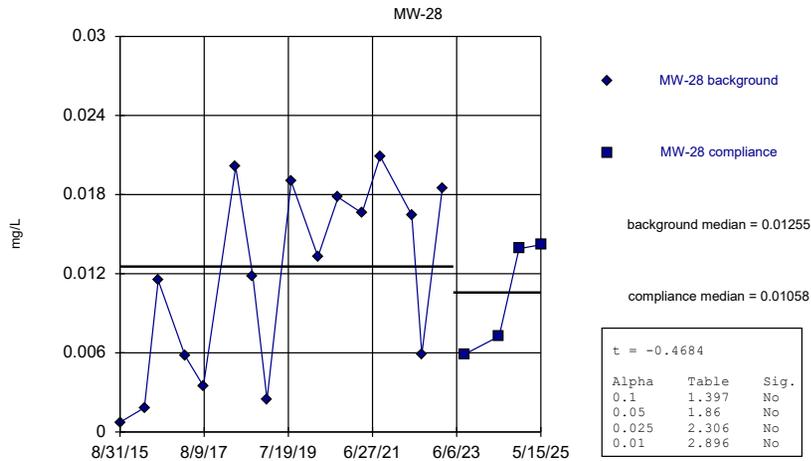
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Chromium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

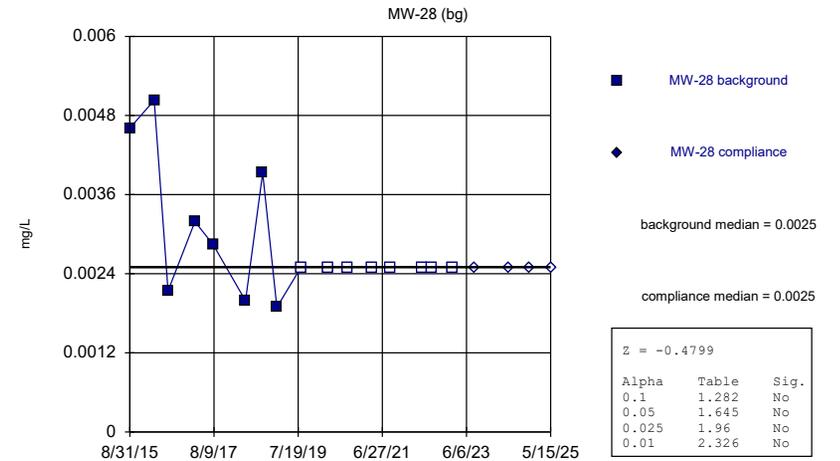
### Welch's t-test



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8949, critical = 0.887.

Constituent: Cobalt Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

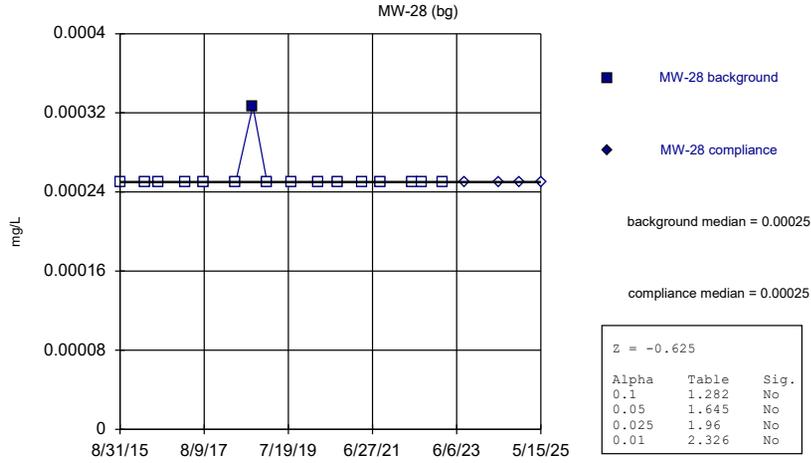
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Copper Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

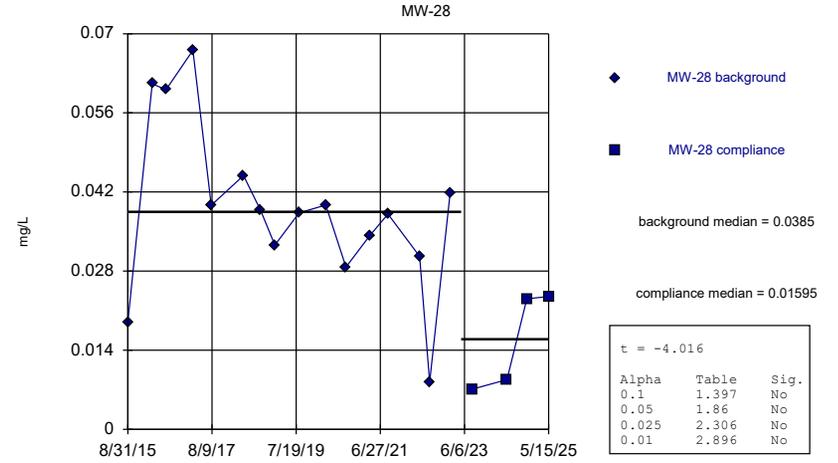
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Lead Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

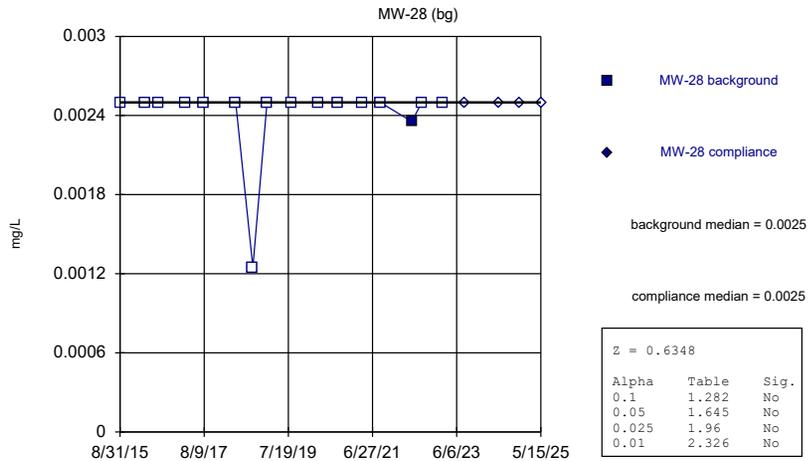
### Welch's t-test



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9444, critical = 0.887.

Constituent: Nickel Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

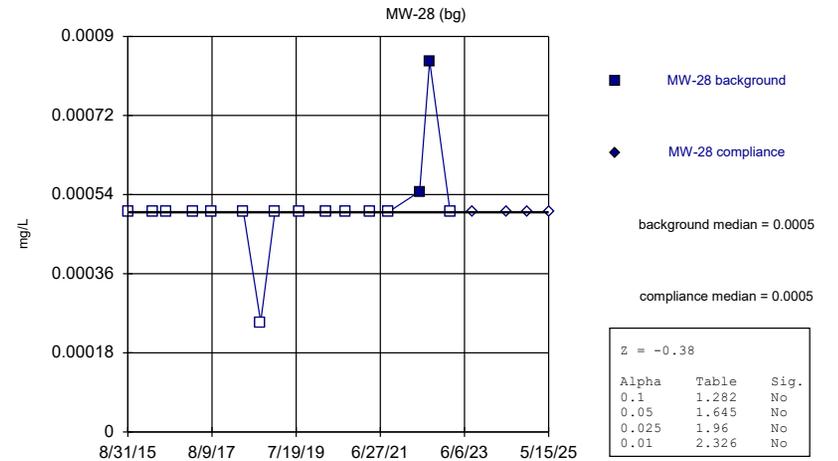
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Selenium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

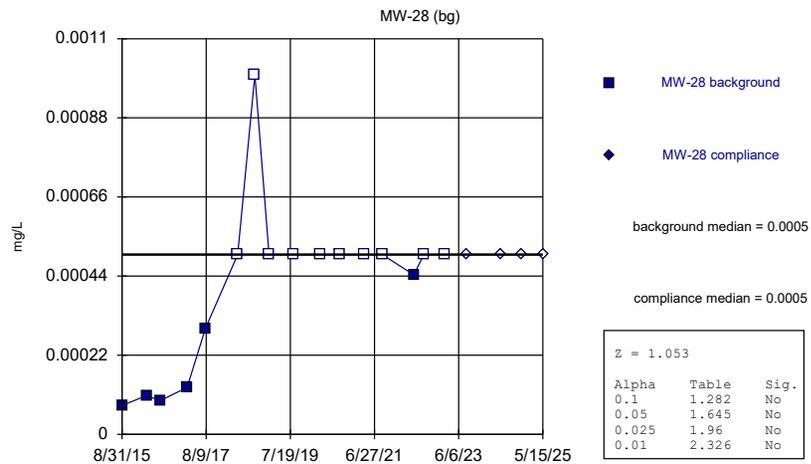
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Silver Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

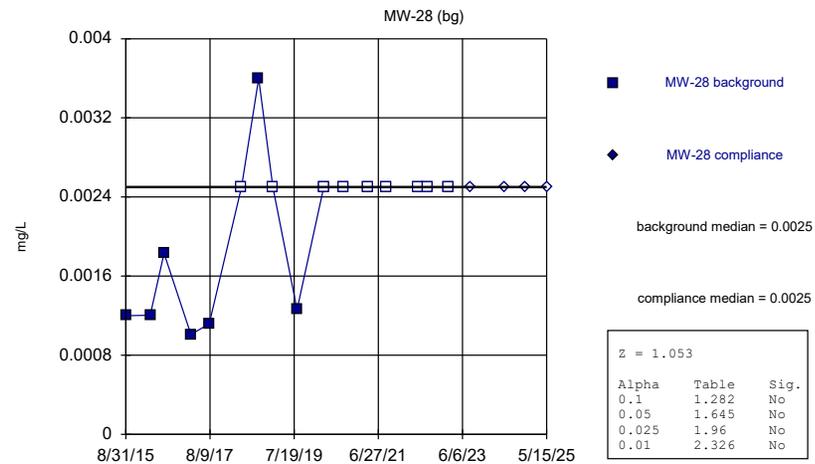
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Thallium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

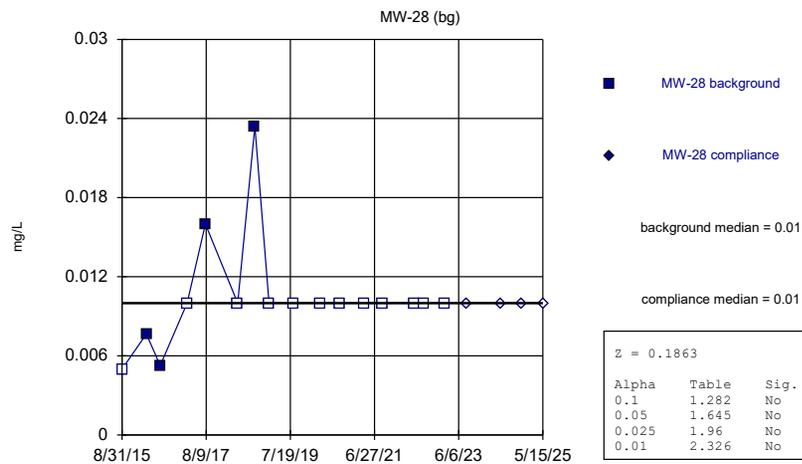
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Vanadium Analysis Run 7/18/2025 2:36 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Zinc Analysis Run 7/18/2025 2:37 PM View: 2025\_SSN MW-28\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

**MW-29 Background Update**

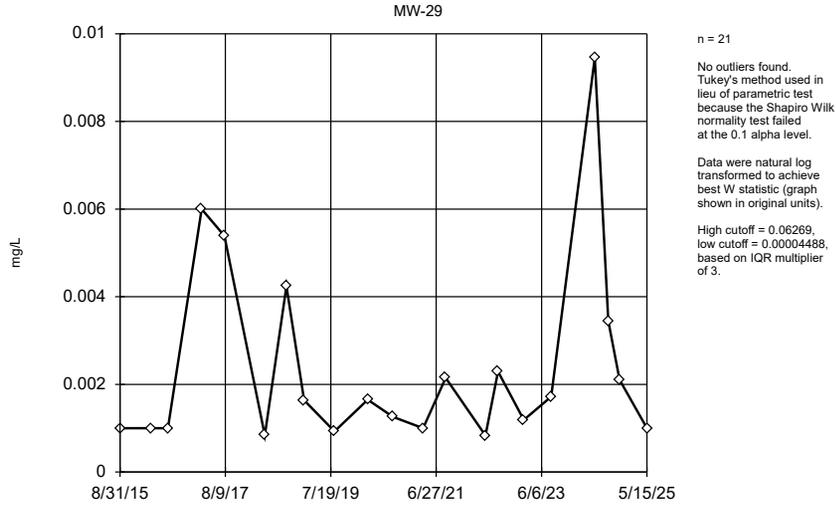
**Outliers, Trends, and Welch's T-Test/Mann-Whitney Summary Table and Graphs**

# MW-29 BG Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 8/7/2025, 11:23 AM

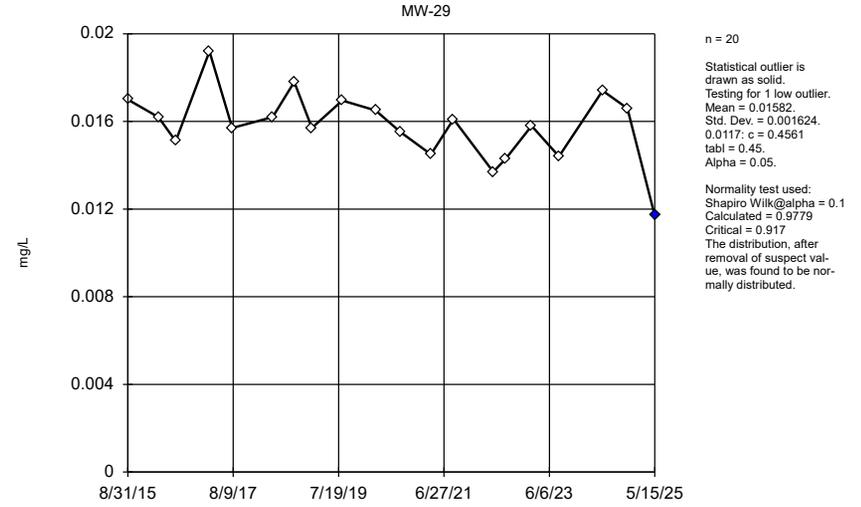
<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Arsenic (mg/L)	MW-29	No	n/a	n/a	NP (nrm)/OH	NaN	21	0.002388	0.002208	unknown	ShapiroWilk
<b>Barium (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0117</b>	<b>5/15/2025</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>20</b>	<b>0.01582</b>	<b>0.001624</b>	<b>normal</b>	<b>ShapiroWilk</b>
Cadmium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.0001271	0.00008772	n/a	n/a
Chromium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002545	0.0002035	n/a	n/a
Cobalt (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	20	0.002615	0.001185	normal	ShapiroWilk
Copper (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002541	0.0006704	n/a	n/a
<b>Lead (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0007105,0.000898,0.000639</b>	<b>8/31/2015,9/24/2018,1/21/2019</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.0003387</b>	<b>0.0001936</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Nickel (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	19	0.01052	0.001105	normal	ShapiroWilk
Selenium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002368	0.0004053	n/a	n/a
Vanadium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002566	0.0009757	n/a	n/a
<b>Zinc (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0297,0.0232,0.0182</b>	<b>3/24/2016,3/2/2017,9/24/2018</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.01207</b>	<b>0.005436</b>	<b>unknown</b>	<b>ShapiroWilk</b>

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



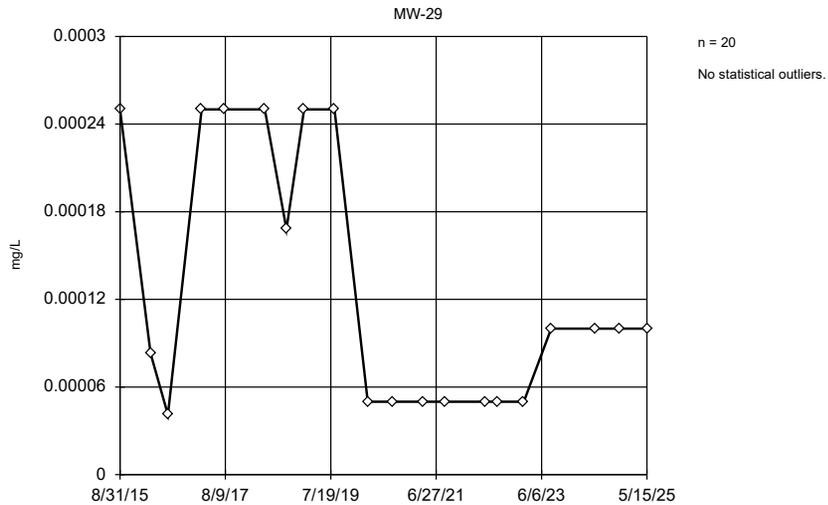
Constituent: Arsenic Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm



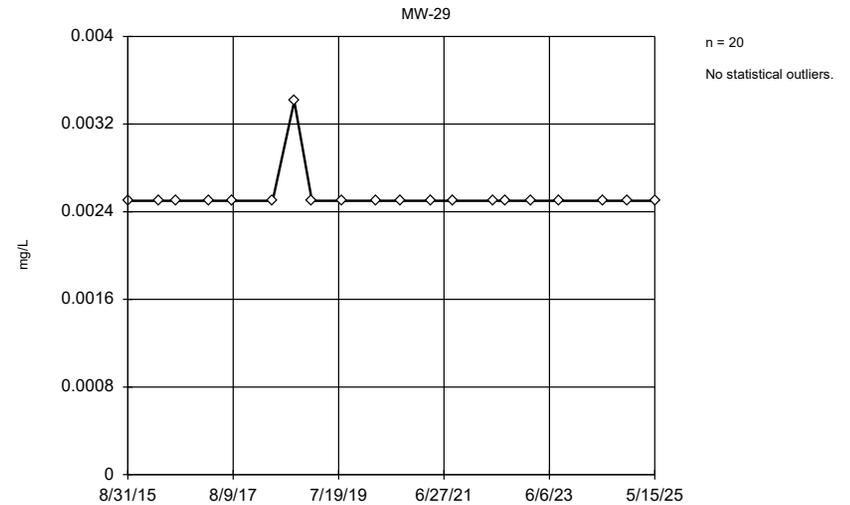
Constituent: Barium Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



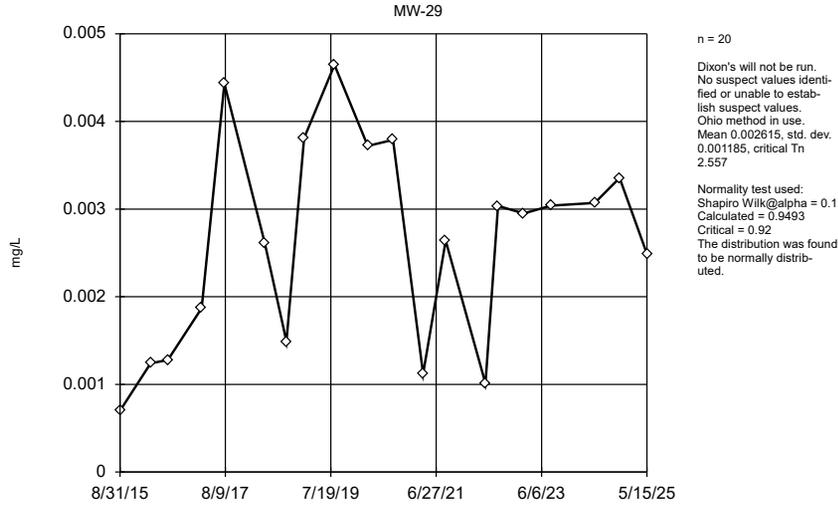
Constituent: Cadmium Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



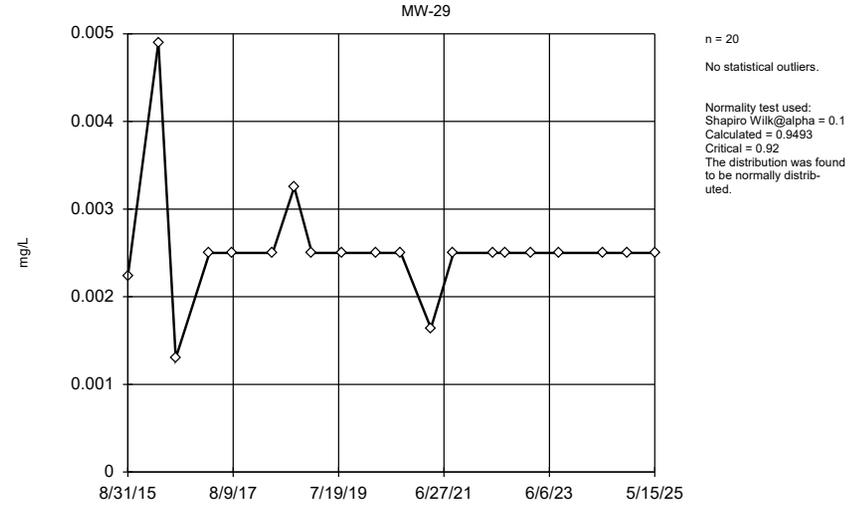
Constituent: Chromium Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### EPA Screening (suspected outliers for Dixon's Test)



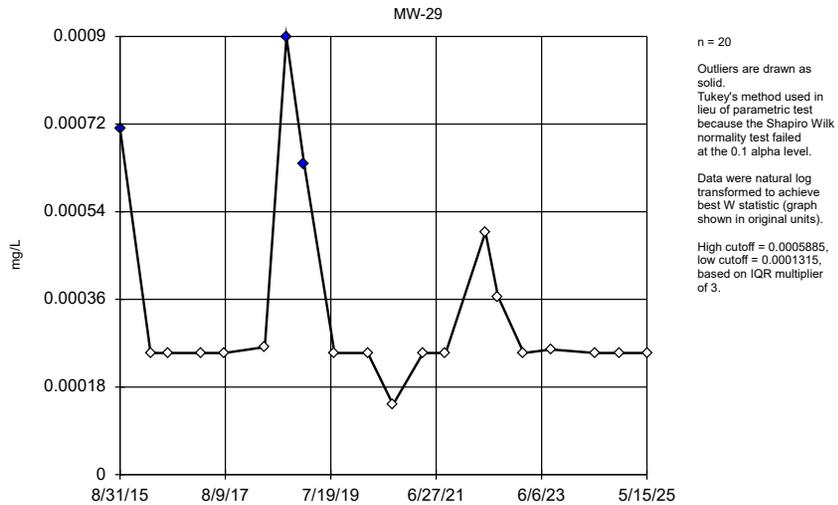
Constituent: Cobalt Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



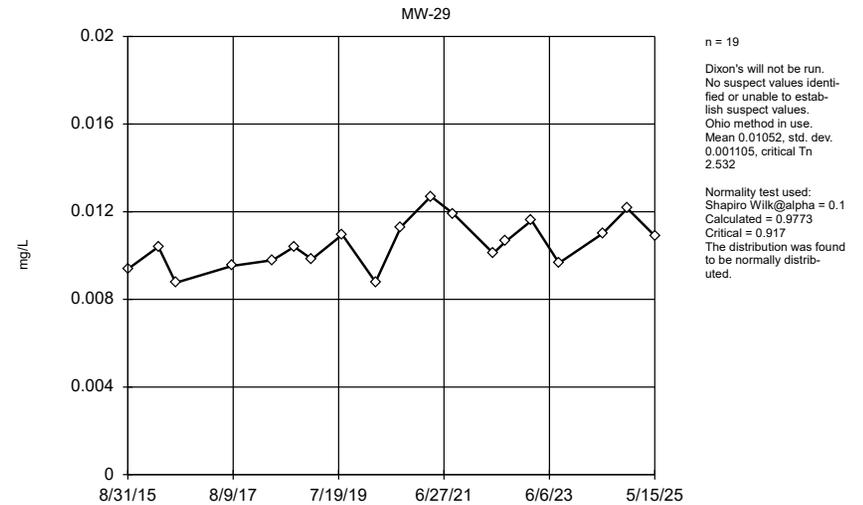
Constituent: Copper Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



Constituent: Lead Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

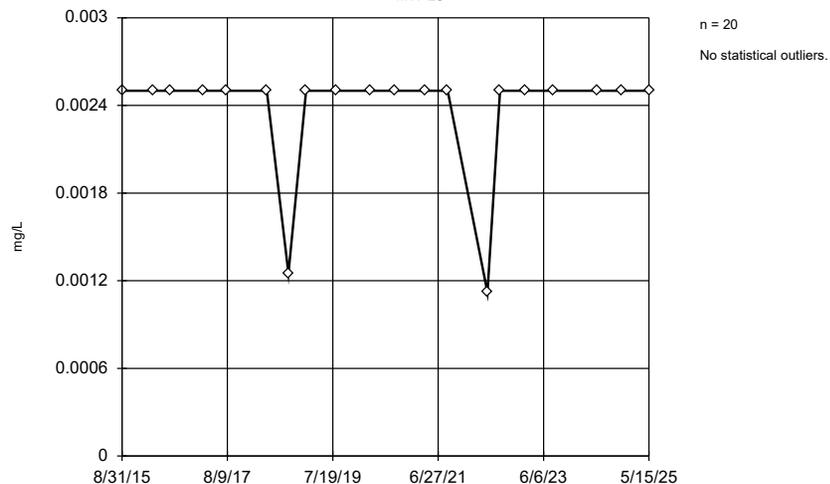
### EPA Screening (suspected outliers for Dixon's Test)



Constituent: Nickel Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

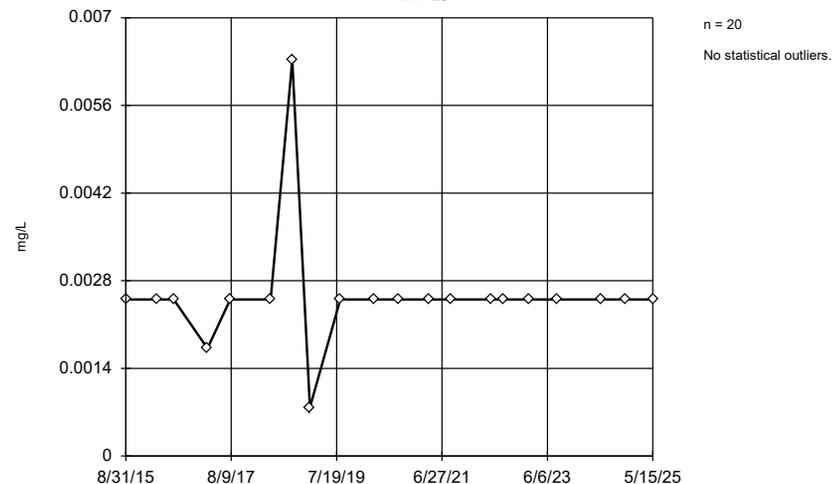
MW-29



Constituent: Selenium Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

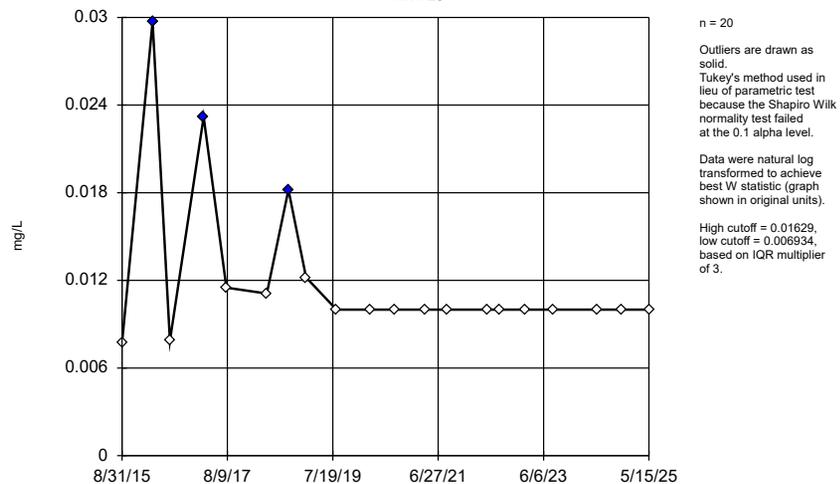
MW-29



Constituent: Vanadium Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-29



Constituent: Zinc Analysis Run 8/7/2025 11:20 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

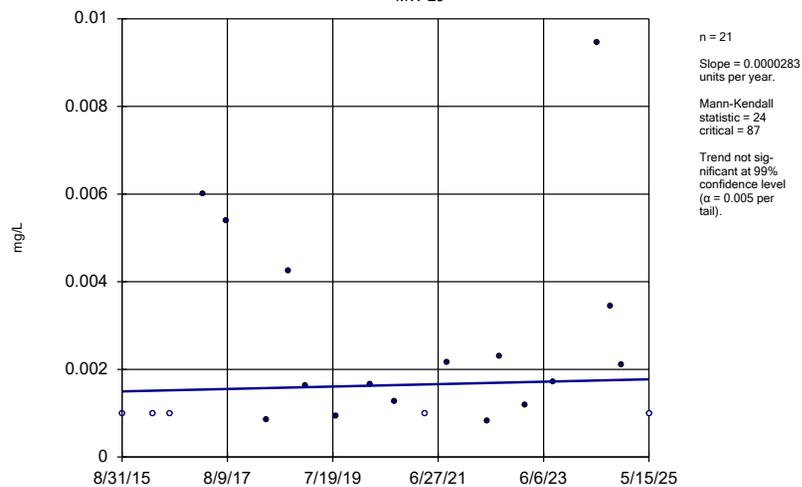
# MW-29 BG Update Trend Test

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 8/7/2025, 11:25 AM

<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-29	0.0000283	24	87	No	21	23.81	0.01	NP
Barium (mg/L)	MW-29	-0.000263	-56	-81	No	20	0	0.01	NP
Cadmium (mg/L)	MW-29	0	-34	-81	No	20	85	0.01	NP
Chromium (mg/L)	MW-29	0	-7	-81	No	20	95	0.01	NP
Cobalt (mg/L)	MW-29	0.0001399	38	81	No	20	0	0.01	NP
Copper (mg/L)	MW-29	0	5	81	No	20	75	0.01	NP
Lead (mg/L)	MW-29	0	-22	-81	No	20	60	0.01	NP
Nickel (mg/L)	MW-29	0.0002025	72	74	No	19	0	0.01	NP
Selenium (mg/L)	MW-29	0	-1	-81	No	20	95	0.01	NP
Vanadium (mg/L)	MW-29	0	10	81	No	20	85	0.01	NP
Zinc (mg/L)	MW-29	0	-44	-81	No	20	60	0.01	NP

### Sen's Slope Estimator

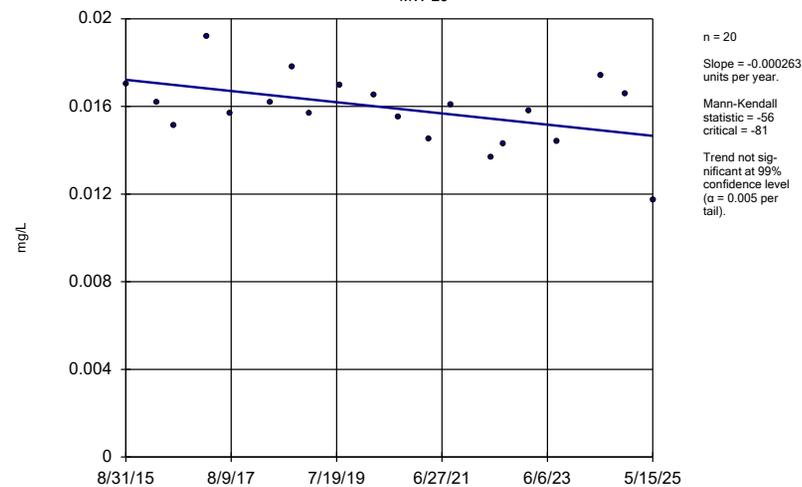
MW-29



Constituent: Arsenic Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

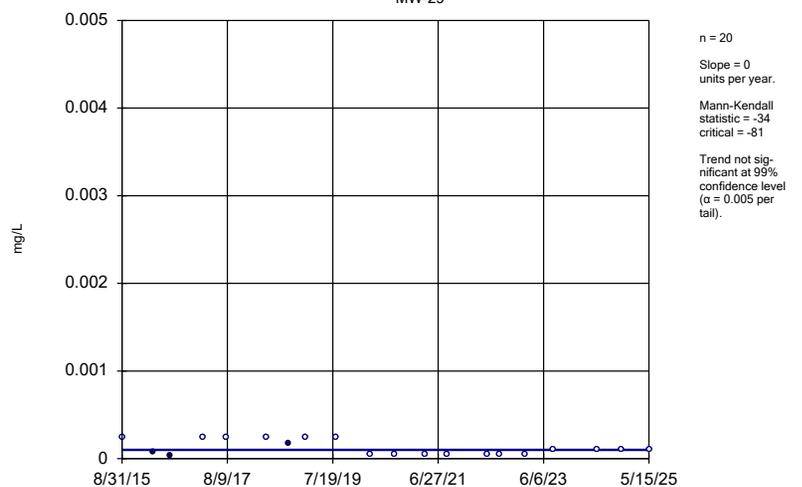
MW-29



Constituent: Barium Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

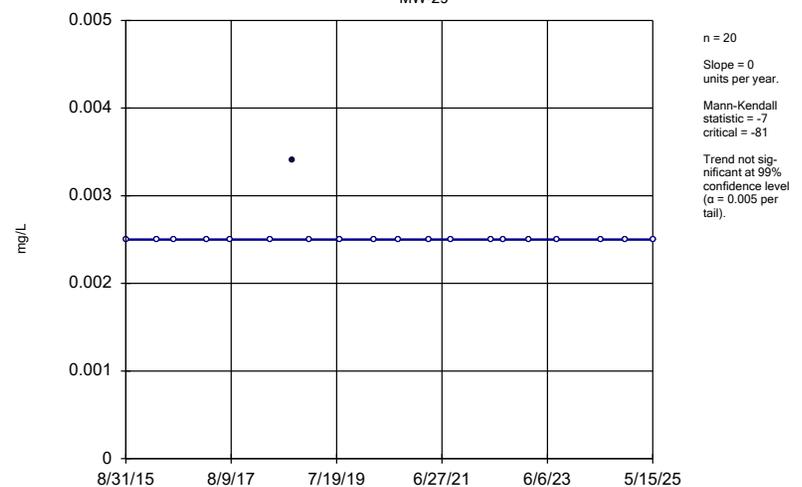
MW-29



Constituent: Cadmium Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

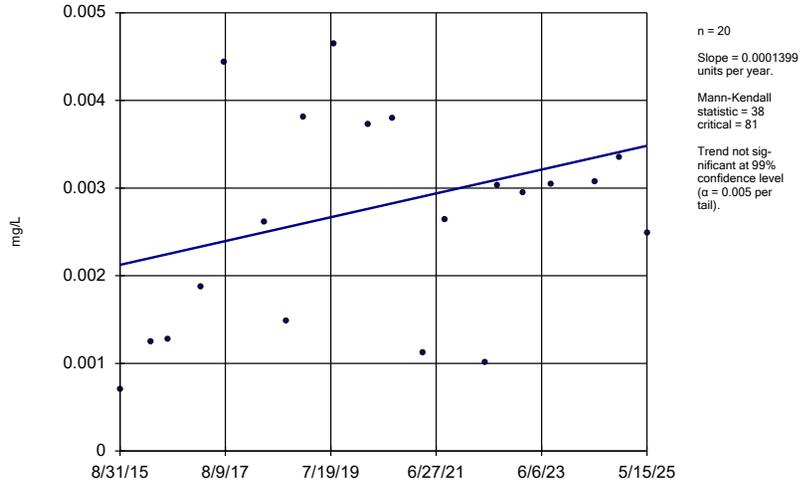
MW-29



Constituent: Chromium Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

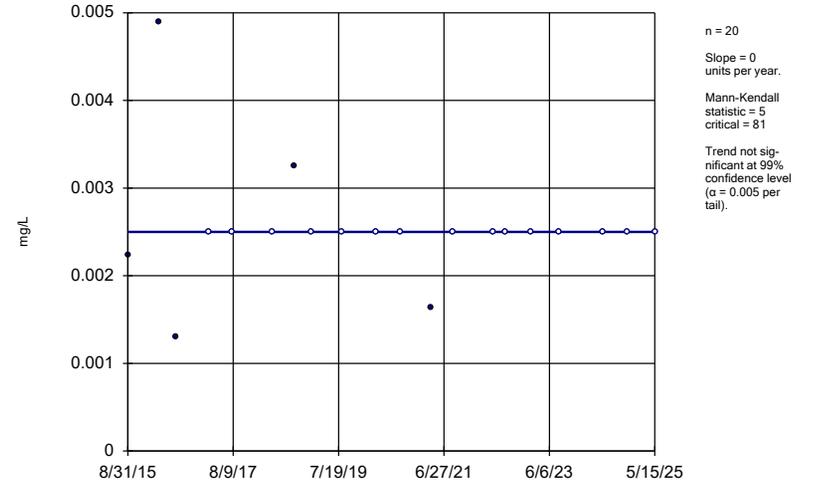
MW-29



Constituent: Cobalt Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

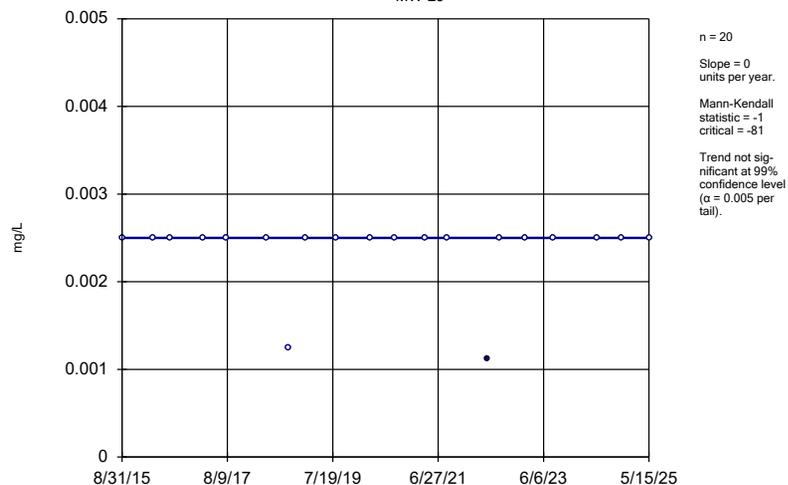
### Sen's Slope Estimator

MW-29



### Sen's Slope Estimator

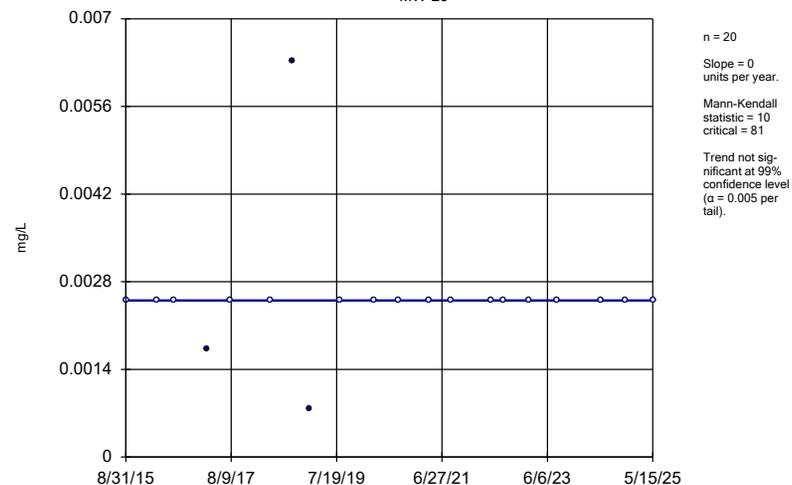
MW-29



Constituent: Selenium Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

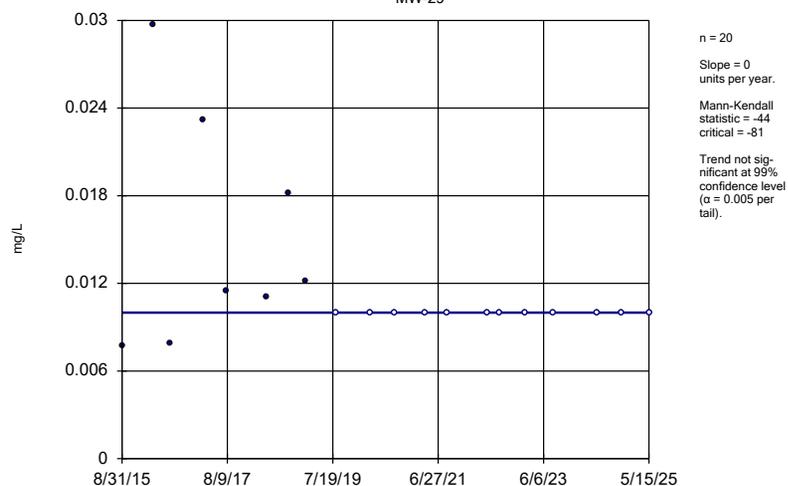
MW-29



Constituent: Vanadium Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Sen's Slope Estimator

MW-29



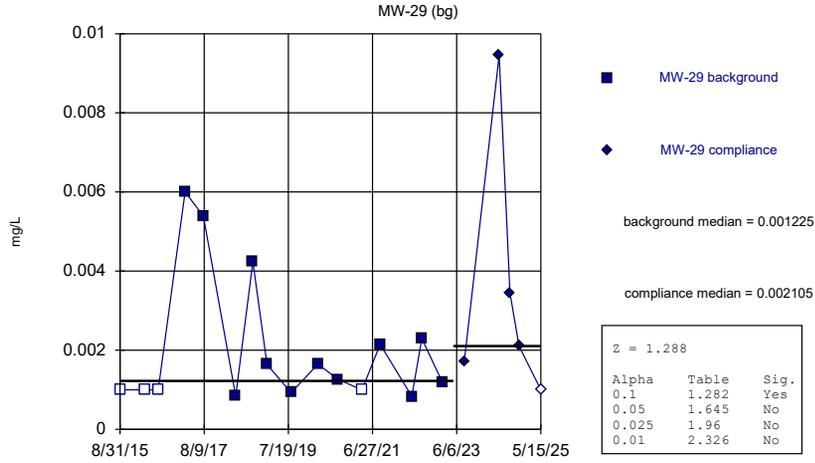
Constituent: Zinc Analysis Run 8/7/2025 11:24 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# MW-29 BG Update Welch's t-test/Mann-Whitney

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 8/7/2025, 11:43 AM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.01</u>	<u>Method</u>
Arsenic (mg/L)	MW-29 (bg)	1.288	No	Mann-W (normality)
Barium (mg/L)	MW-29	-0.7499	No	Welch's
Cadmium (mg/L)	MW-29 (bg)	0.344	No	Mann-W (NDs)
Chromium (mg/L)	MW-29 (bg)	-0.625	No	Mann-W (NDs)
Cobalt (mg/L)	MW-29	1.253	No	Welch's
Copper (mg/L)	MW-29 (bg)	0.1863	No	Mann-W (normality)
Lead (mg/L)	MW-29 (bg)	-0.6399	No	Mann-W (normality)
Nickel (mg/L)	MW-29	0.8893	No	Welch's
Selenium (mg/L)	MW-29 (bg)	0.6348	No	Mann-W (NDs)
Vanadium (mg/L)	MW-29 (bg)	0.228	No	Mann-W (NDs)
Zinc (mg/L)	MW-29 (bg)	-0.9065	No	Mann-W (normality)

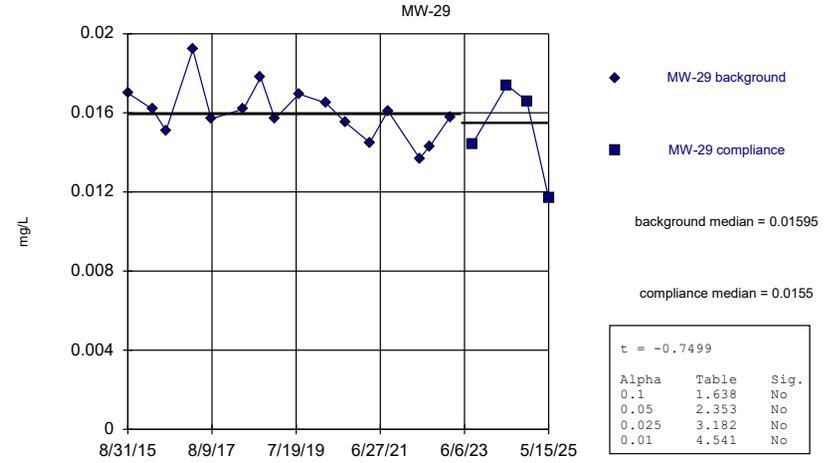
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Arsenic Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

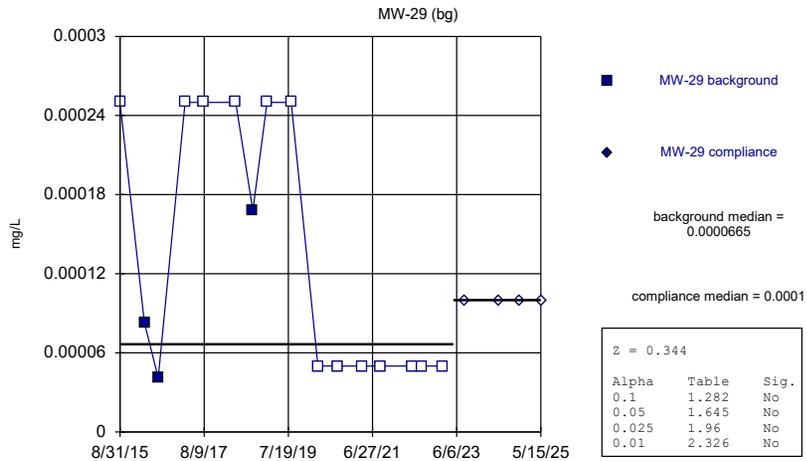
### Welch's t-test



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9676, critical = 0.887.

Constituent: Barium Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

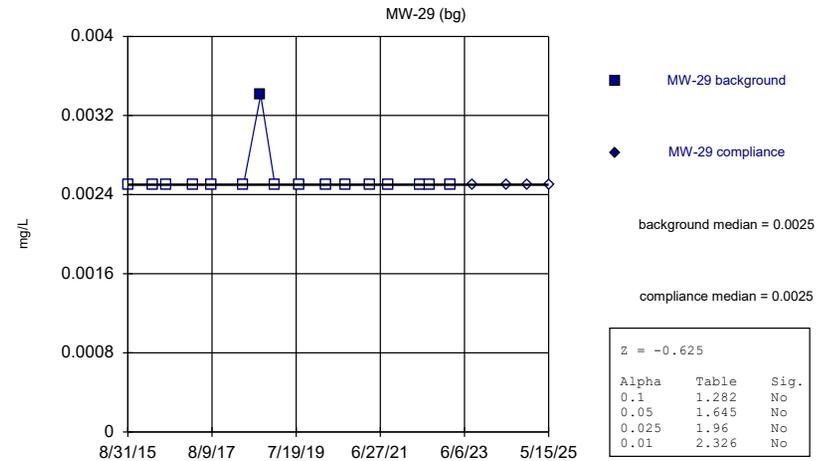
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

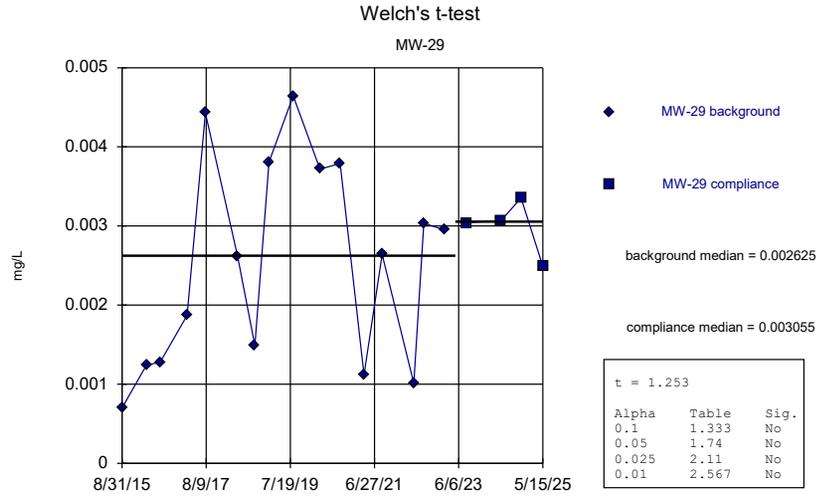
Constituent: Cadmium Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Mann-Whitney (Wilcoxon Rank Sum)



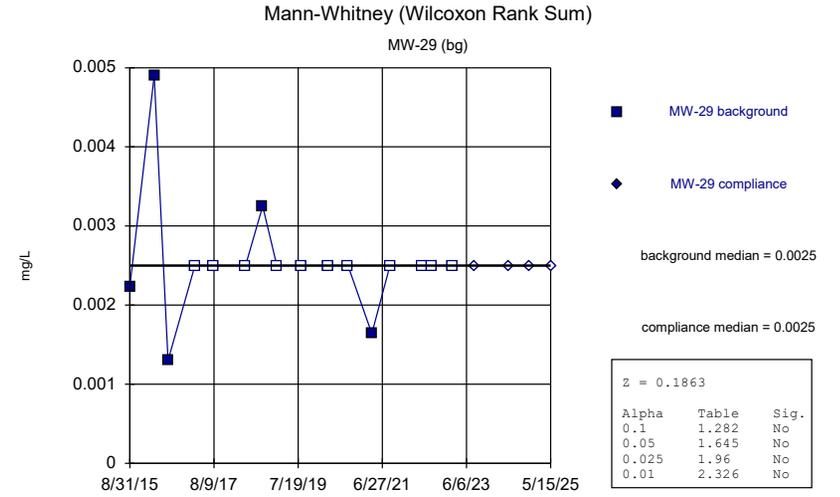
Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Chromium Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master



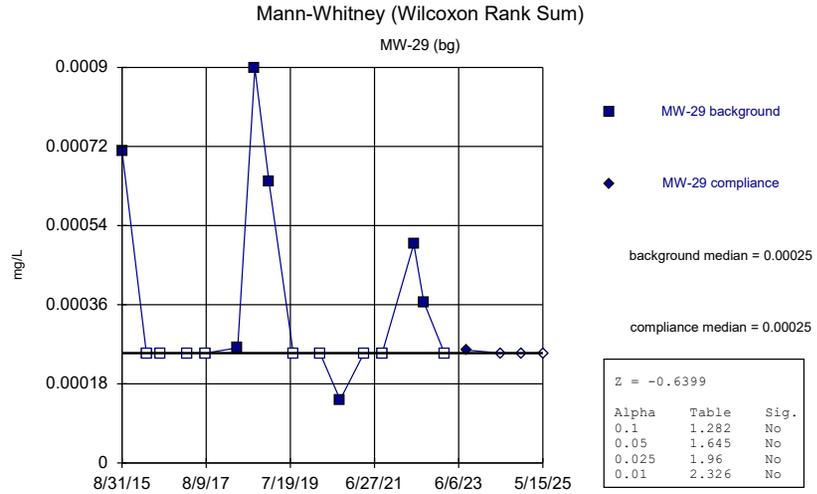
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.926, critical = 0.887.

Constituent: Cobalt Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master



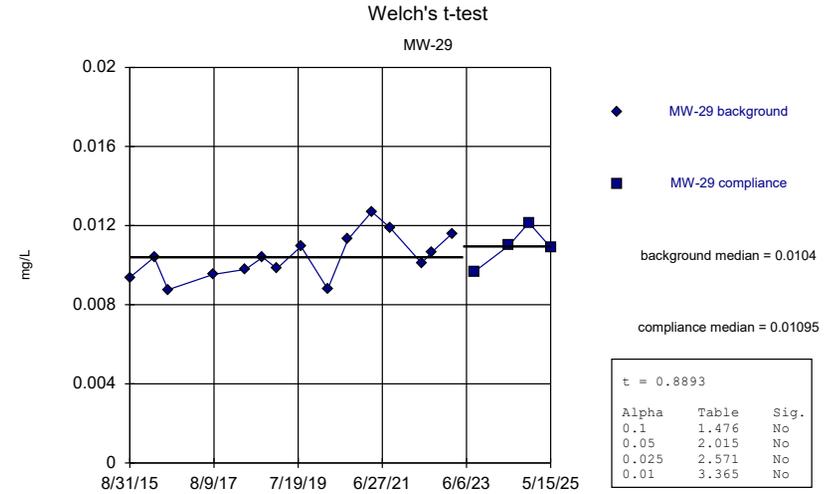
Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Copper Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

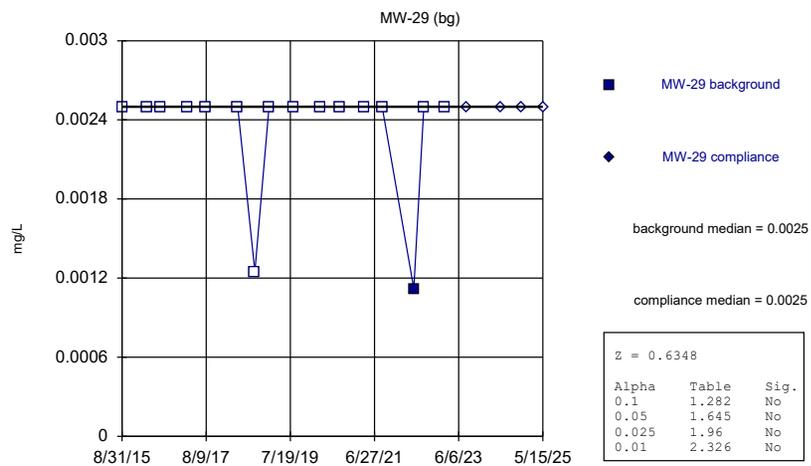
Constituent: Lead Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9722, critical = 0.881.

Constituent: Nickel Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

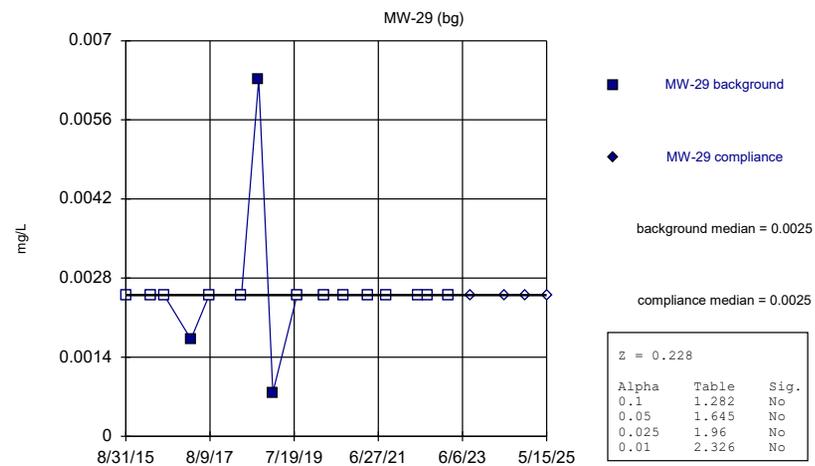
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Selenium Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

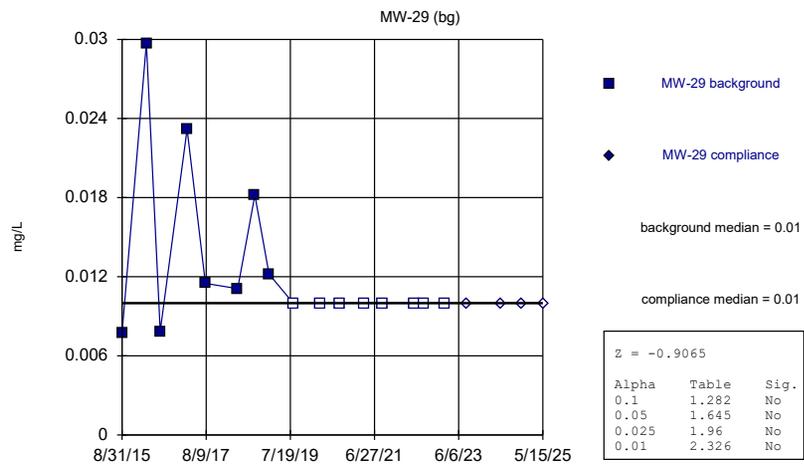
### Mann-Whitney (Wilcoxon Rank Sum)



Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because censored data exceeded 75%.

Constituent: Vanadium Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Mann-Whitney (Wilcoxon Rank Sum)



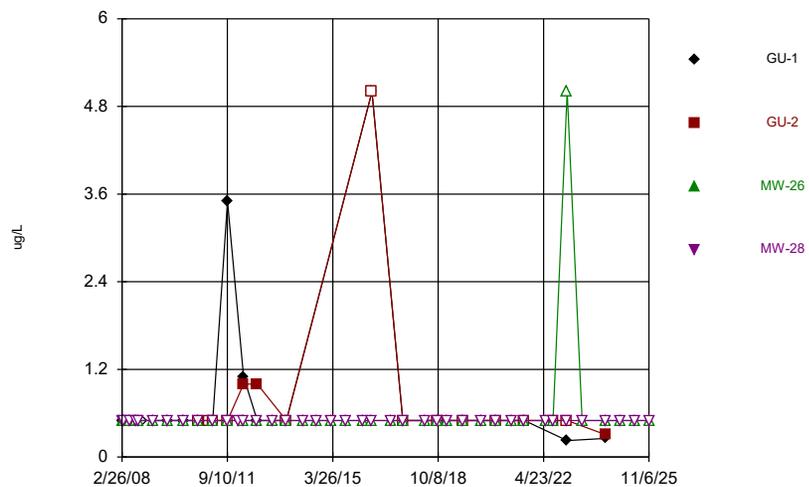
Mann-Whitney (Wilcoxon Rank Sum) used in lieu of Welch's t-test because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level.

Constituent: Zinc Analysis Run 8/7/2025 11:34 AM View: 2025\_SSN MW-29\_BG\_Update  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

**Attachment B**  
**2<sup>nd</sup> 2025 Statistical Evaluation Output**

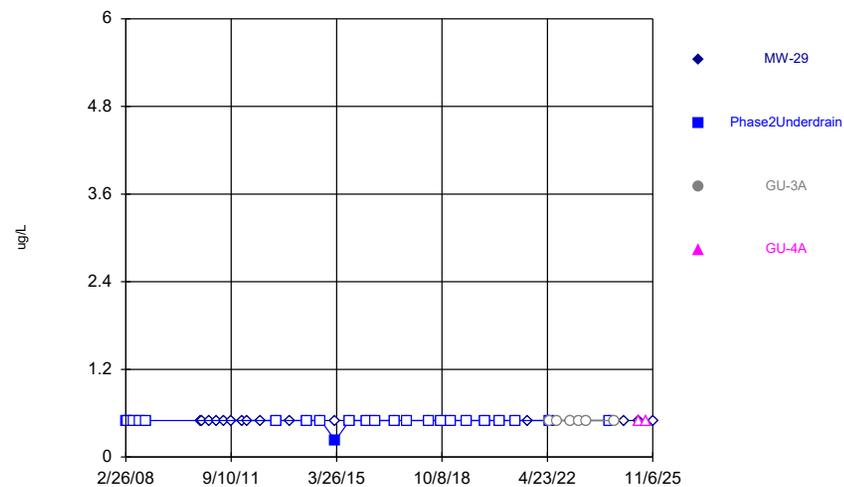
## Time Series Plots

### Time Series



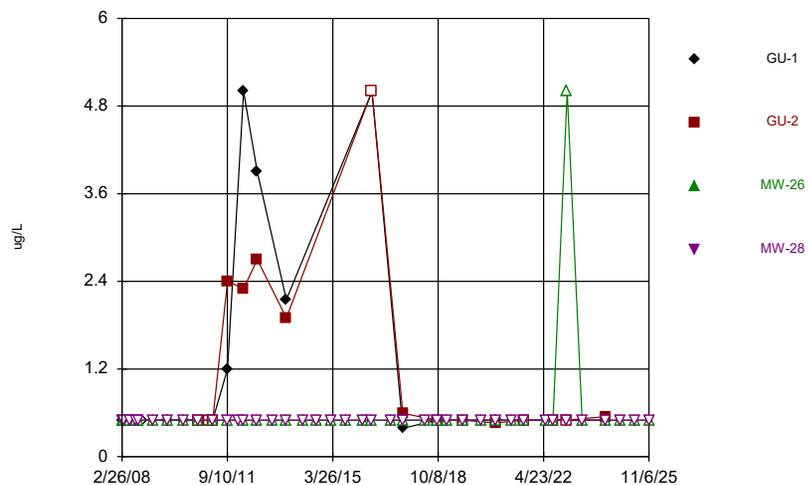
Constituent: 1,1-Dichloroethane Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



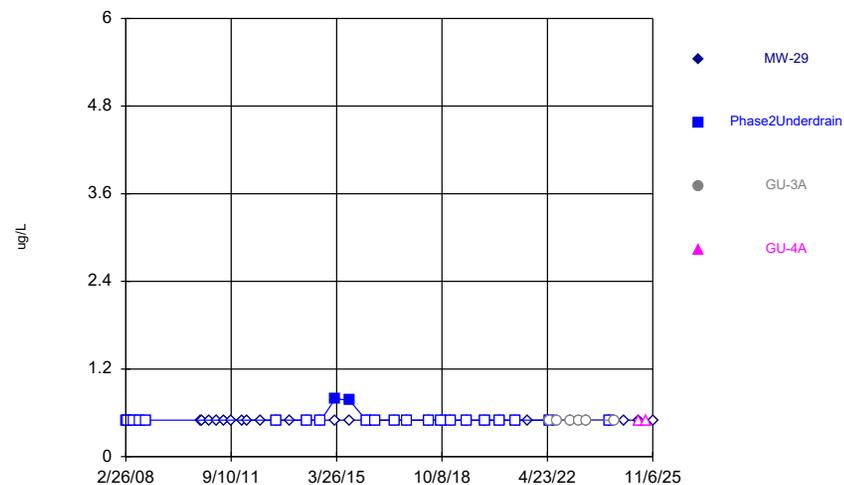
Constituent: 1,1-Dichloroethane Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



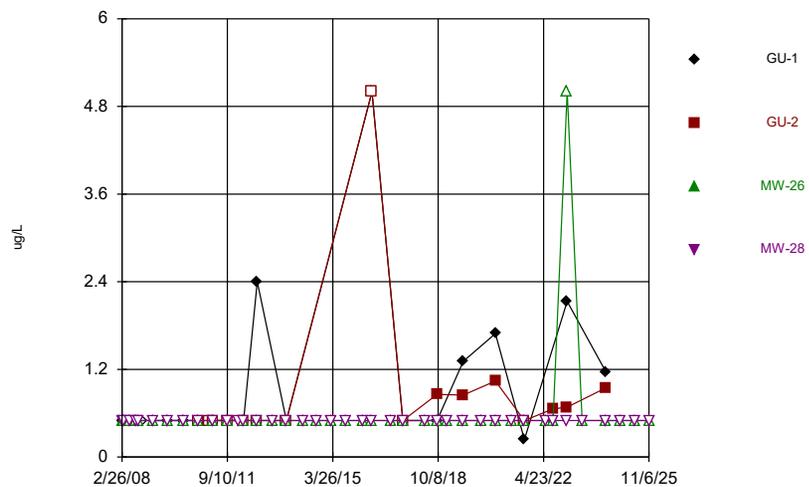
Constituent: 1,2-Dichloroethane Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



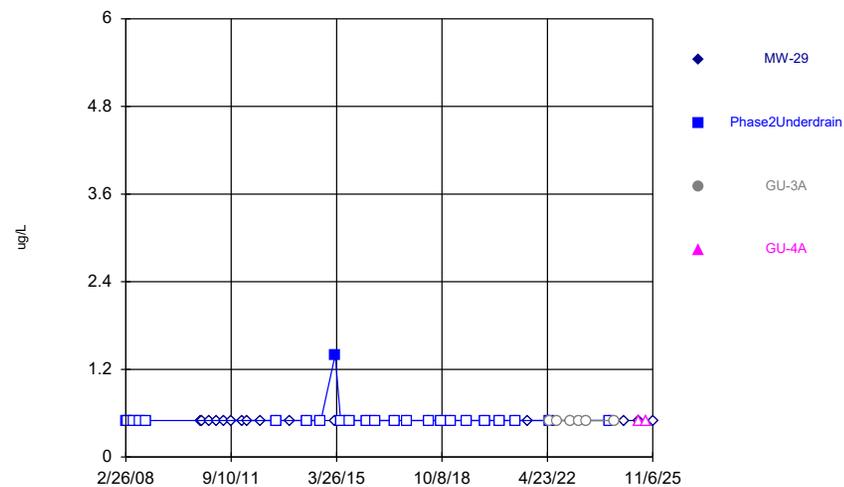
Constituent: 1,2-Dichloroethane Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



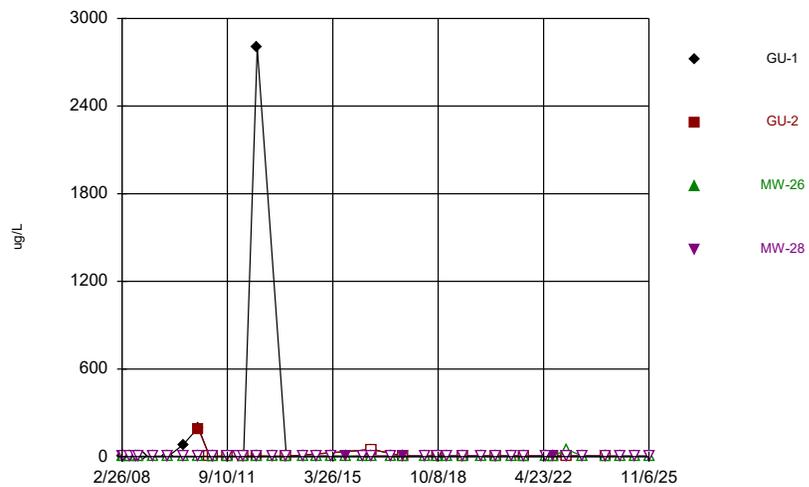
Constituent: 1,4-Dichlorobenzene Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



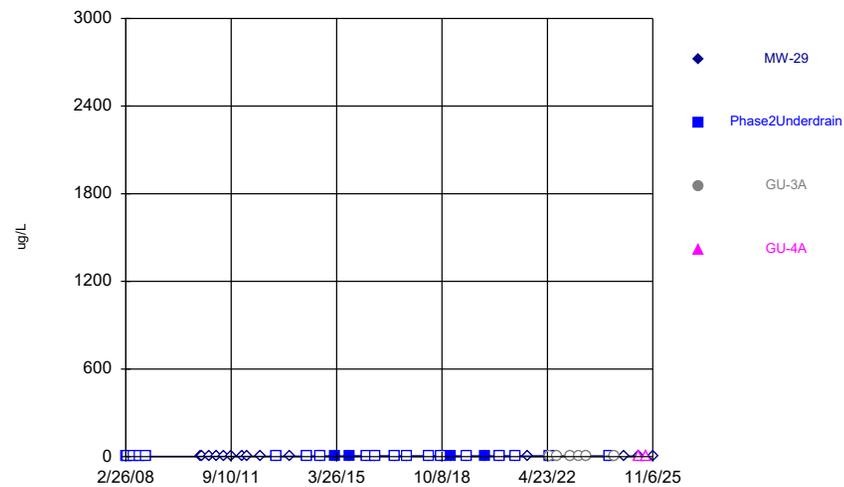
Constituent: 1,4-Dichlorobenzene Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



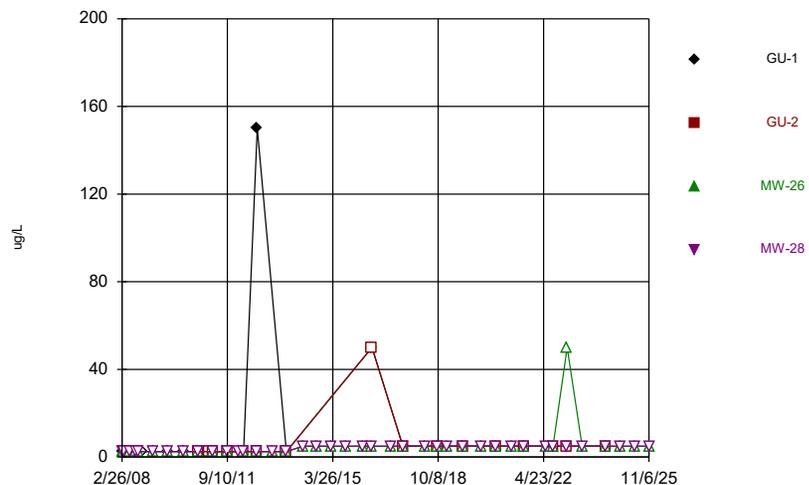
Constituent: 2-Butanone Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



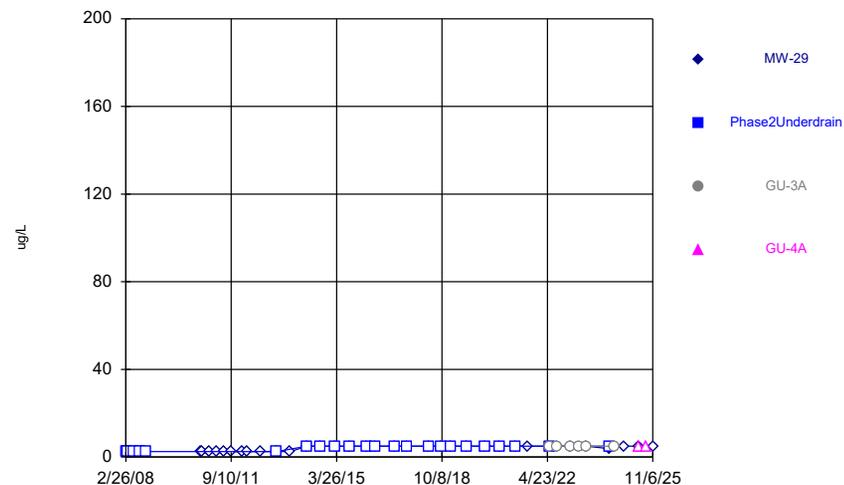
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



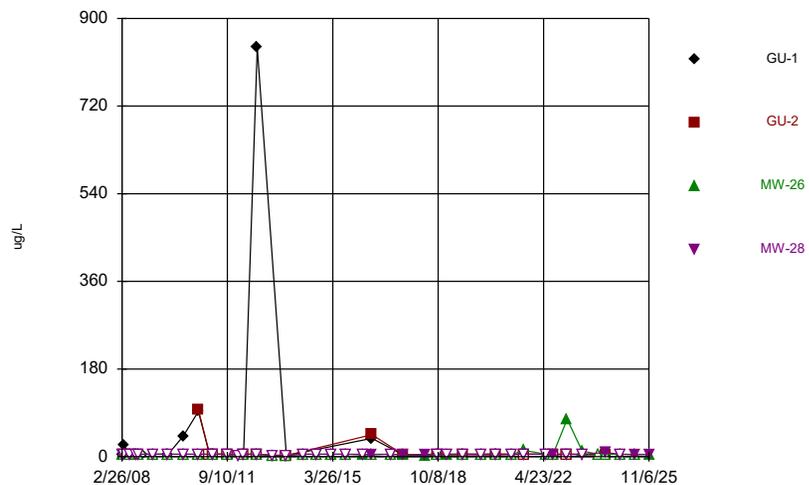
Constituent: 4-Methyl-2-pentanone Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



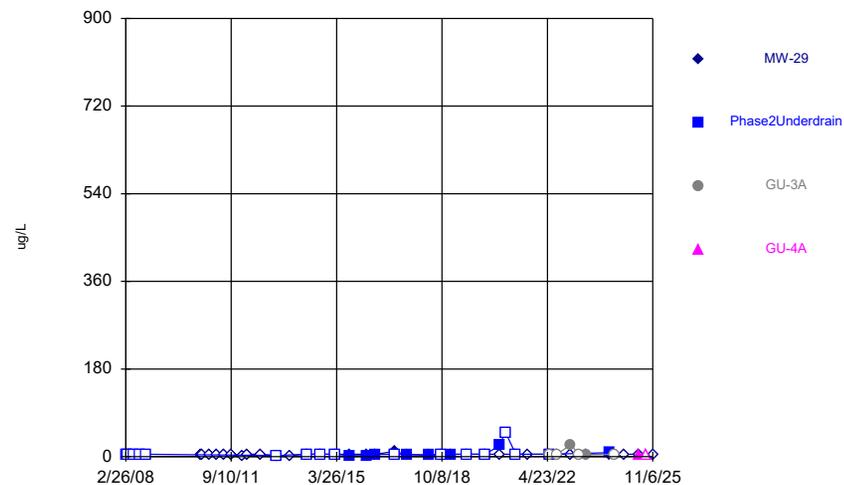
Constituent: 4-Methyl-2-pentanone Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



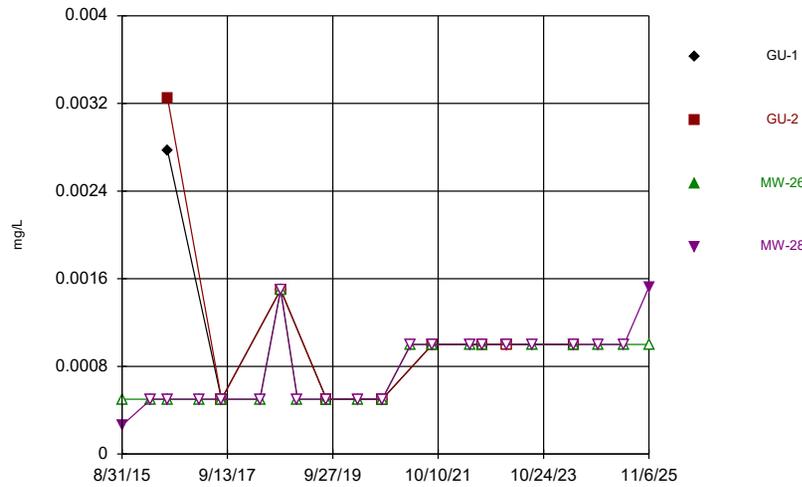
Constituent: Acetone Analysis Run 1/9/2026 10:33 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



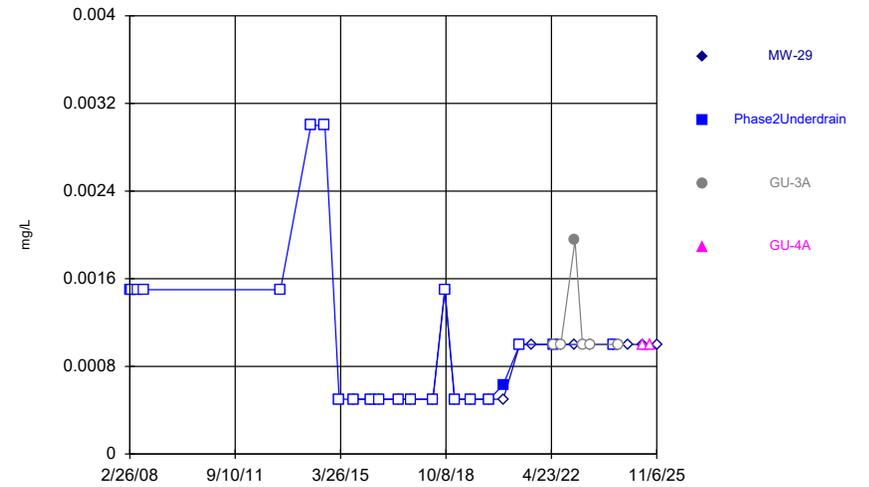
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



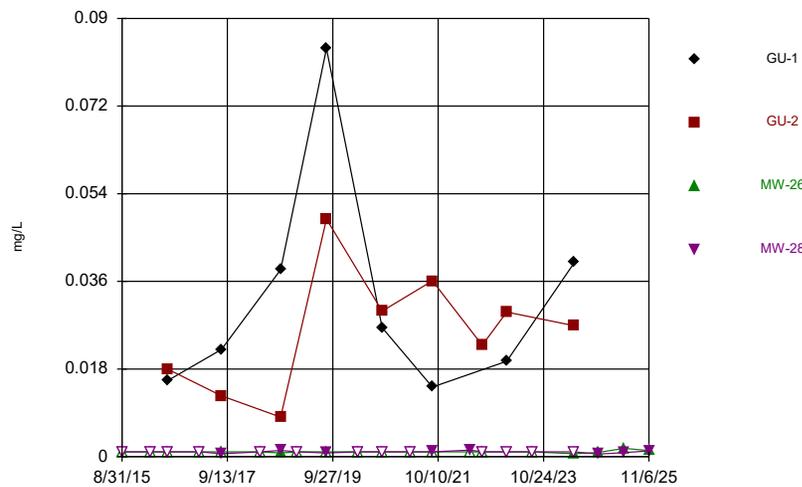
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



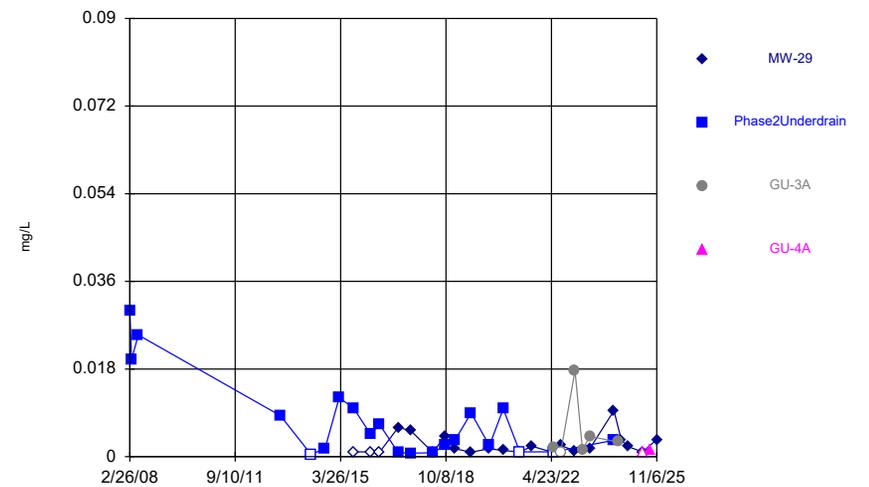
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



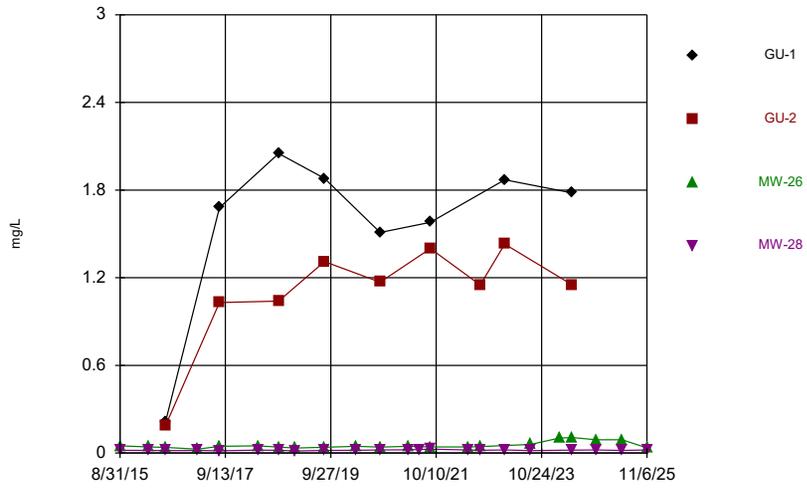
Constituent: Arsenic Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



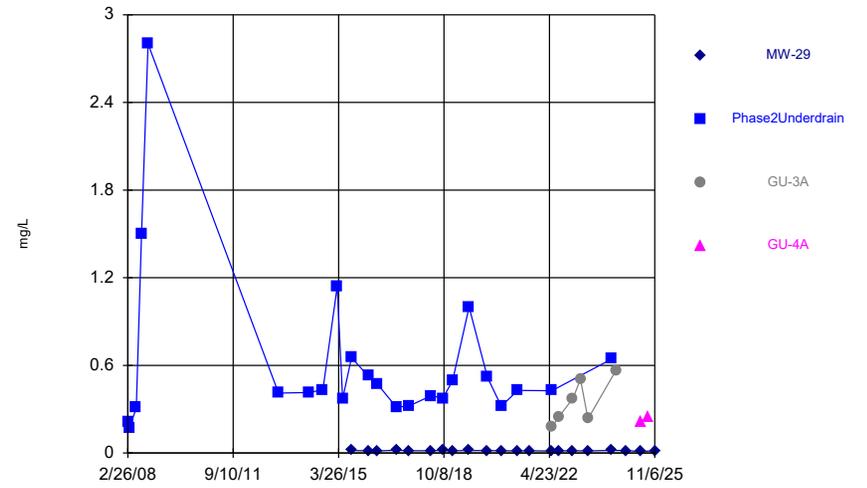
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



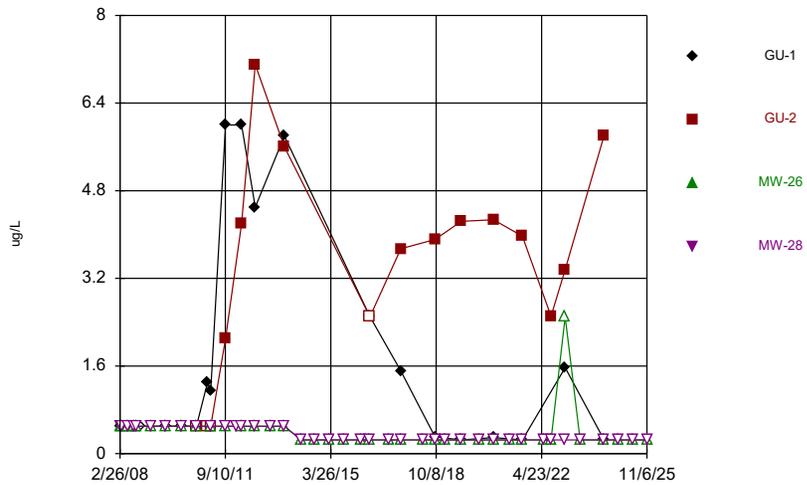
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



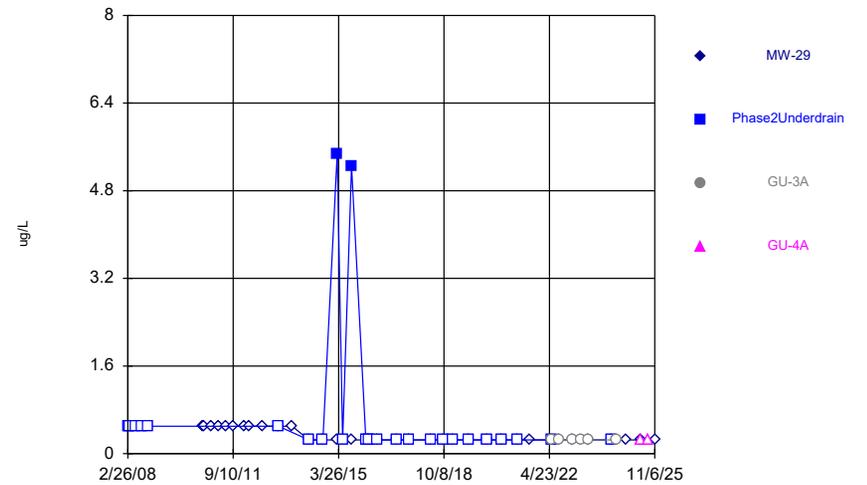
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



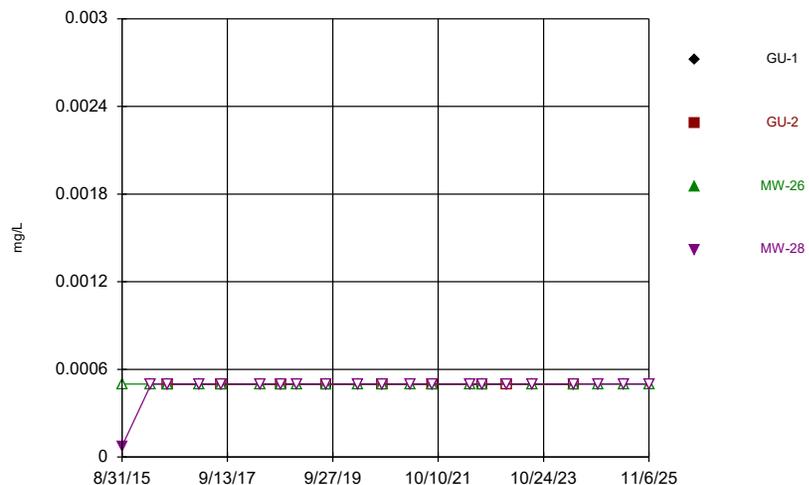
Constituent: Benzene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



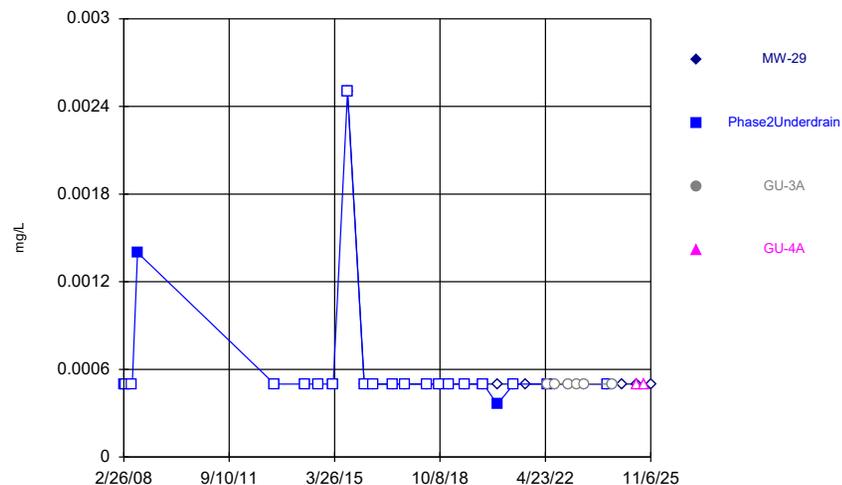
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



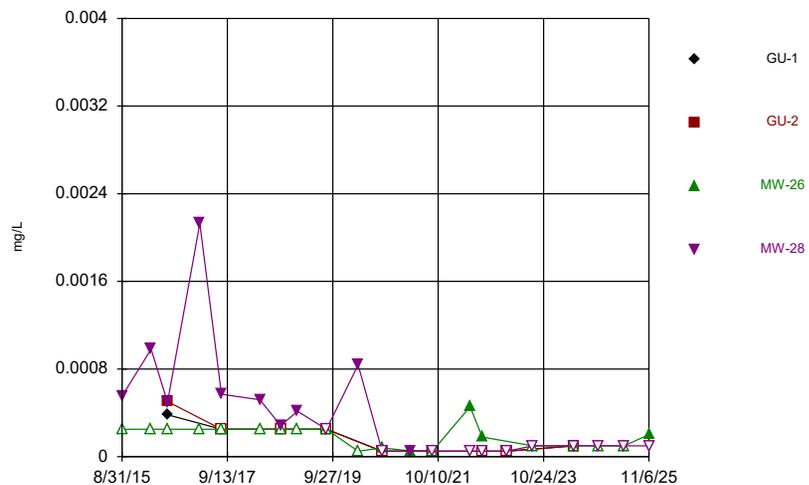
Constituent: Beryllium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



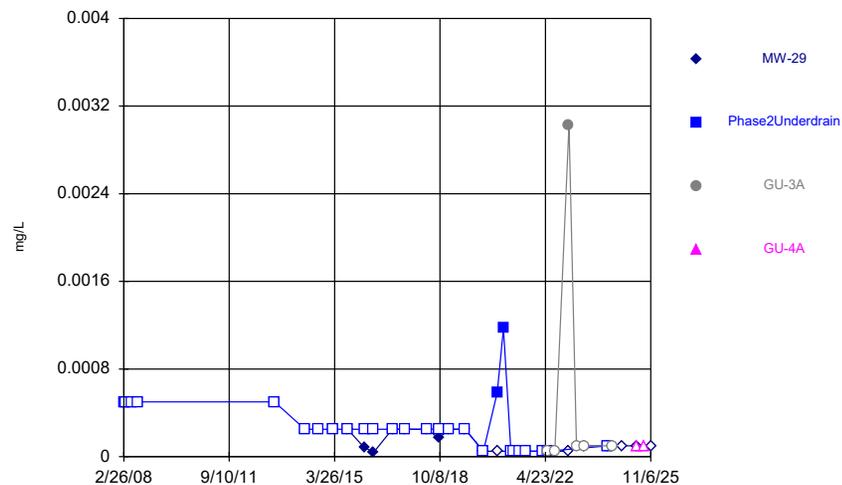
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



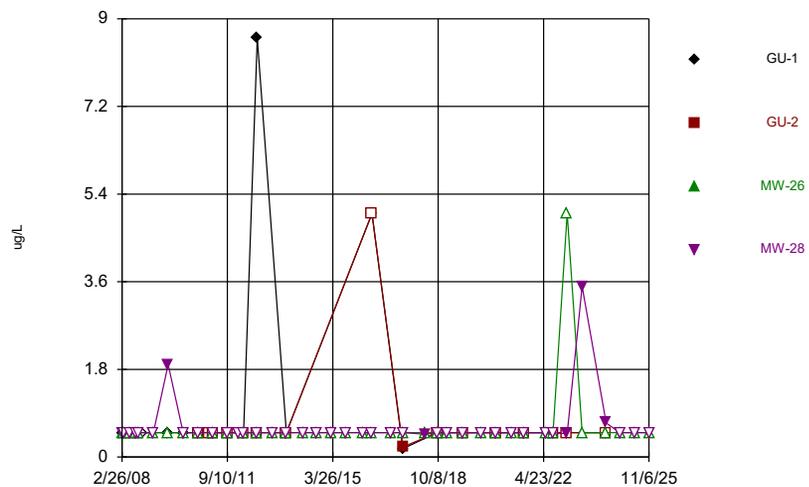
Constituent: Cadmium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



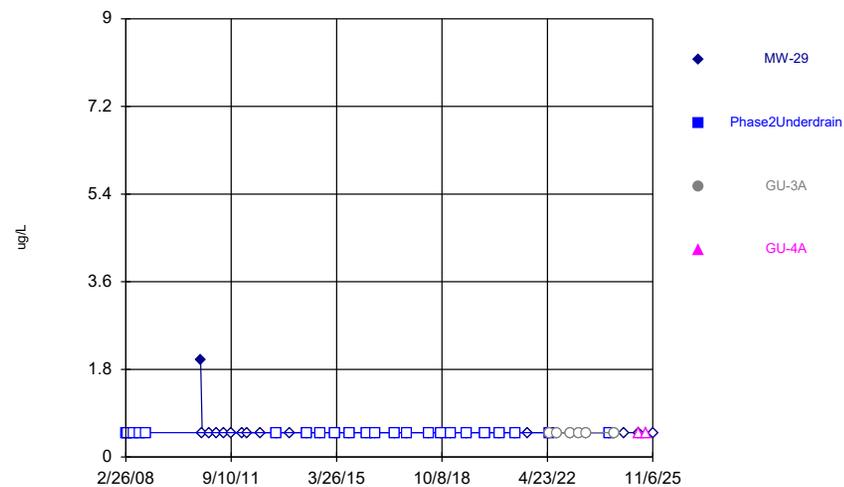
Constituent: Cadmium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



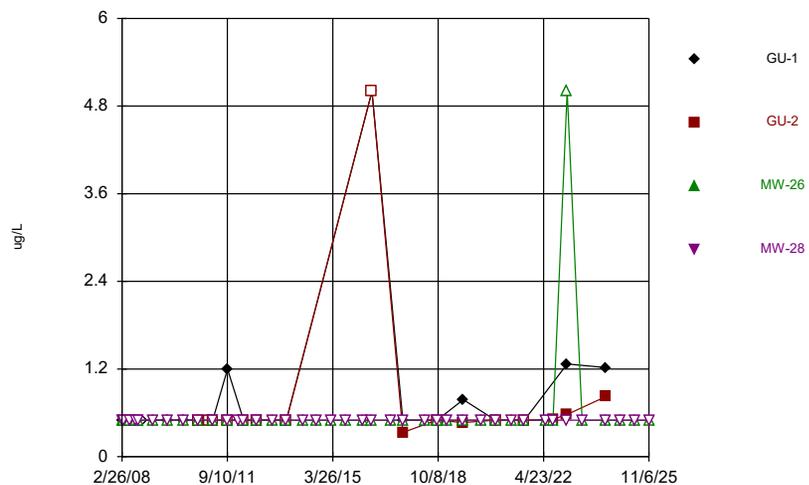
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



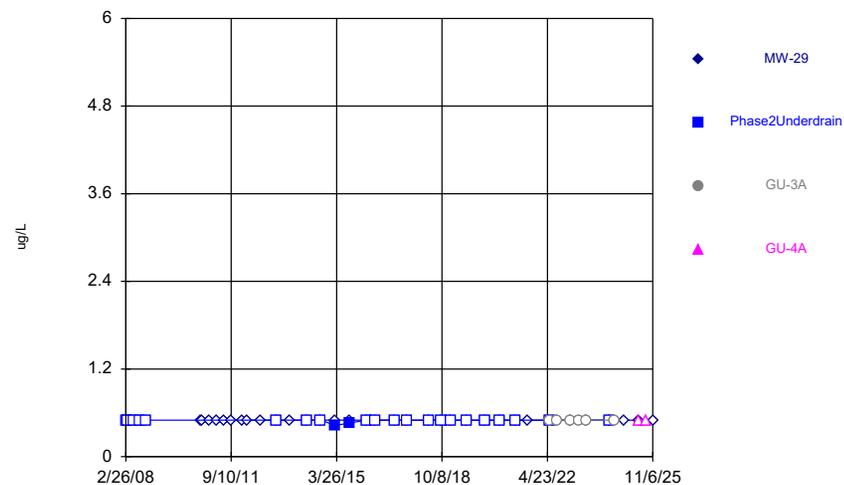
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



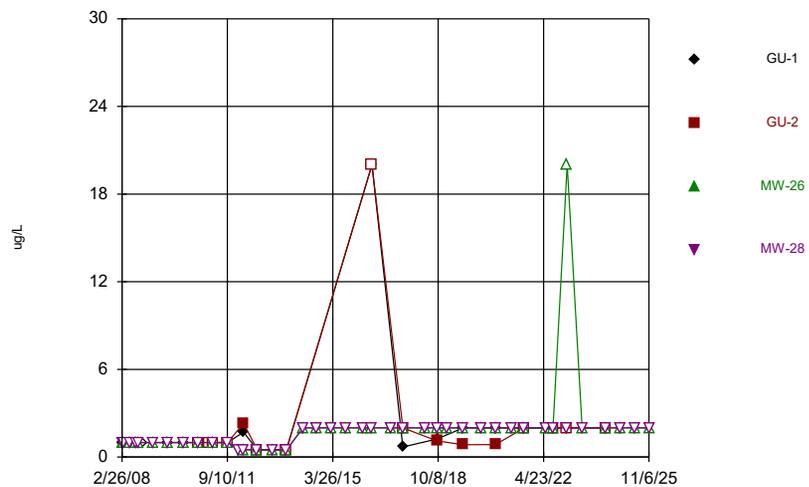
Constituent: Chlorobenzene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



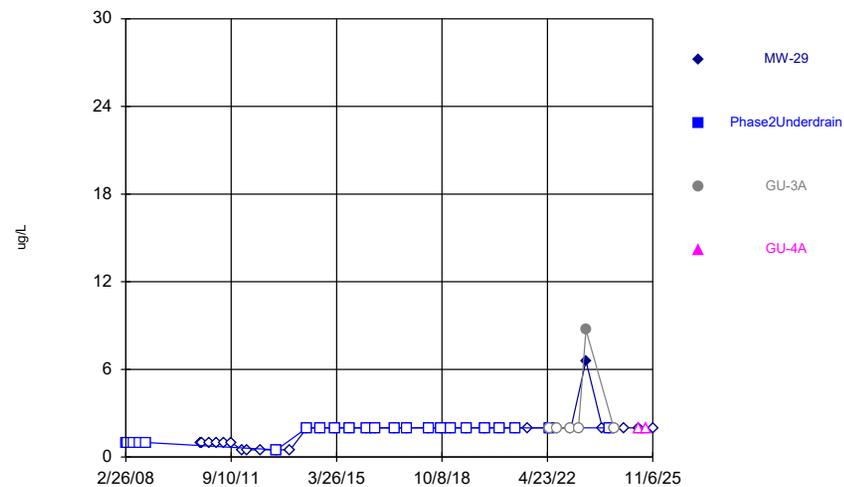
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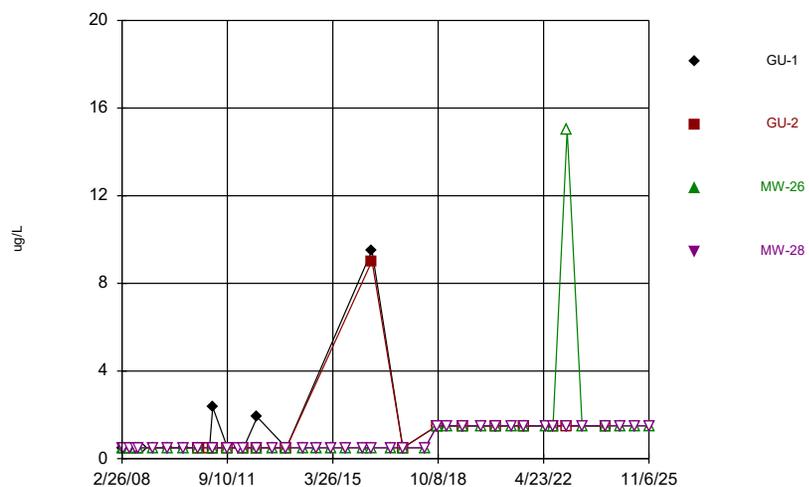
Constituent: Chloroethane Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



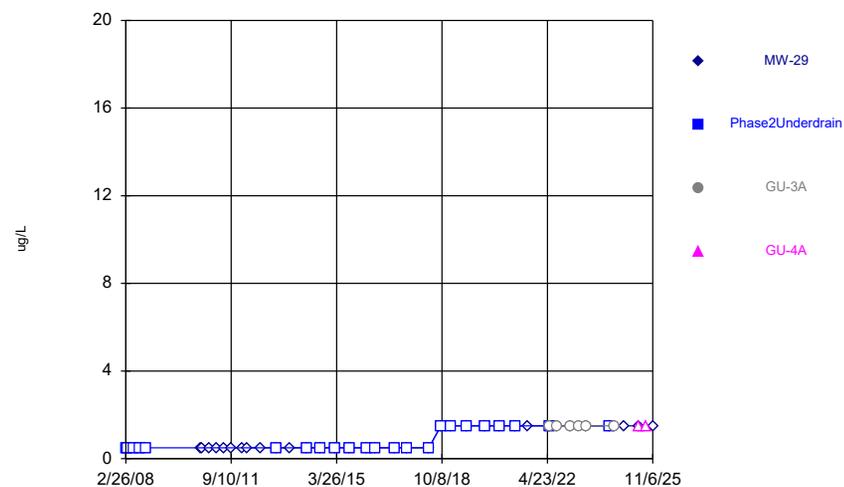
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



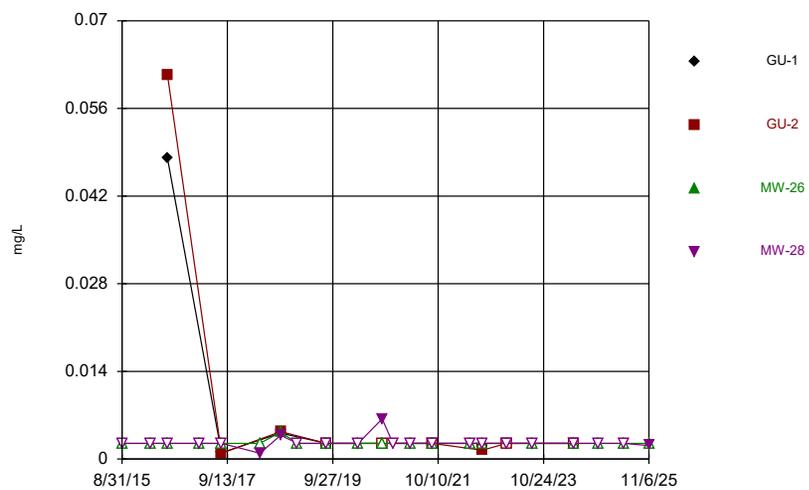
Constituent: Chloroform Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



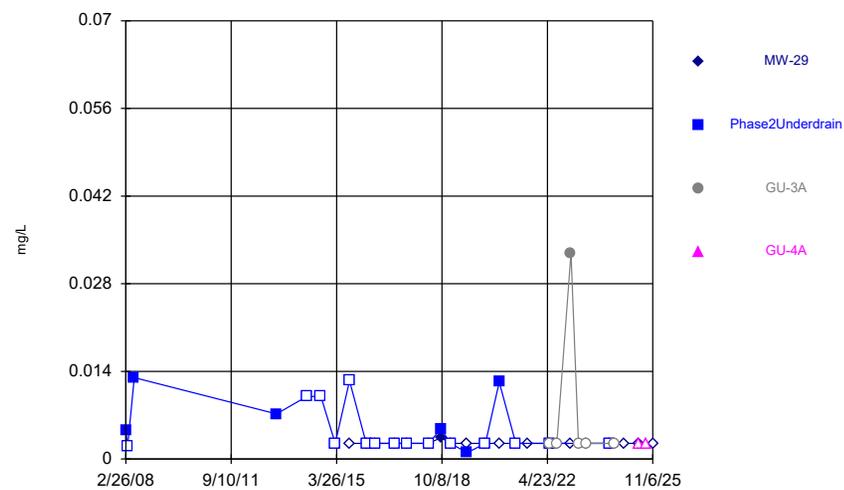
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



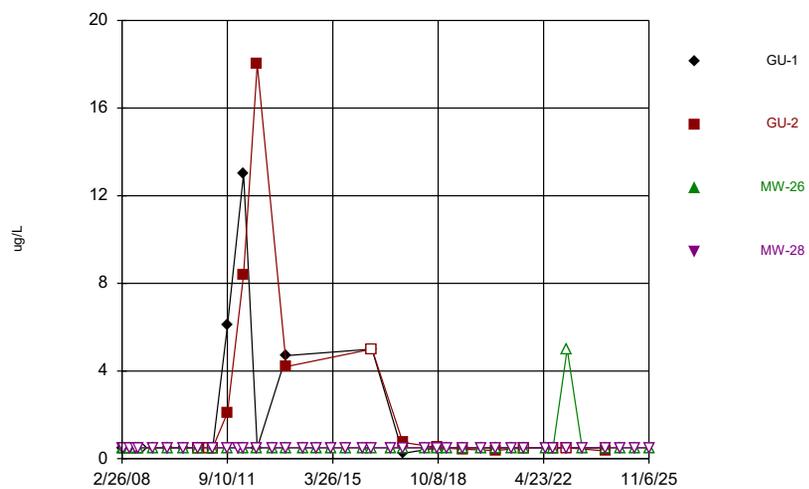
Constituent: Chromium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



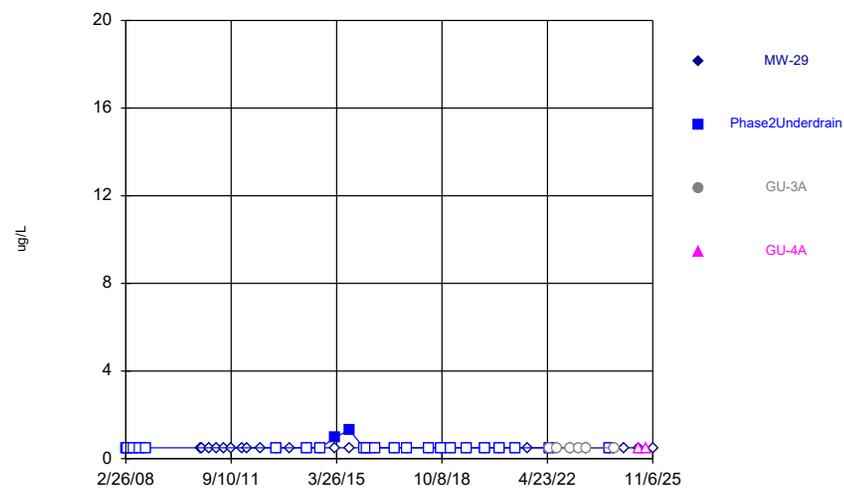
Constituent: Chromium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



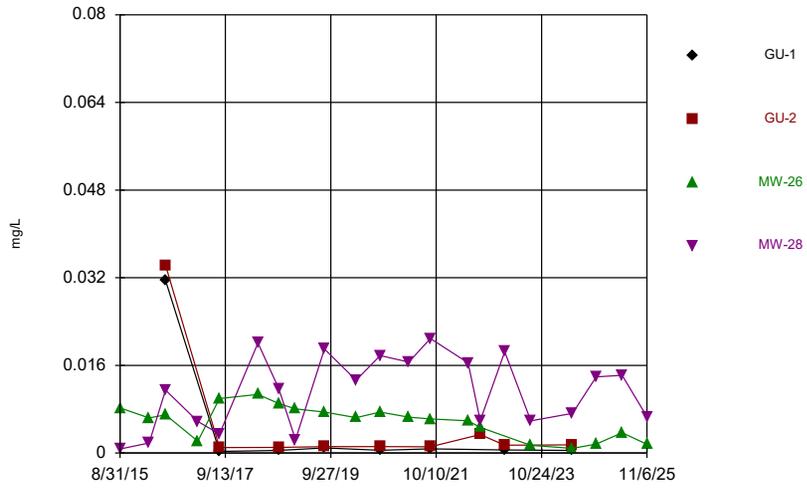
Constituent: cis-1,2-Dichloroethene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



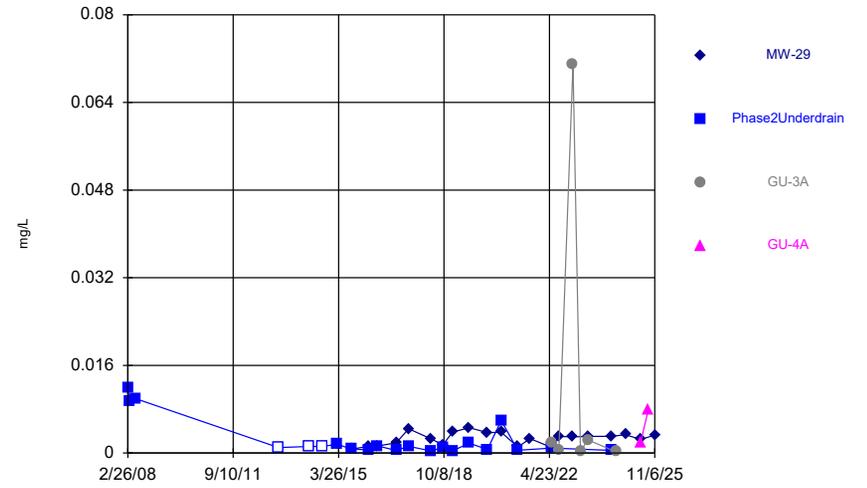
Constituent: cis-1,2-Dichloroethene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



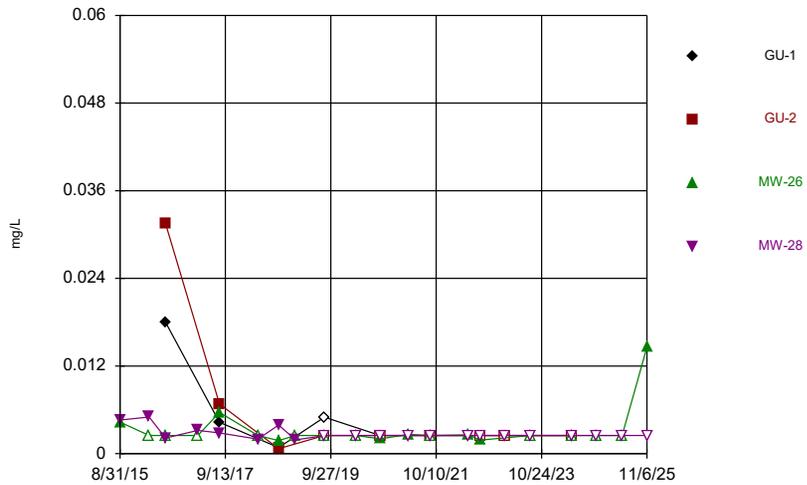
Constituent: Cobalt Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



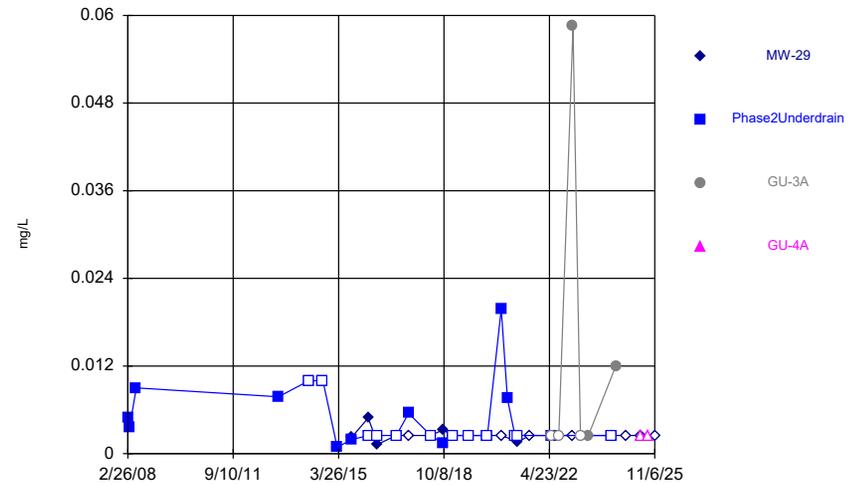
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



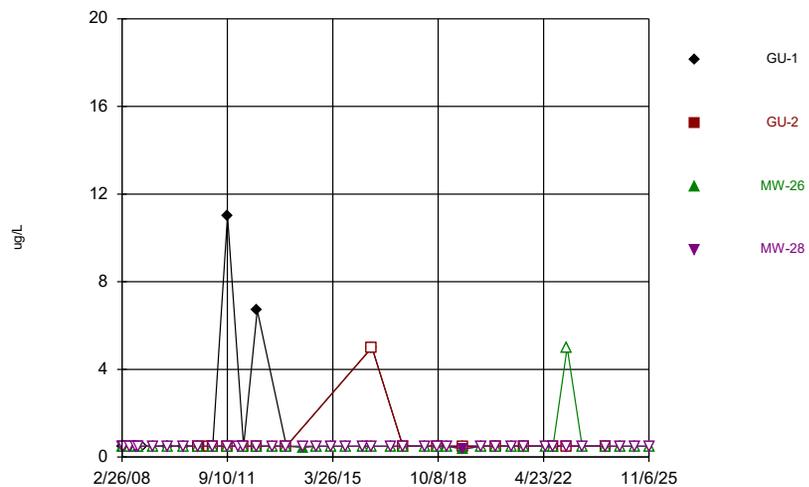
Constituent: Copper Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



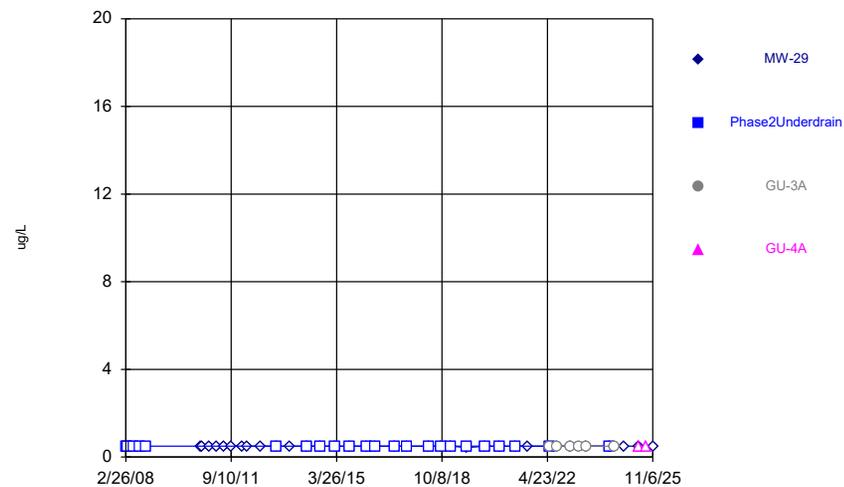
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

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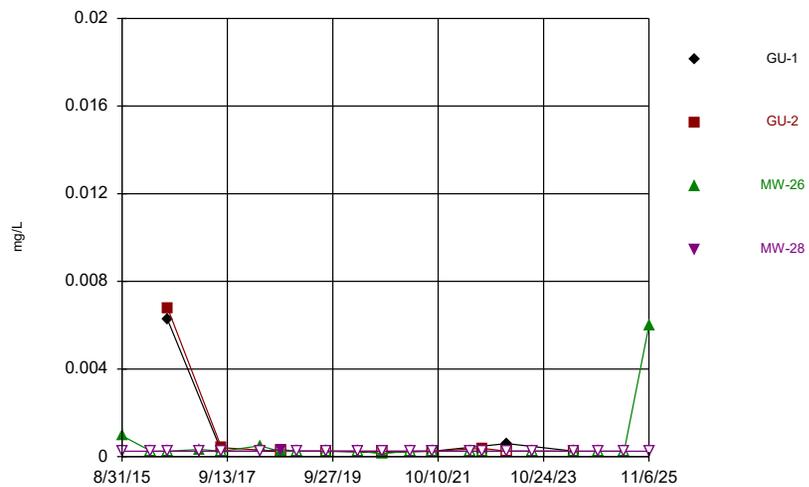
Constituent: Ethylbenzene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



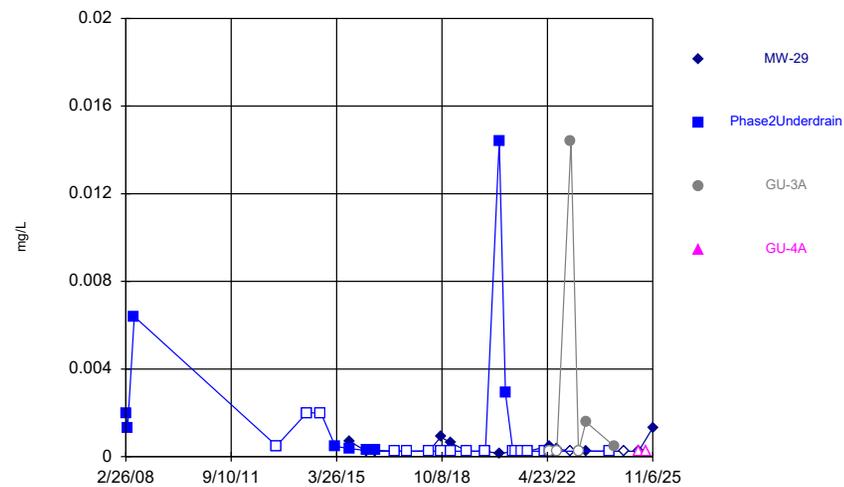
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### Time Series



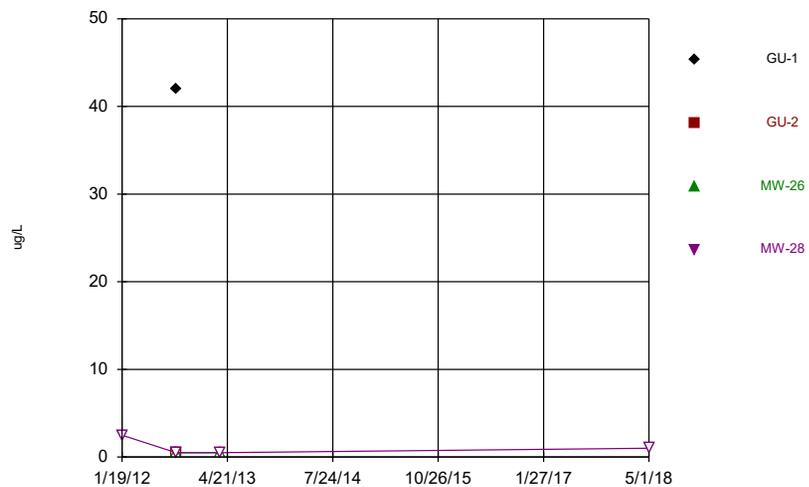
Constituent: Lead Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



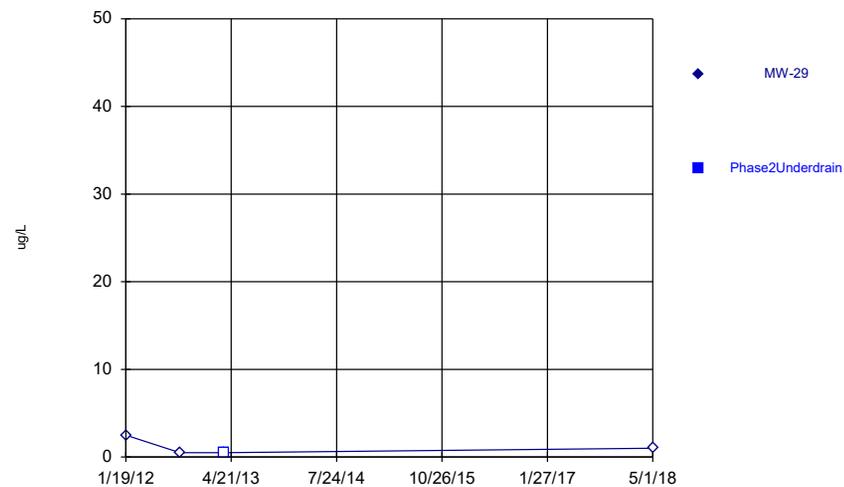
Constituent: Lead Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



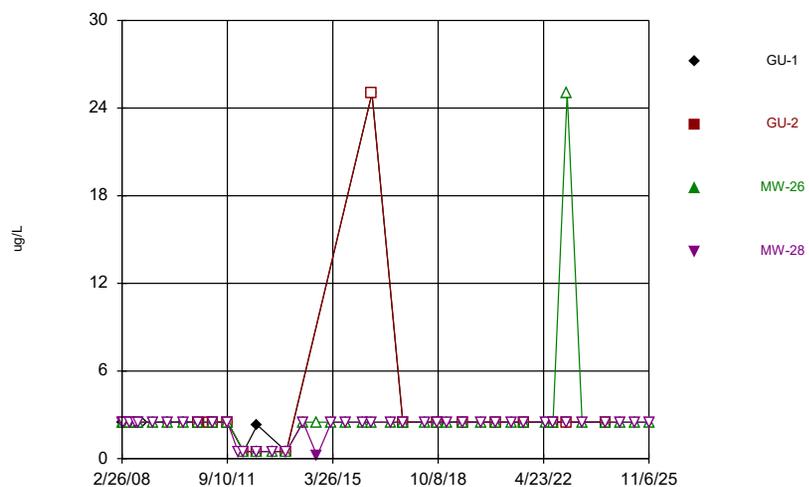
Constituent: M&P-Xylene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



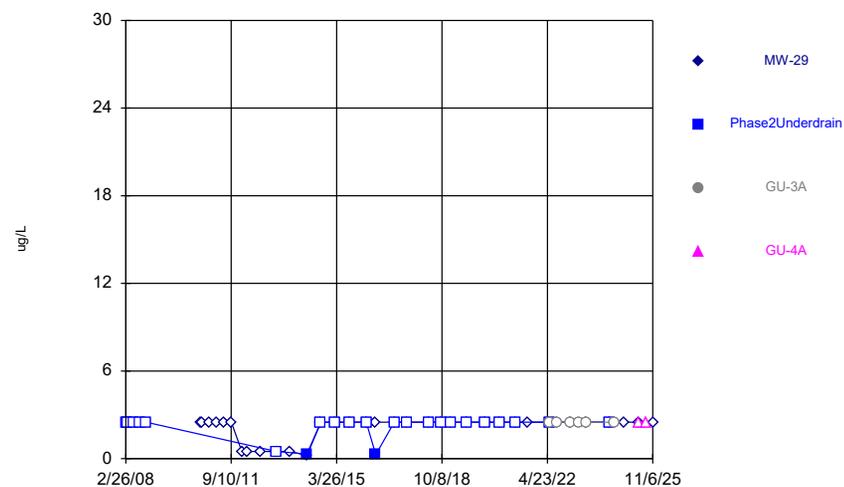
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



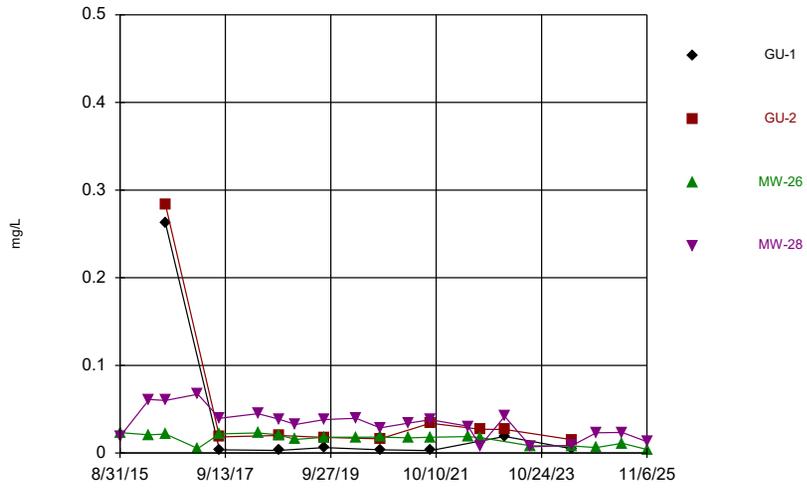
Constituent: Methylene Chloride Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



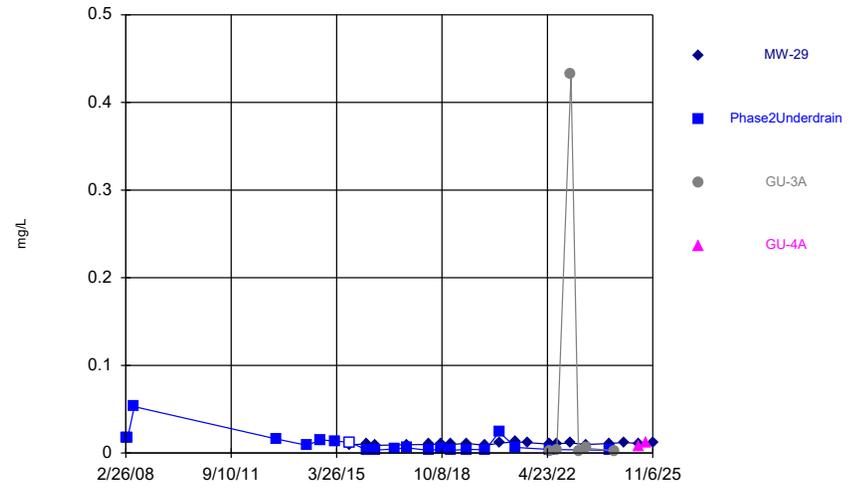
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 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



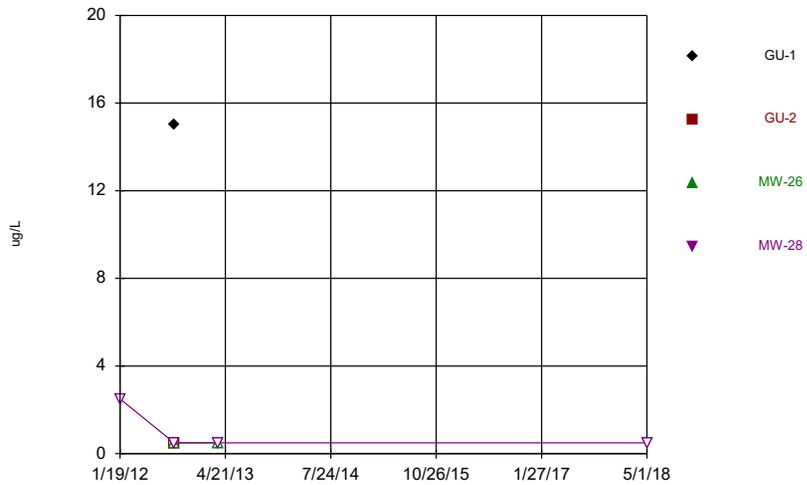
Constituent: Nickel Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



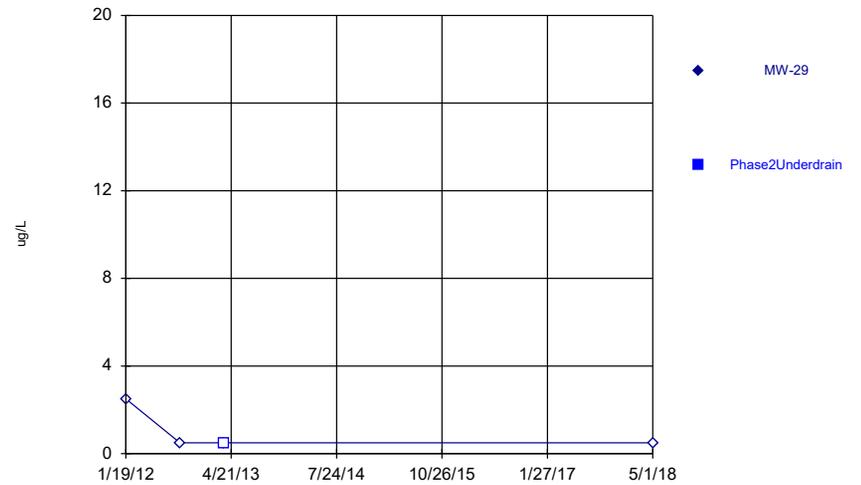
Constituent: Nickel Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



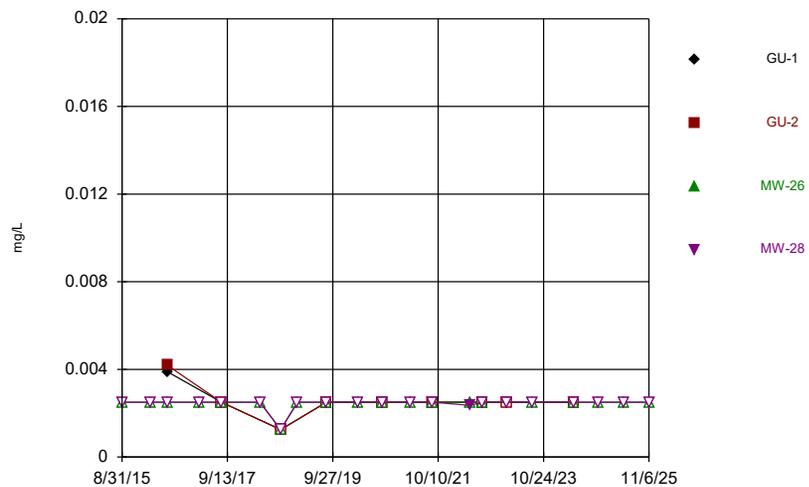
Constituent: O-Xylene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



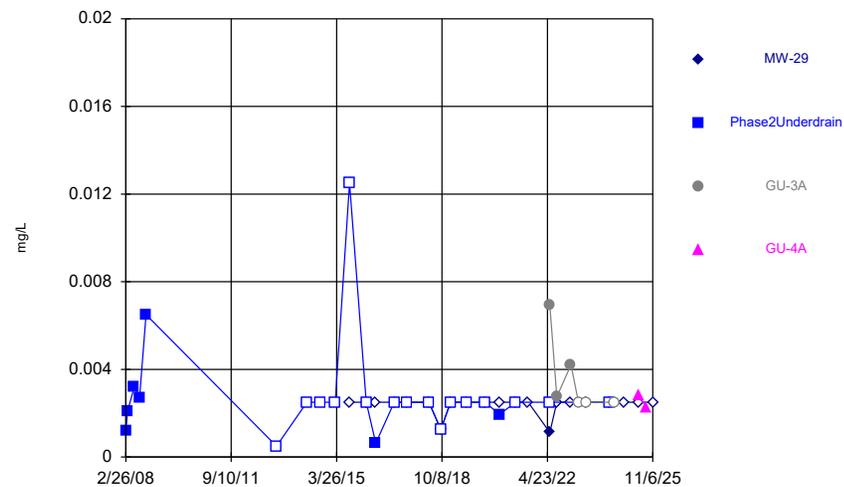
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



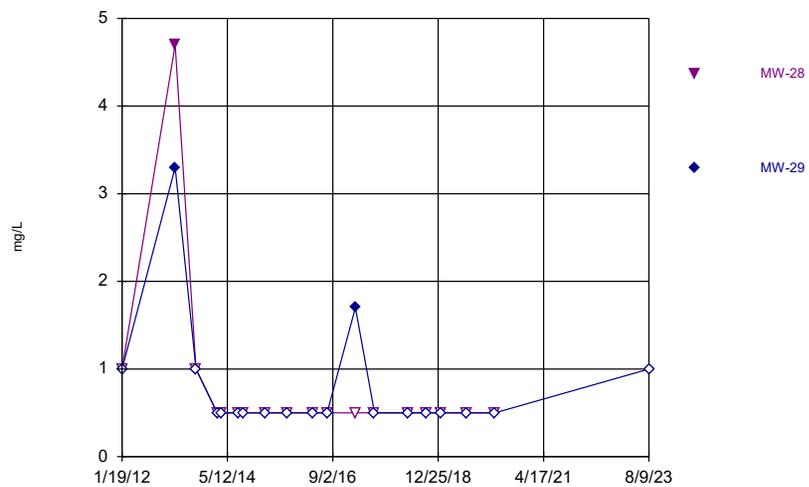
Constituent: Selenium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



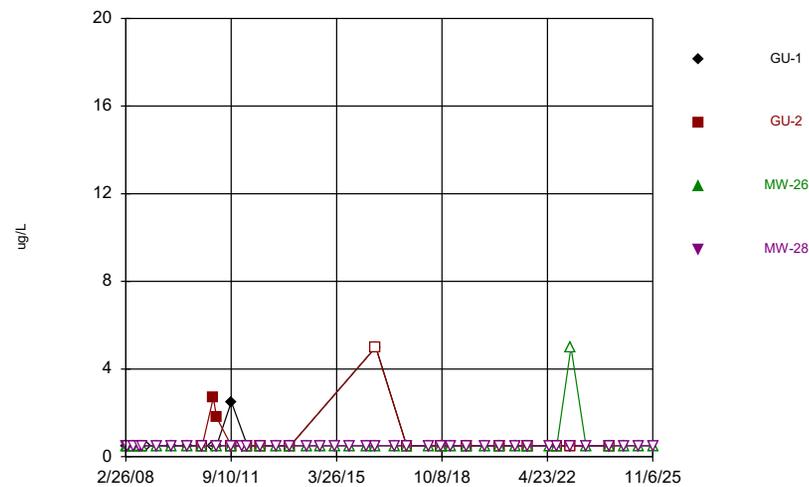
Constituent: Selenium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



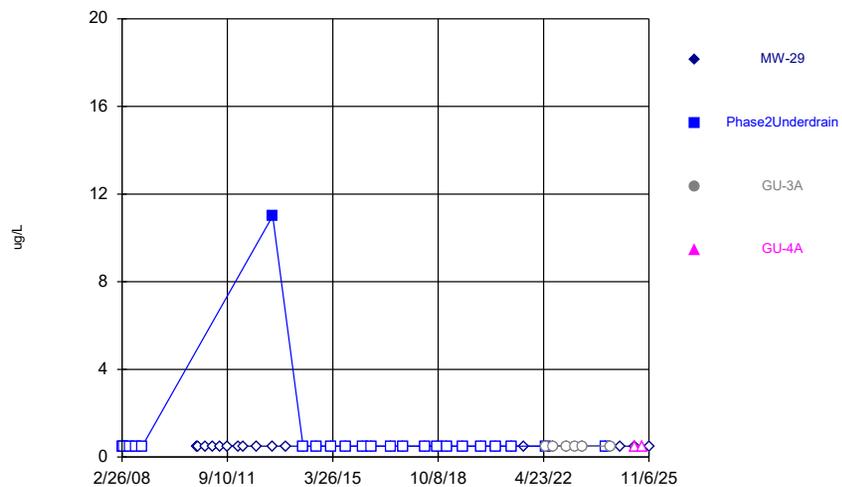
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



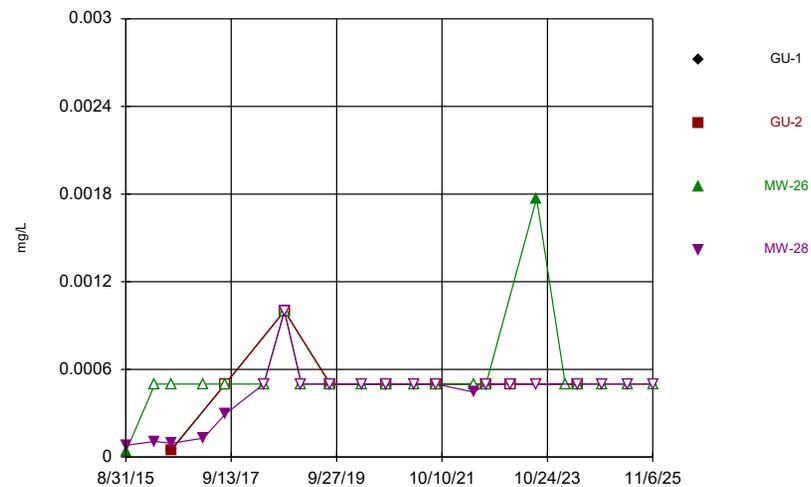
Constituent: Tetrachloroethene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



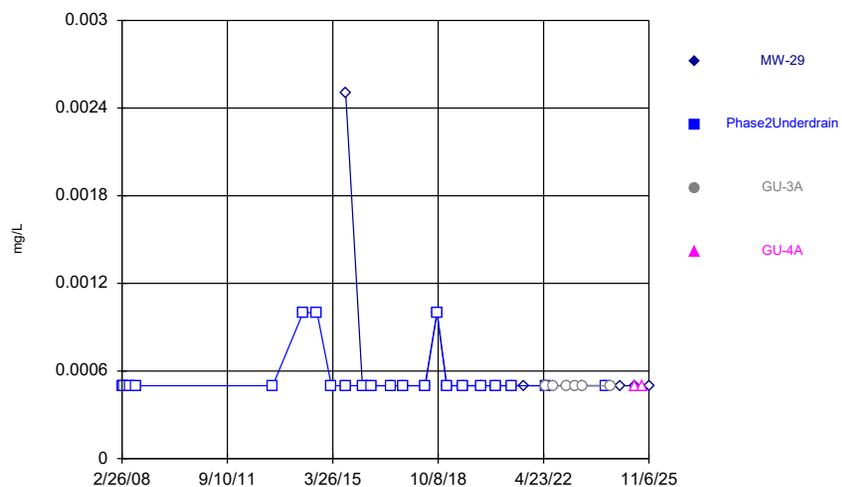
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Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



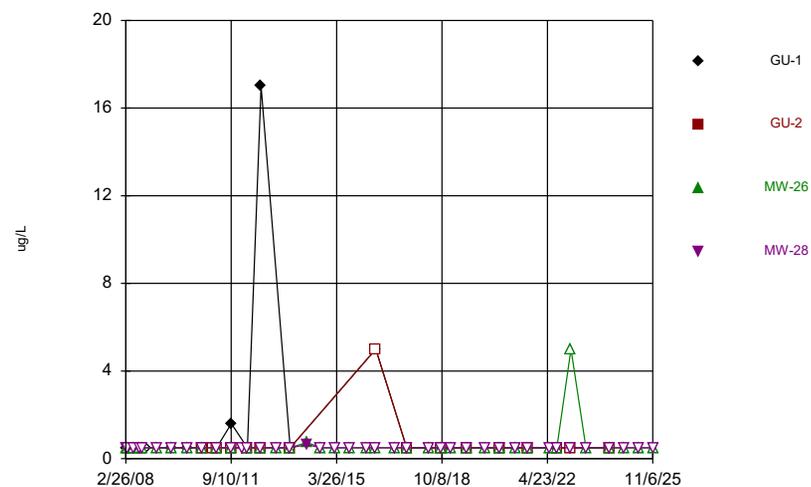
Constituent: Thallium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



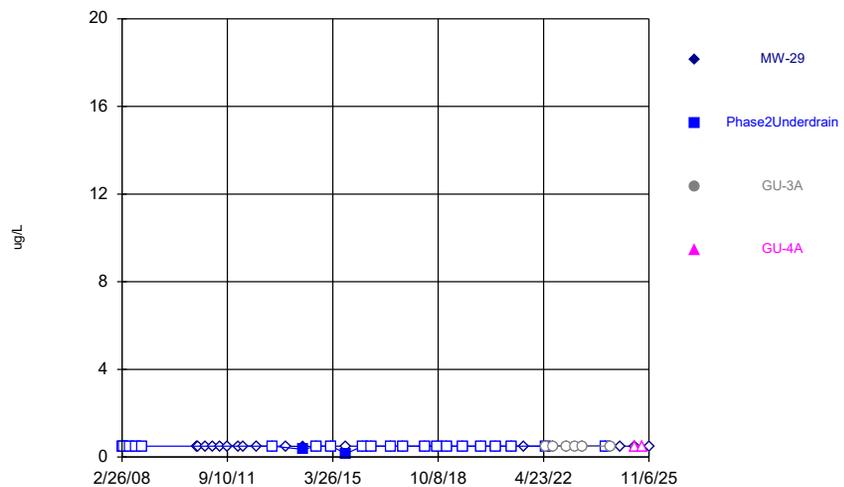
Constituent: Thallium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



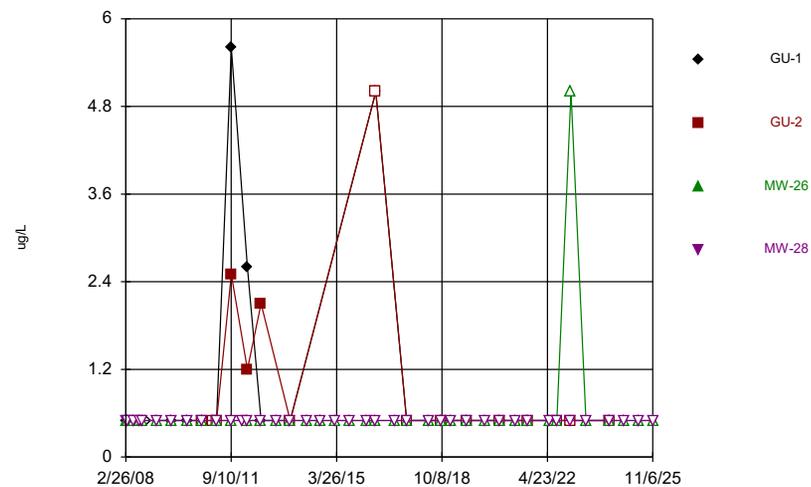
Constituent: Toluene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



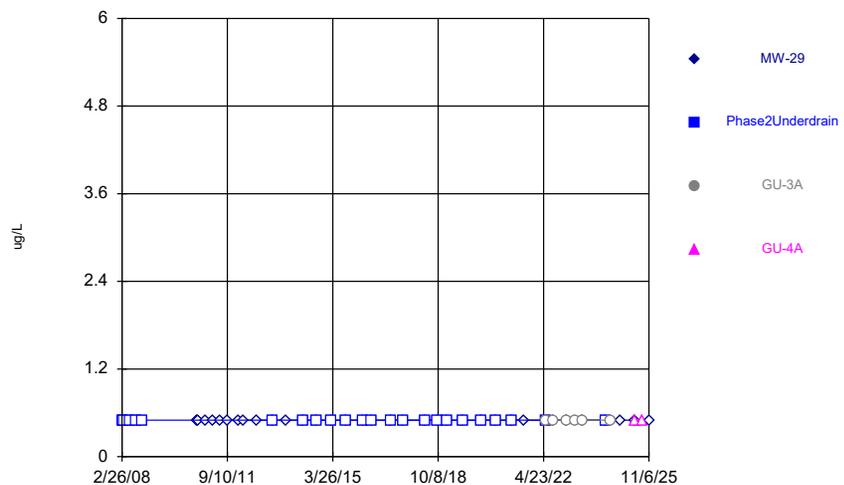
Constituent: Toluene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



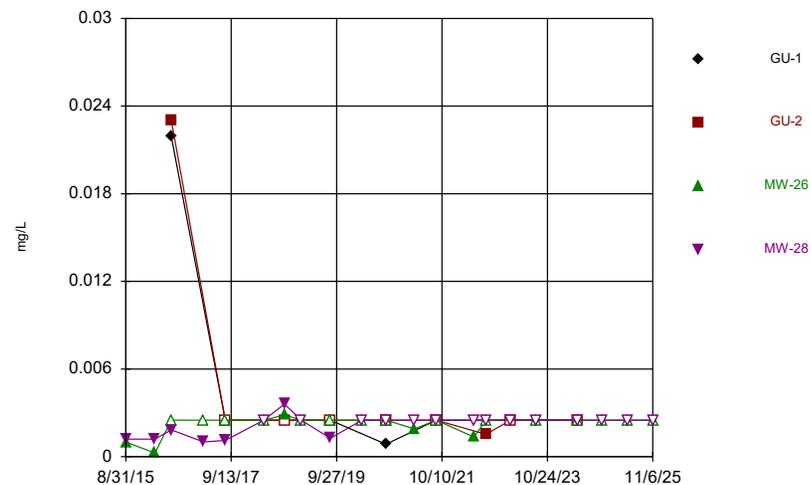
Constituent: Trichloroethene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



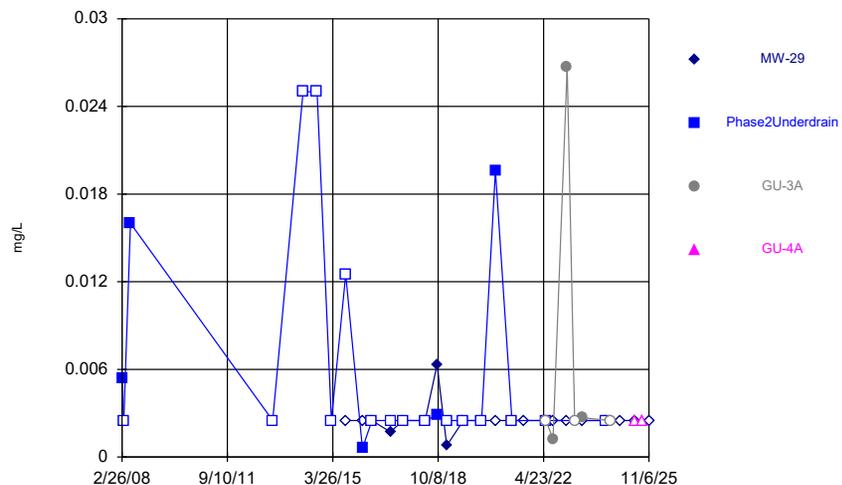
Constituent: Trichloroethene Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Time Series



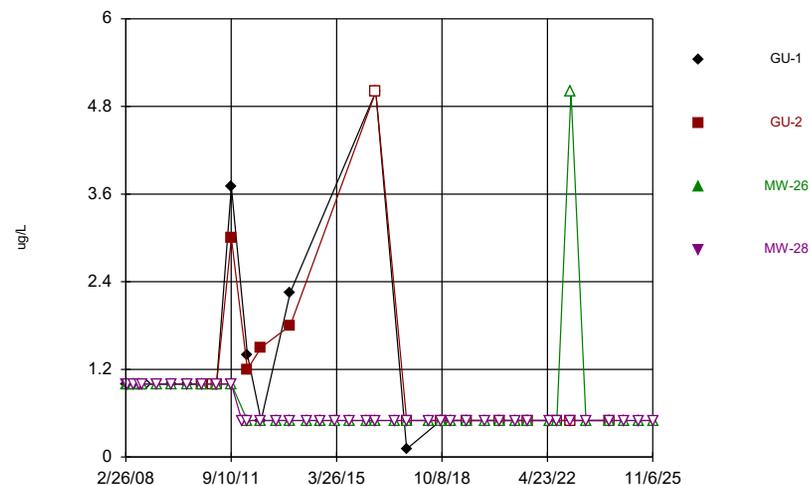
Constituent: Vanadium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



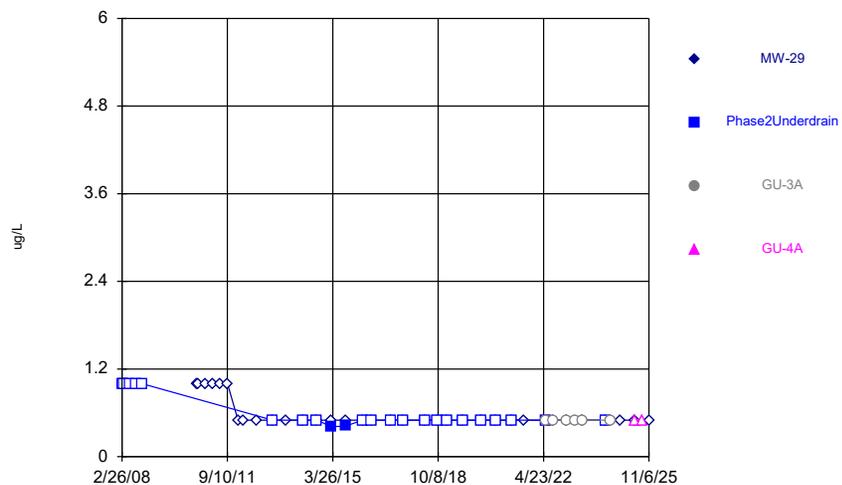
Constituent: Vanadium Analysis Run 1/9/2026 10:34 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



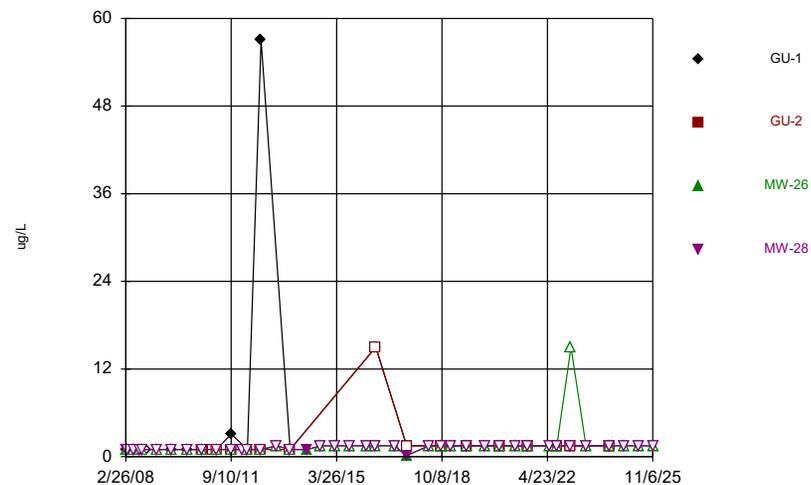
Constituent: Vinyl chloride Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



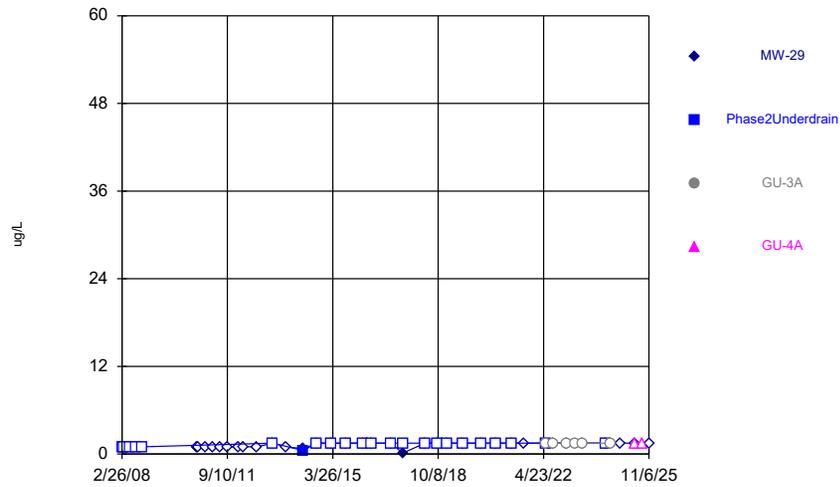
Constituent: Vinyl chloride Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



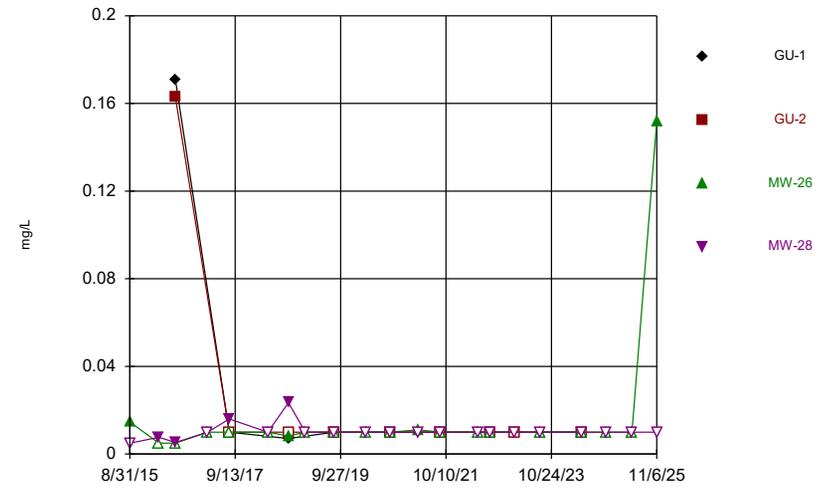
Constituent: Xylenes, total Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



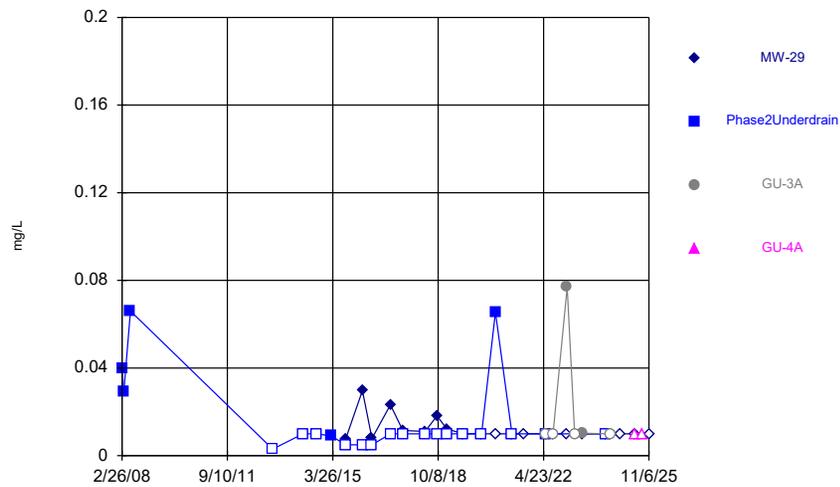
Constituent: Xylenes, total Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



Constituent: Zinc Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Time Series



Constituent: Zinc Analysis Run 1/9/2026 10:35 AM View: 2025AWQR - Time Series  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

## **Outlier Tests Summary Table and Graphs**

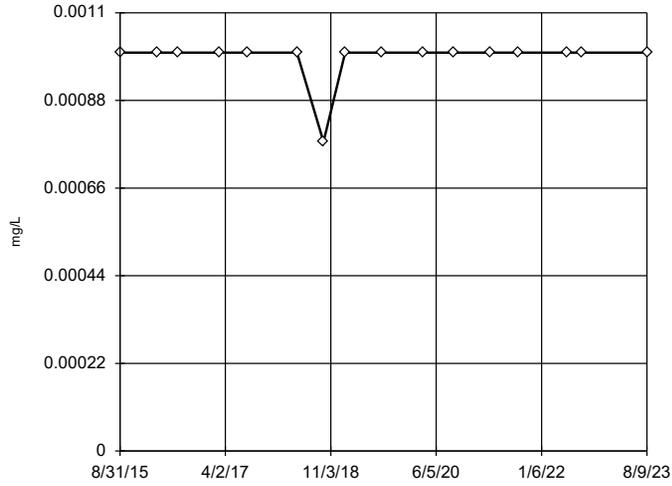
# MW-26 BG Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 11:56 AM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Arsenic (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.000986	0.000056	n/a	n/a
<b>Barium (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.103,0.0268</b>	<b>2/27/2024,3/2/2017</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>17</b>	<b>0.04649</b>	<b>0.0161</b>	<b>normal</b>	<b>ShapiroWilk</b>
Cadmium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.0002013	0.0001095	n/a	n/a
Chromium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.002613	0.0004525	n/a	n/a
<b>Cobalt (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00217,0.0014</b>	<b>3/2/2017,8/9/2023</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>16</b>	<b>0.006735</b>	<b>0.002465</b>	<b>normal</b>	<b>ShapiroWilk</b>
<b>Copper (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00432,0.00565,0.00179,0.002025,0.00186</b>	<b>8/31/2015,8/2/2017,9/24/2018,9/10/2020,8/17/2022</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>16</b>	<b>0.002711</b>	<b>0.0009554</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Lead (mg/L)	MW-26	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.000307	0.0001858	unknown	ShapiroWilk
<b>Nickel (mg/L)</b>	<b>MW-26</b>	<b>Yes</b>	<b>0.00825,0.005175</b>	<b>8/9/2023,3/2/2017</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>16</b>	<b>0.01791</b>	<b>0.004917</b>	<b>normal</b>	<b>ShapiroWilk</b>
Silver (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.0004864	0.00006359	n/a	n/a
Thallium (mg/L)	MW-26	No	n/a	n/a	OH	NaN	17	0.0005769	0.0003515	n/a	n/a
Vanadium (mg/L)	MW-26	No	n/a	n/a	NP (nrm)/OH	NaN	16	0.002179	0.0007053	unknown	ShapiroWilk
Zinc (mg/L)	MW-26	No	n/a	n/a	OH	NaN	16	0.009618	0.002206	n/a	n/a

### Ohio EPA 0715 Outlier Algorithm

MW-26

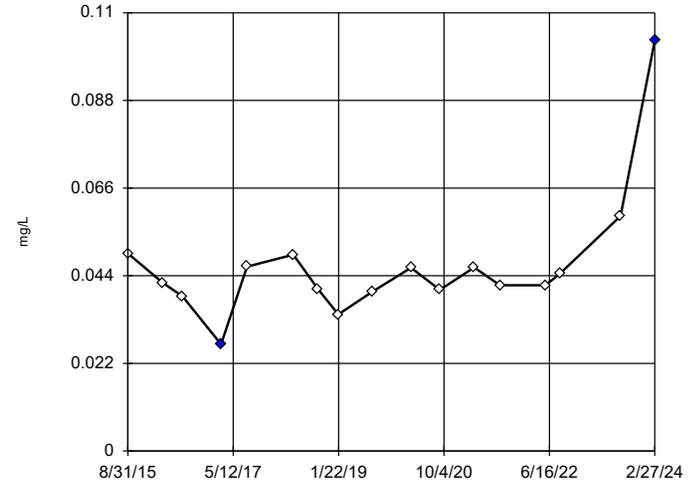


n = 16  
No statistical outliers.

Constituent: Arsenic Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

MW-26

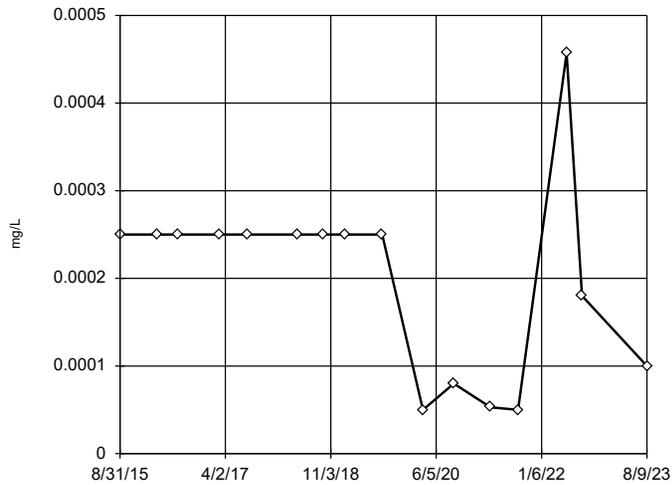


n = 17  
Statistical outliers are drawn as solid.  
Testing for 1 high and 1 low outliers.  
Mean = 0.04649.  
Std. Dev. = 0.0161.  
0.103: c = 0.8318  
tab1 = 0.49.  
0.0268 (D): c = 0.5263  
tab1 = 0.49.  
Alpha = 0.05.  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9259  
Critical = 0.901  
The distribution, after removal of suspect values, was found to be normally distributed.

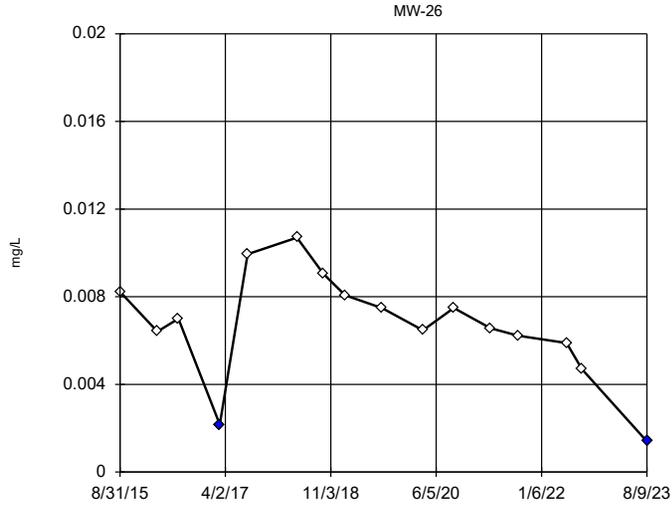
Constituent: Barium Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26



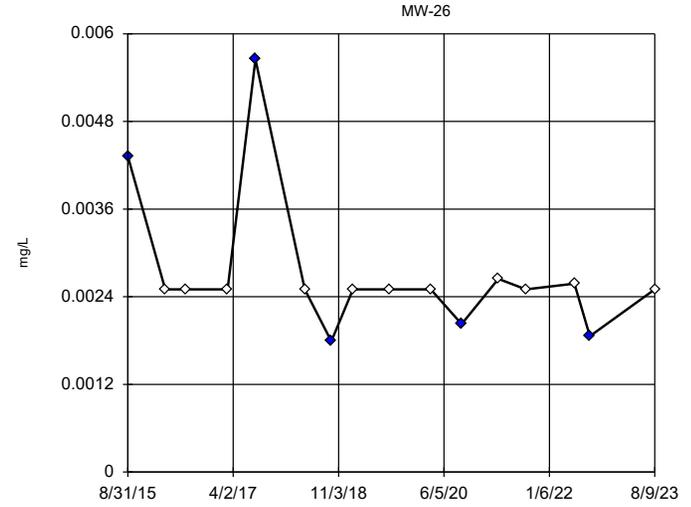
### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm



n = 16  
 Statistical outliers are drawn as solid.  
 Testing for 2 low outliers.  
 Mean = 0.006735.  
 Std. Dev. = 0.002465.  
 0.00217 (D); c = 0.5415  
 tab1 = 0.507.  
 Alpha = 0.05.  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9639  
 Critical = 0.895  
 The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Cobalt Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

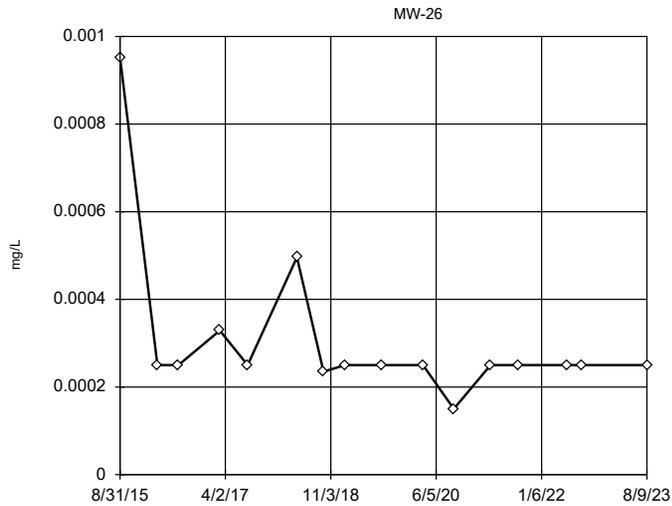
### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



n = 16  
 Outliers are drawn as solid.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 High cutoff = 0.002663,  
 low cutoff = 0.002385,  
 based on IQR multiplier of 3.

Constituent: Copper Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

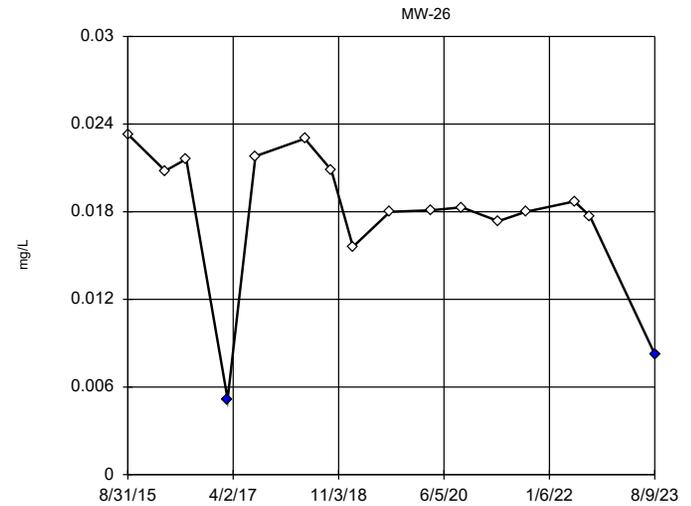
### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



n = 16  
 No outliers found.  
 Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
 Data were natural log transformed to achieve best W statistic (graph shown in original units).  
 The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm

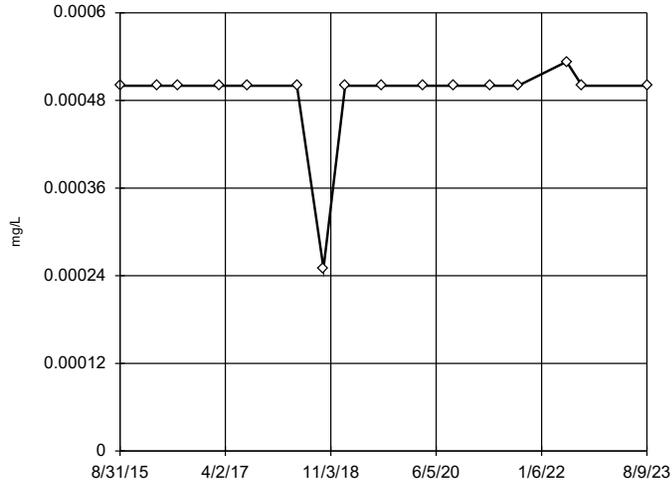


n = 16  
 Statistical outliers are drawn as solid.  
 Testing for 2 low outliers.  
 Mean = 0.01791.  
 Std. Dev. = 0.004917.  
 0.00825; c = 0.6716  
 tab1 = 0.507.  
 Alpha = 0.05.  
 Normality test used:  
 Shapiro Wilk@alpha = 0.1  
 Calculated = 0.9253  
 Critical = 0.895  
 The distribution, after removal of suspect values, was found to be normally distributed.

Constituent: Nickel Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
 Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

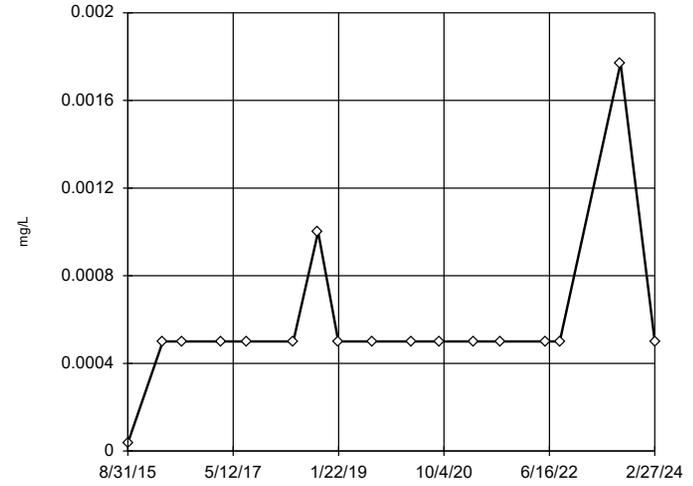


n = 16  
No statistical outliers.

Constituent: Silver Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26

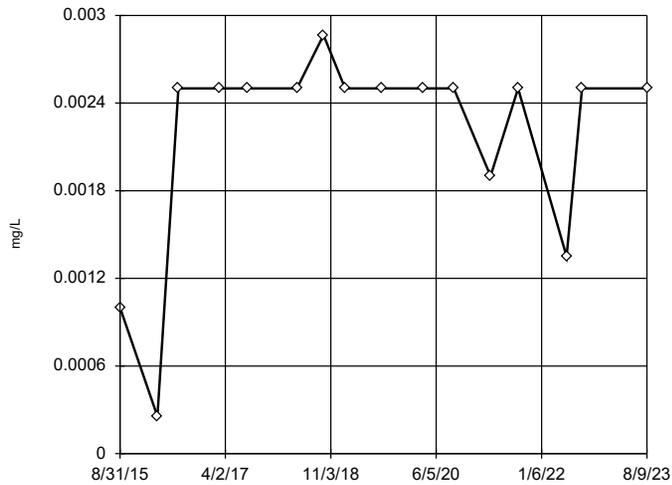


n = 17  
No statistical outliers.

Constituent: Thallium Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-26

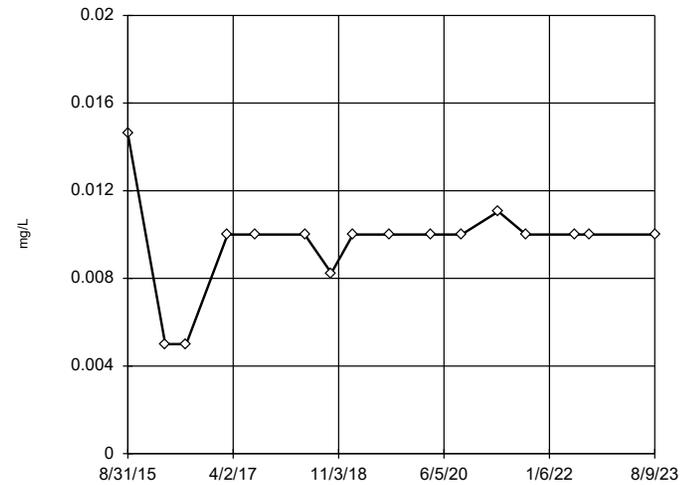


n = 16  
No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
Data were x<sup>5</sup> transformed to achieve best W statistic (graph shown in original units).  
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Vanadium Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-26



n = 16  
No statistical outliers.

Constituent: Zinc Analysis Run 1/9/2026 11:54 AM View: 2025 AWQR MW-26 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

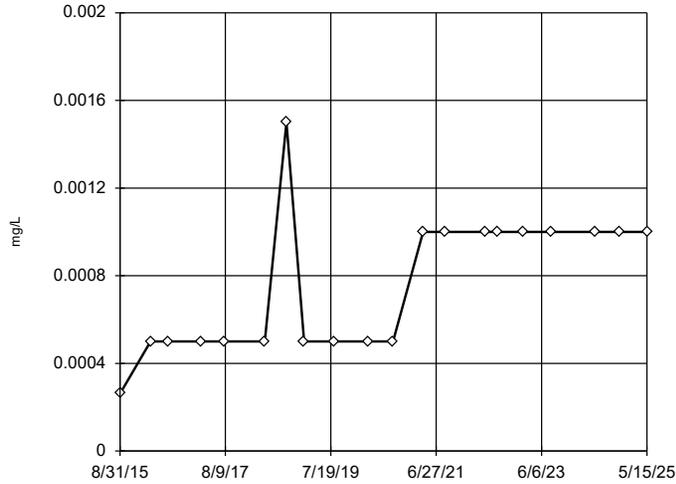
# MW-28 BG Outlier Analysis

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 12:48 PM

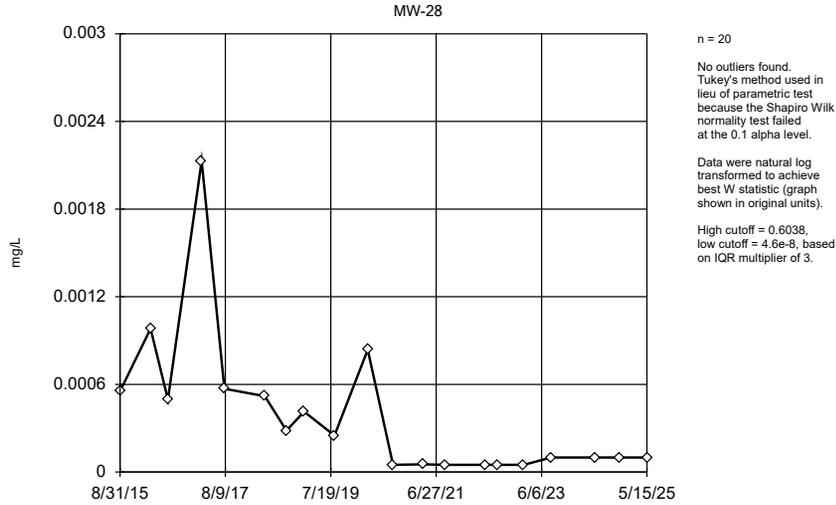
<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Antimony (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0007631	0.0003181	n/a	n/a
Arsenic (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.0009694	0.0001856	unknown	ShapiroWilk
Barium (mg/L)	MW-28	No	n/a	n/a	EPA/OH	0.05	21	0.0194	0.002913	normal	ShapiroWilk
Beryllium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0004788	0.00009503	n/a	n/a
Cadmium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.0003869	0.0004986	unknown	ShapiroWilk
Chromium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	21	0.002674	0.0009725	n/a	n/a
Cobalt (mg/L)	MW-28	No	n/a	n/a	Dixon/OH	0.05	20	0.01137	0.006662	normal	ShapiroWilk
<b>Copper (mg/L)</b>	<b>MW-28</b>	<b>Yes</b>	<b>0.00461,0.00503,0.00199,0.00393,0.00189</b>	<b>8/31/2015,3/24/2016,5/1/2018,9/24/2018,1/21/2019</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.002781</b>	<b>0.0008167</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Lead (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0002539	0.00001722	n/a	n/a
Nickel (mg/L)	MW-28	No	n/a	n/a	EPA/OH	0.05	20	0.03428	0.01675	normal	ShapiroWilk
Selenium (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.00243	0.0002797	n/a	n/a
Silver (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.0005071	0.00009789	n/a	n/a
<b>Thallium (mg/L)</b>	<b>MW-28</b>	<b>Yes</b>	<b>0.001</b>	<b>9/24/2018</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.0004325</b>	<b>0.0002098</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Vanadium (mg/L)	MW-28	No	n/a	n/a	NP (nrm)/OH	NaN	20	0.002186	0.0006776	unknown	ShapiroWilk
Zinc (mg/L)	MW-28	No	n/a	n/a	OH	NaN	20	0.01037	0.00374	n/a	n/a

### Ohio EPA 0715 Outlier Algorithm

MW-28

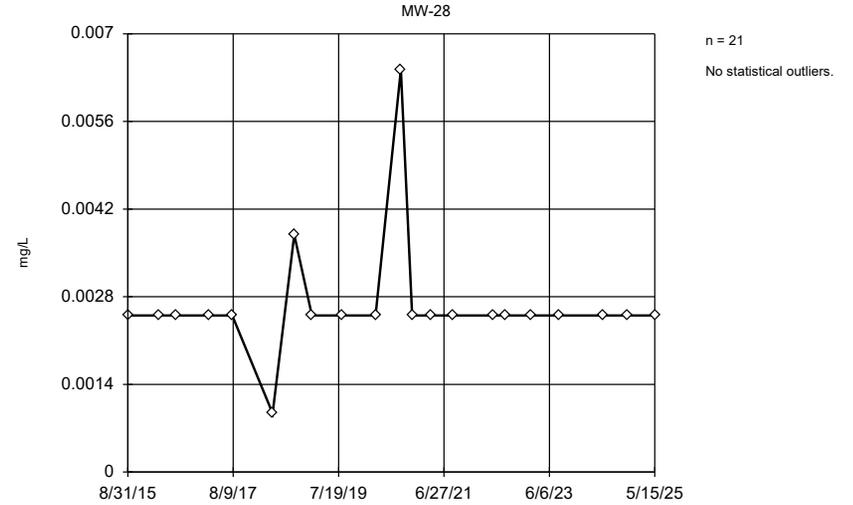


### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



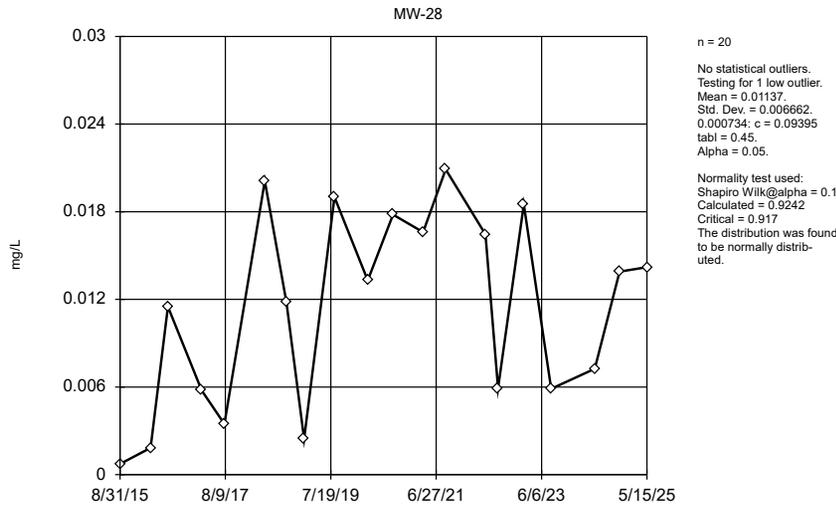
Constituent: Cadmium Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



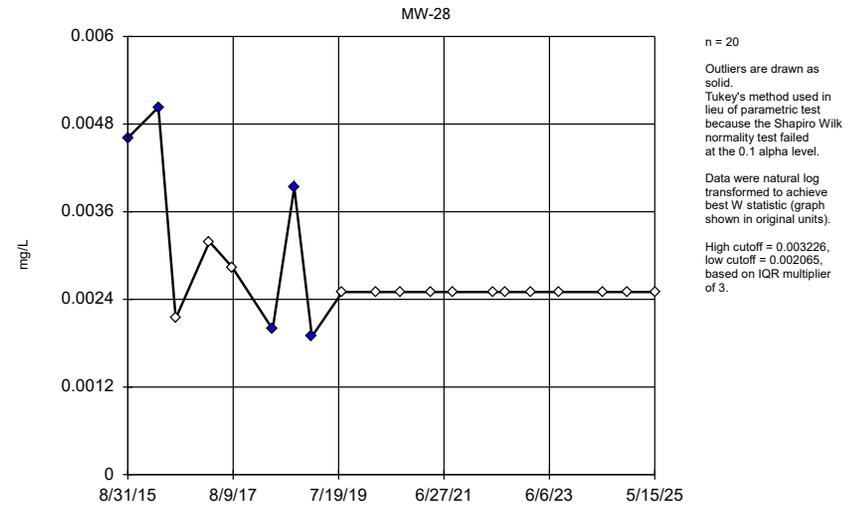
Constituent: Chromium Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Dixon's Outlier Test / Ohio EPA 0715 Outlier Algorithm



Constituent: Cobalt Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

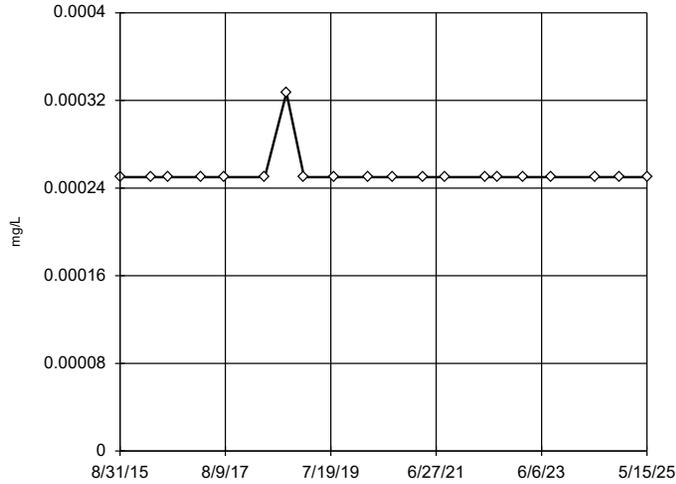
### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



Constituent: Copper Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

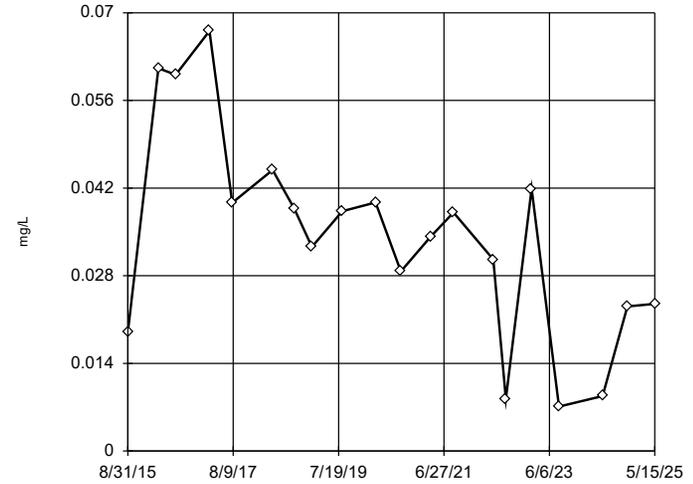


n = 20  
No statistical outliers.

Constituent: Lead Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### EPA Screening (suspected outliers for Dixon's Test)

MW-28

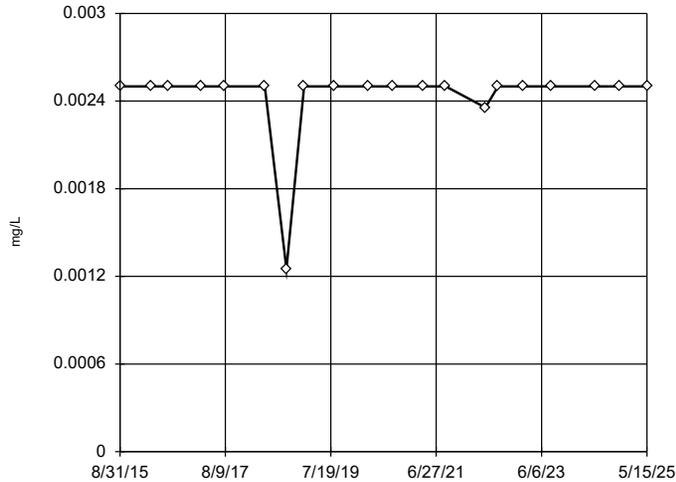


n = 20  
Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Ohio method in use.  
Mean 0.03428, std. dev. 0.01675, critical Tn 2.557  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9522  
Critical = 0.92  
The distribution was found to be normally distributed.

Constituent: Nickel Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-28

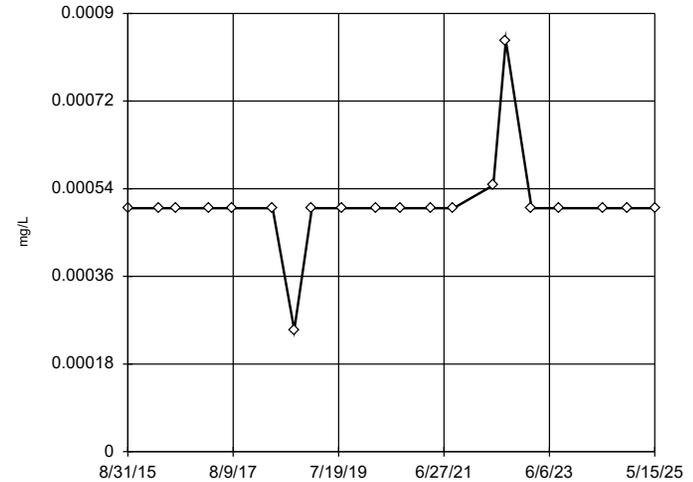


n = 20  
No statistical outliers.

Constituent: Selenium Analysis Run 1/9/2026 12:44 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

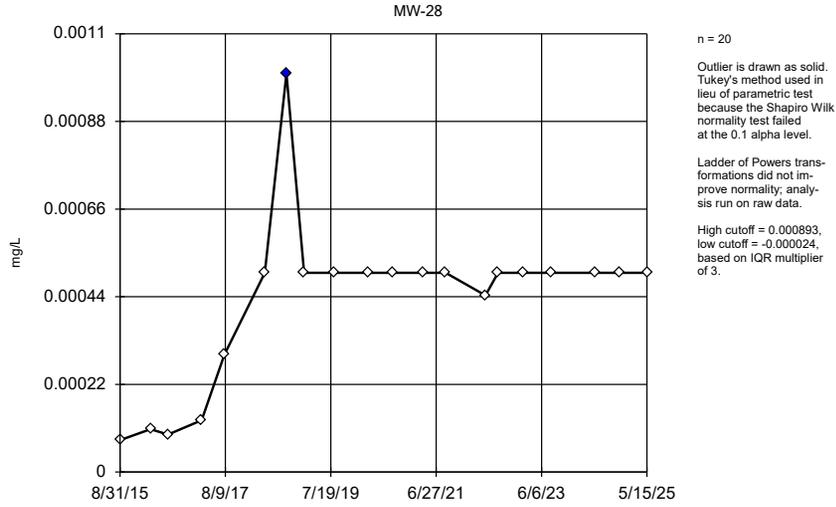
MW-28



n = 20  
No statistical outliers.

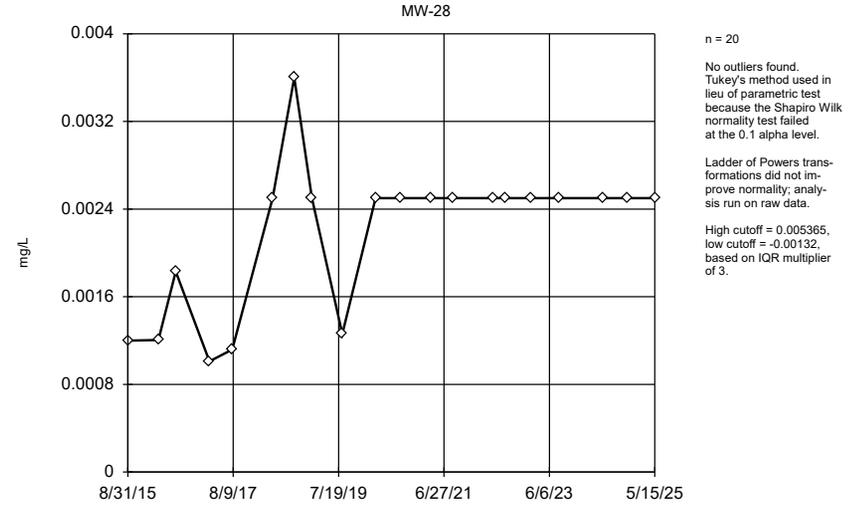
Constituent: Silver Analysis Run 1/9/2026 12:45 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



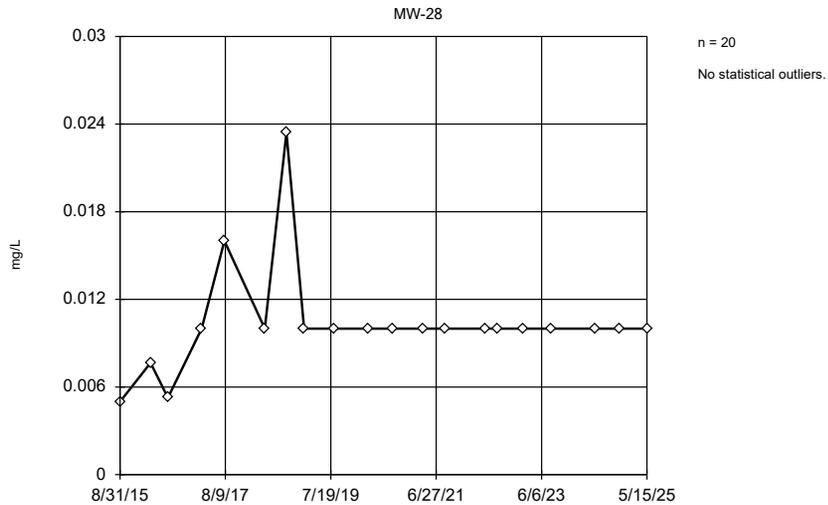
Constituent: Thallium Analysis Run 1/9/2026 12:45 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



Constituent: Vanadium Analysis Run 1/9/2026 12:45 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



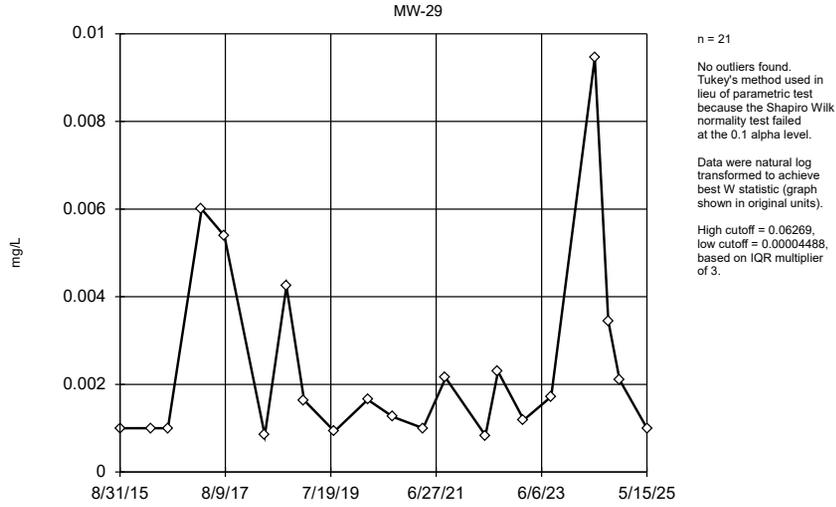
Constituent: Zinc Analysis Run 1/9/2026 12:45 PM View: 2025 AWQR MW-28 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# MW-29 BG Outlier Analysis

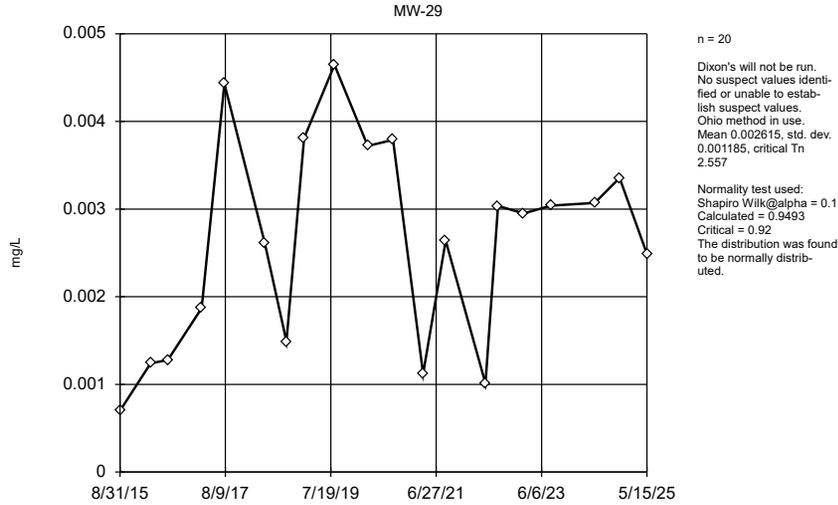
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 1:32 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Arsenic (mg/L)	MW-29	No	n/a	n/a	NP (nrm)/OH	NaN	21	0.002388	0.002208	unknown	ShapiroWilk
<b>Barium (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0117</b>	<b>5/15/2025</b>	<b>Dixon/OH</b>	<b>0.05</b>	<b>20</b>	<b>0.01582</b>	<b>0.001624</b>	<b>normal</b>	<b>ShapiroWilk</b>
Cadmium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.0001271	0.00008772	n/a	n/a
Chromium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002545	0.0002035	n/a	n/a
Cobalt (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	20	0.002615	0.001185	normal	ShapiroWilk
Copper (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002541	0.0006704	n/a	n/a
<b>Lead (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0007105,0.000898,0.000639</b>	<b>8/31/2015,9/24/2018,1/21/2019</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.0003387</b>	<b>0.0001936</b>	<b>unknown</b>	<b>ShapiroWilk</b>
Nickel (mg/L)	MW-29	No	n/a	n/a	EPA/OH	0.05	19	0.01052	0.001105	normal	ShapiroWilk
Selenium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002368	0.0004053	n/a	n/a
Vanadium (mg/L)	MW-29	No	n/a	n/a	OH	NaN	20	0.002566	0.0009757	n/a	n/a
<b>Zinc (mg/L)</b>	<b>MW-29</b>	<b>Yes</b>	<b>0.0297,0.0232,0.0182</b>	<b>3/24/2016,3/2/2017,9/24/2018</b>	<b>NP (nrm)/OH</b>	<b>NaN</b>	<b>20</b>	<b>0.01207</b>	<b>0.005436</b>	<b>unknown</b>	<b>ShapiroWilk</b>

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

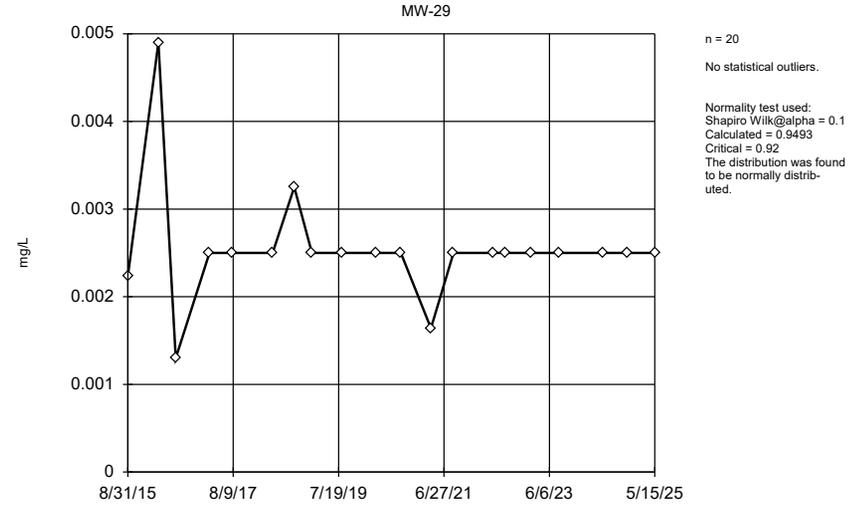


### EPA Screening (suspected outliers for Dixon's Test)



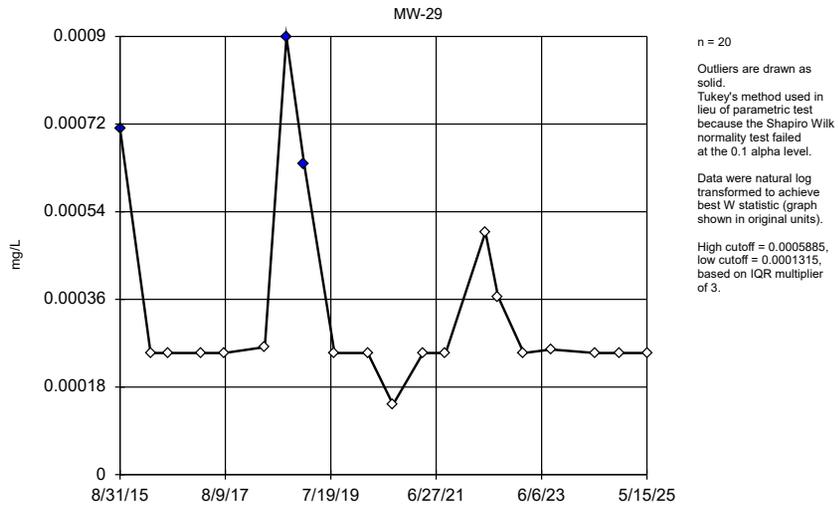
Constituent: Cobalt Analysis Run 1/9/2026 1:29 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm



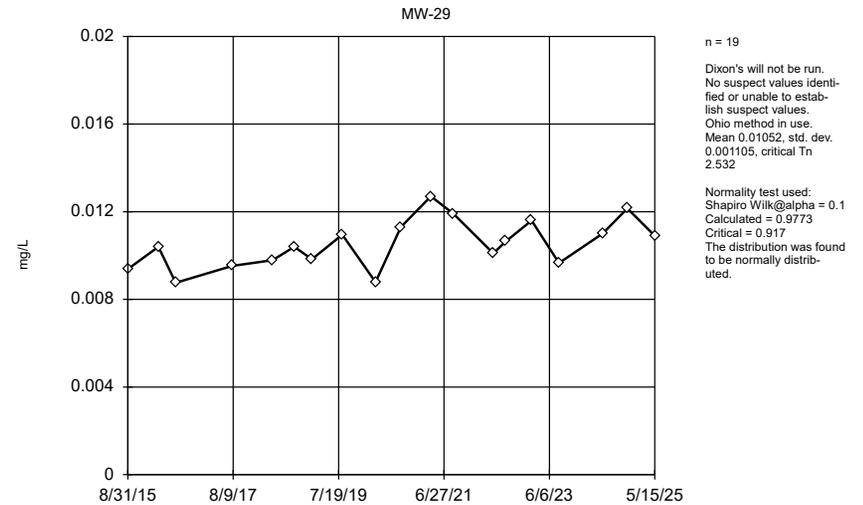
Constituent: Copper Analysis Run 1/9/2026 1:29 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm



Constituent: Lead Analysis Run 1/9/2026 1:30 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

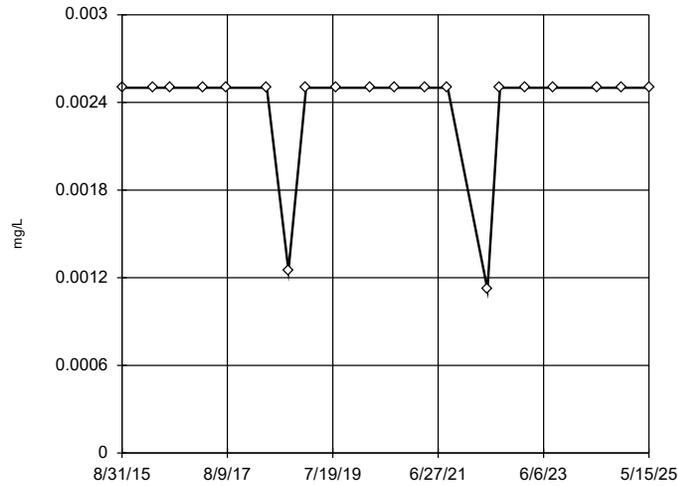
### EPA Screening (suspected outliers for Dixon's Test)



Constituent: Nickel Analysis Run 1/9/2026 1:30 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-29

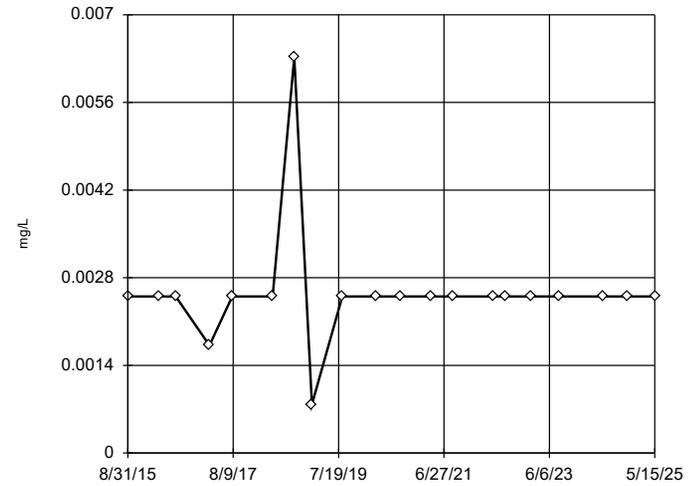


n = 20  
No statistical outliers.

Constituent: Selenium Analysis Run 1/9/2026 1:30 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Ohio EPA 0715 Outlier Algorithm

MW-29

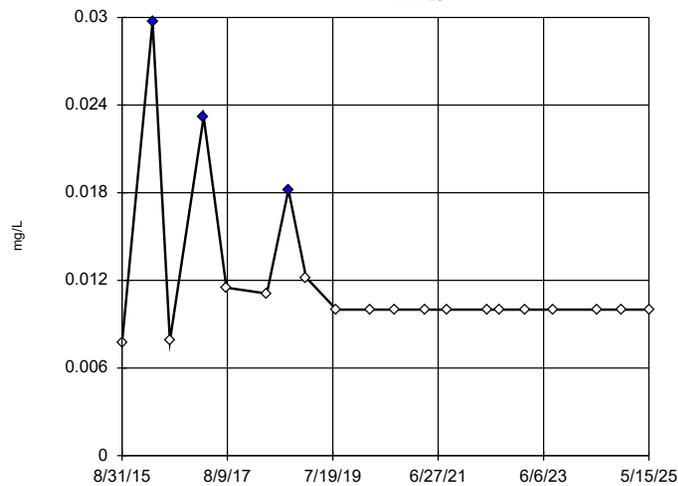


n = 20  
No statistical outliers.

Constituent: Vanadium Analysis Run 1/9/2026 1:30 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

### Tukey's Outlier Screening / Ohio EPA 0715 Outlier Algorithm

MW-29



n = 20  
Outliers are drawn as solid.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.  
Data were natural log transformed to achieve best W statistic (graph shown in original units).  
High cutoff = 0.01629, low cutoff = 0.006934, based on IQR multiplier of 3.

Constituent: Zinc Analysis Run 1/9/2026 1:30 PM View: 2025 AWQR MW-29 Outliers  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

## **Intrawell Prediction Limit Summary Tables and Graphs**

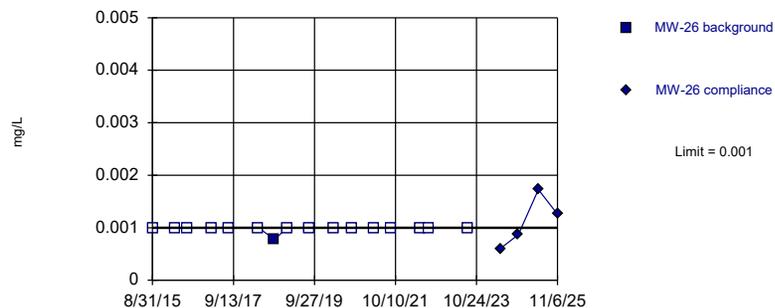
# MW-26 Intra Prediction Limit

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 12:01 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-26	0.001	n/a	11/6/2025	0.00126J	No	16	n/a	93.75	n/a	0.001026	NP Intra (NDs) 1 of 3
Barium (mg/L)	MW-26	0.103	n/a	11/6/2025	0.0352	No	17	n/a	0	n/a	0.0009102	NP Intra (normality) 1 of 3
Cadmium (mg/L)	MW-26	0.000457	n/a	11/6/2025	0.000201	No	16	n/a	75	n/a	0.001026	NP Intra (NDs) 1 of 3
Chromium (mg/L)	MW-26	0.00431	n/a	11/6/2025	0.0025ND	No	16	n/a	93.75	n/a	0.001026	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-26	0.01091	n/a	11/6/2025	0.00162	No	16	n/a	0	No	0.0007314	Param Intra 1 of 3
<b>Copper (mg/L)</b>	<b>MW-26</b>	<b>0.00565</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.0146</b>	<b>Yes</b>	<b>16</b>	<b>n/a</b>	<b>56.25</b>	<b>n/a</b>	<b>0.001026</b>	<b>NP Intra (NDs) 1 of 3</b>
<b>Lead (mg/L)</b>	<b>MW-26</b>	<b>0.000952</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.00599</b>	<b>Yes</b>	<b>16</b>	<b>n/a</b>	<b>68.75</b>	<b>n/a</b>	<b>0.001026</b>	<b>NP Intra (NDs) 1 of 3</b>
Nickel (mg/L)	MW-26	0.02424	n/a	11/6/2025	0.00401J	No	16	n/a	0	x^2	0.0007314	Param Intra 1 of 3
Silver (mg/L)	MW-26	0.000533	n/a	11/6/2025	0.0005ND	No	16	n/a	93.75	n/a	0.001026	NP Intra (NDs) 1 of 3
Thallium (mg/L)	MW-26	0.00177	n/a	11/6/2025	0.0005ND	No	17	n/a	88.24	n/a	0.0009102	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-26	0.002865	n/a	11/6/2025	0.0025ND	No	16	n/a	68.75	n/a	0.001026	NP Intra (NDs) 1 of 3
<b>Zinc (mg/L)</b>	<b>MW-26</b>	<b>0.0146</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.152</b>	<b>Yes</b>	<b>16</b>	<b>n/a</b>	<b>81.25</b>	<b>n/a</b>	<b>0.001026</b>	<b>NP Intra (NDs) 1 of 3</b>

Within Limit

Prediction Limit  
Intrawell Non-parametric

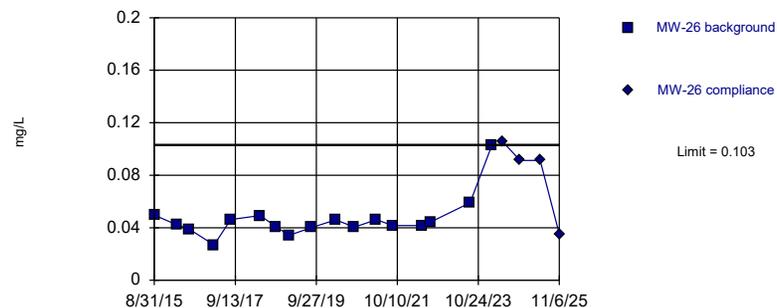


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Arsenic Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

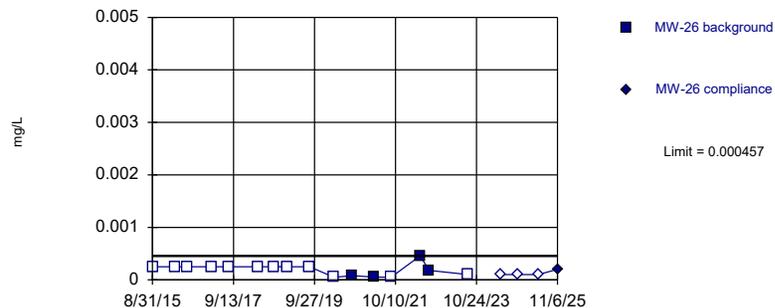


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 17 background values. Well-constituent pair annual alpha = 0.00182. Individual comparison alpha = 0.0009102 (1 of 3).

Constituent: Barium Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

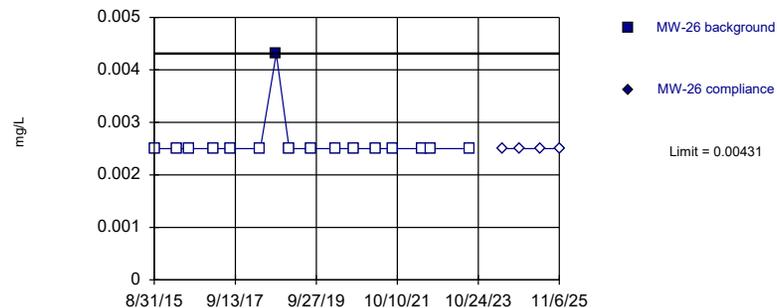


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Cadmium Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Chromium Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Parametric

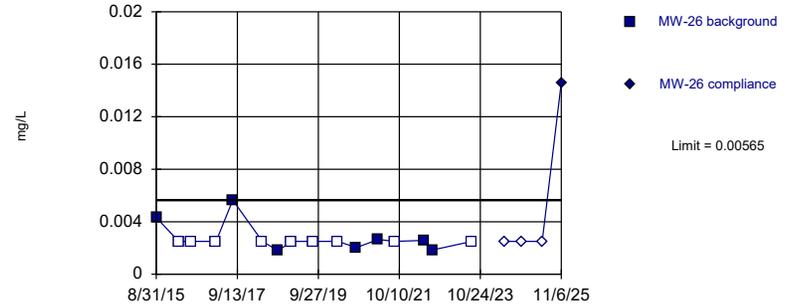


Background Data Summary: Mean=0.006735, Std. Dev.=0.002465, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.939, critical = 0.844. Kappa = 1.692 (c=12, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007314.

Constituent: Cobalt Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Exceeds Limit

### Prediction Limit Intrawell Non-parametric

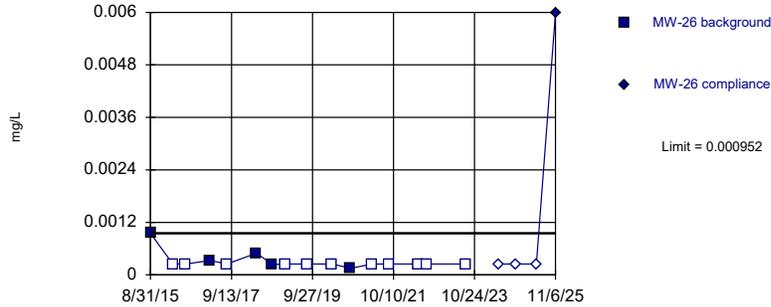


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 56.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Copper Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Exceeds Limit

### Prediction Limit Intrawell Non-parametric

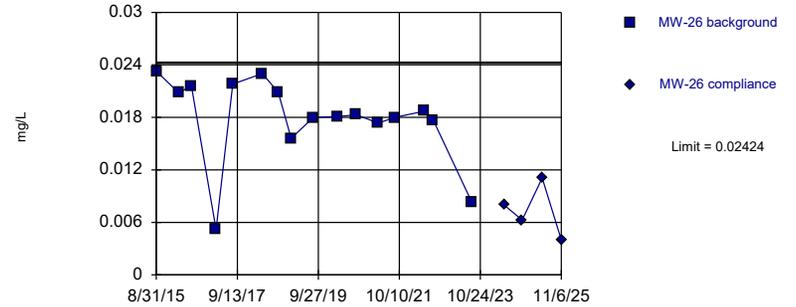


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Lead Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Parametric

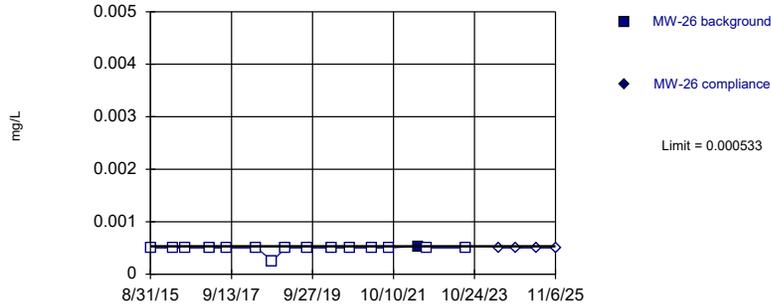


Background Data Summary (based on square transformation): Mean=0.0003434, Std. Dev.=0.0001444, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9087, critical = 0.844. Kappa = 1.692 (c=12, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007314.

Constituent: Nickel Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

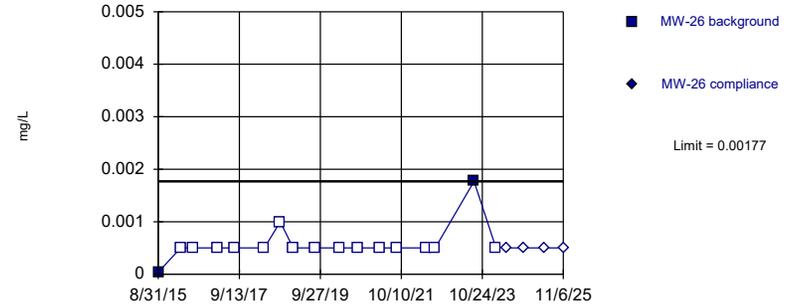


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Silver Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

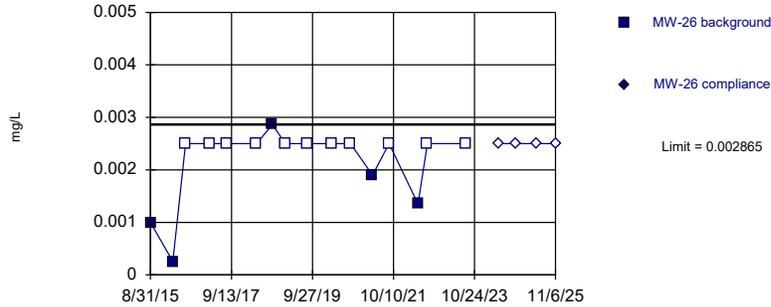


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 17 background values. 88.24% NDs. Well-constituent pair annual alpha = 0.00182. Individual comparison alpha = 0.0009102 (1 of 3).

Constituent: Thallium Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit Intrawell Non-parametric

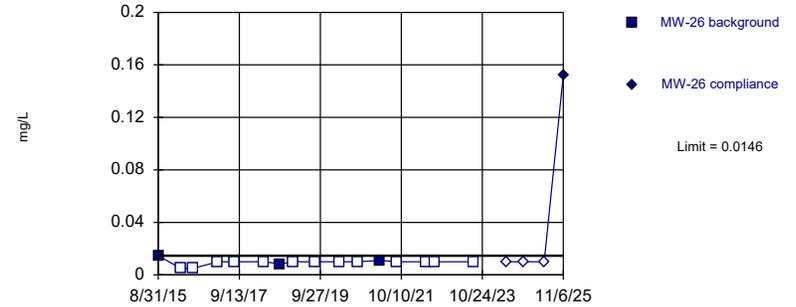


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Vanadium Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Exceeds Limit

### Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 81.25% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3).

Constituent: Zinc Analysis Run 1/9/2026 11:59 AM View: 2025 AWQR MW-26 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

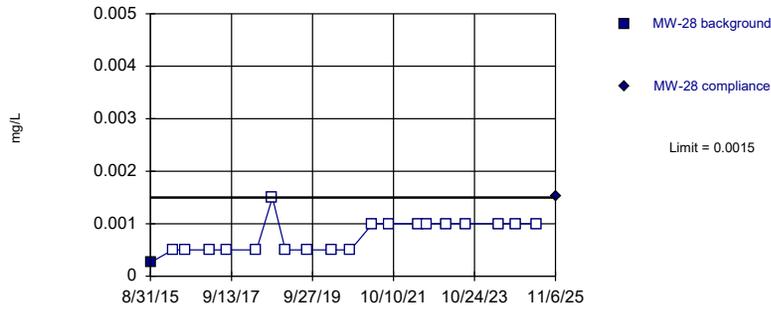
# MW-28 Intra Prediction Limit

Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 12:53 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
<b>Antimony (mg/L)</b>	<b>MW-28</b>	<b>0.0015</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.001525</b>	<b>Yes</b>	<b>20</b>	<b>n/a</b>	<b>95</b>	<b>n/a</b>	<b>0.0005627</b>	<b>NP Intra (NDs) 1 of 3</b>
Arsenic (mg/L)	MW-28	0.00136	n/a	11/6/2025	0.001175J	No	20	n/a	65	n/a	0.0005627	NP Intra (NDs) 1 of 3
Barium (mg/L)	MW-28	0.0242	n/a	11/6/2025	0.02075	No	21	n/a	0	No	0.0005852	Param Intra 1 of 3
Beryllium (mg/L)	MW-28	0.0005	n/a	11/6/2025	0.0005ND	No	20	n/a	95	n/a	0.0005627	NP Intra (NDs) 1 of 3
Cadmium (mg/L)	MW-28	0.001184	n/a	11/6/2025	0.0001ND	No	20	n/a	50	x^(1/3)	0.0005852	Param Intra 1 of 3
Chromium (mg/L)	MW-28	0.00643	n/a	11/6/2025	0.00215J	No	21	n/a	85.71	n/a	0.000511	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-28	0.02243	n/a	11/6/2025	0.006635	No	20	n/a	0	No	0.0005852	Param Intra 1 of 3
Copper (mg/L)	MW-28	0.00503	n/a	11/6/2025	0.0025ND	No	20	n/a	60	n/a	0.0005627	NP Intra (NDs) 1 of 3
Lead (mg/L)	MW-28	0.000327	n/a	11/6/2025	0.00025ND	No	20	n/a	95	n/a	0.0005627	NP Intra (NDs) 1 of 3
Nickel (mg/L)	MW-28	0.06208	n/a	11/6/2025	0.01295	No	20	n/a	0	No	0.0005852	Param Intra 1 of 3
Selenium (mg/L)	MW-28	0.0025	n/a	11/6/2025	0.0025ND	No	20	n/a	95	n/a	0.0005627	NP Intra (NDs) 1 of 3
Silver (mg/L)	MW-28	0.000844	n/a	11/6/2025	0.0005ND	No	20	n/a	90	n/a	0.0005627	NP Intra (NDs) 1 of 3
Thallium (mg/L)	MW-28	0.001	n/a	11/6/2025	0.0005ND	No	20	n/a	70	n/a	0.0005627	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-28	0.0036	n/a	11/6/2025	0.0025ND	No	20	n/a	65	n/a	0.0005627	NP Intra (NDs) 1 of 3
Zinc (mg/L)	MW-28	0.0234	n/a	11/6/2025	0.01ND	No	20	n/a	80	n/a	0.0005627	NP Intra (NDs) 1 of 3

Exceeds Limit

Prediction Limit  
Intrawell Non-parametric

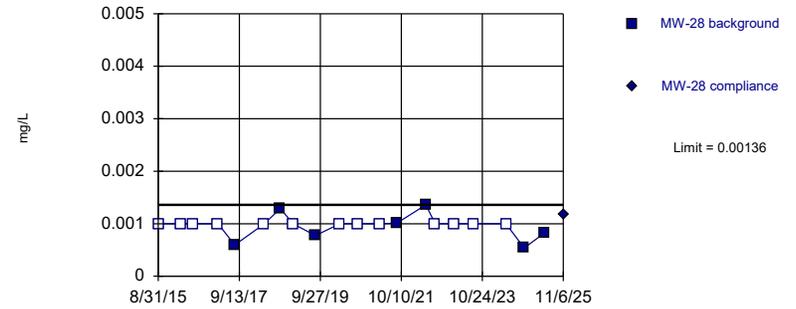


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Antimony Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

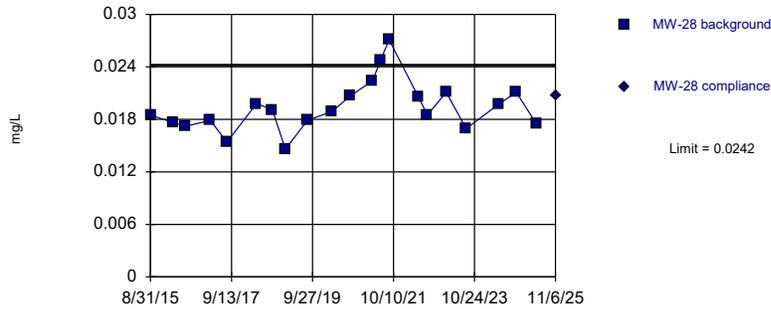


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 65% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Arsenic Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Parametric

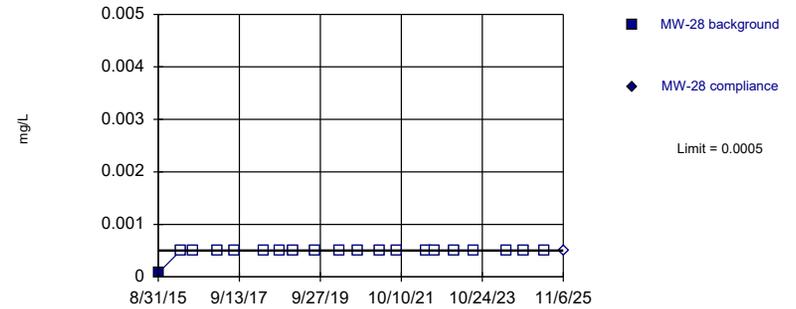


Background Data Summary: Mean=0.0194, Std. Dev.=0.002913, n=21. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9372, critical = 0.873. Kappa = 1.647 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Barium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric



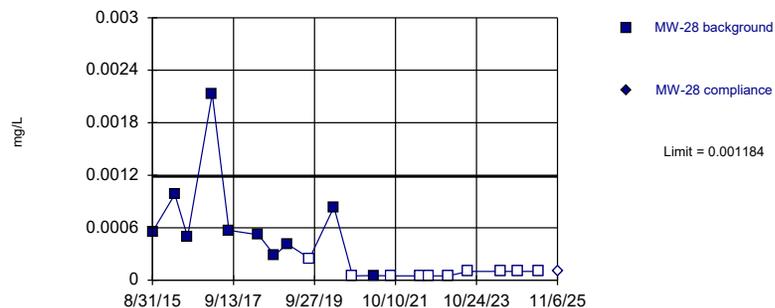
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Beryllium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



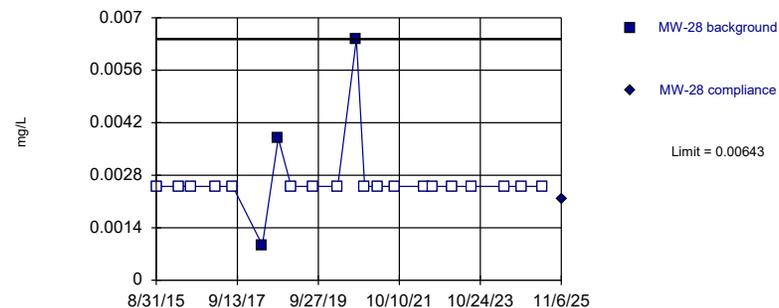
Background Data Summary (based on cube root transformation) (after Kaplan-Meier Adjustment): Mean=0.06042, Std. Dev.=0.02733, n=20, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8739, critical = 0.868. Kappa = 1.66 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Cadmium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



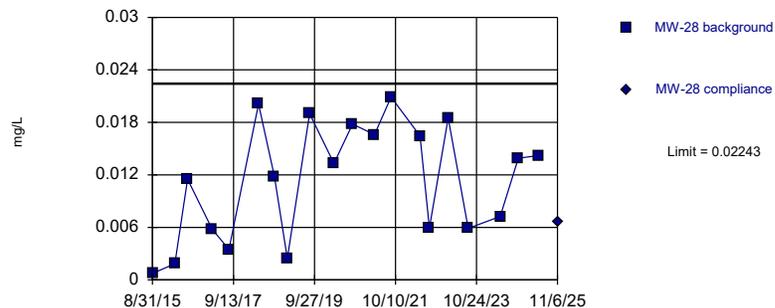
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 21 background values. 85.71% NDs. Well-constituent pair annual alpha = 0.001022. Individual comparison alpha = 0.000511 (1 of 3).

Constituent: Chromium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



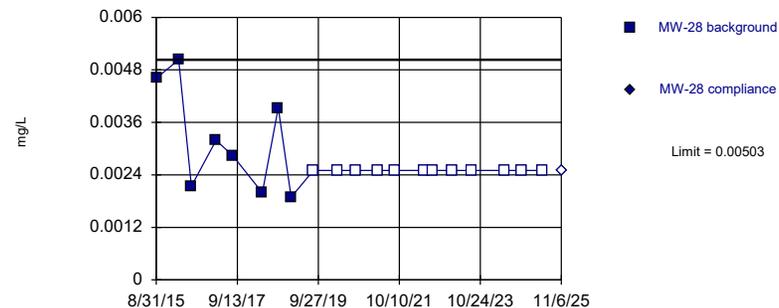
Background Data Summary: Mean=0.01137, Std. Dev.=0.006662, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9253, critical = 0.868. Kappa = 1.66 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Cobalt Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric

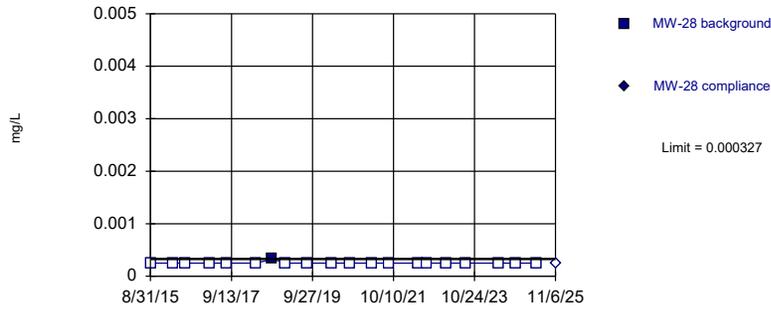


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 60% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Copper Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

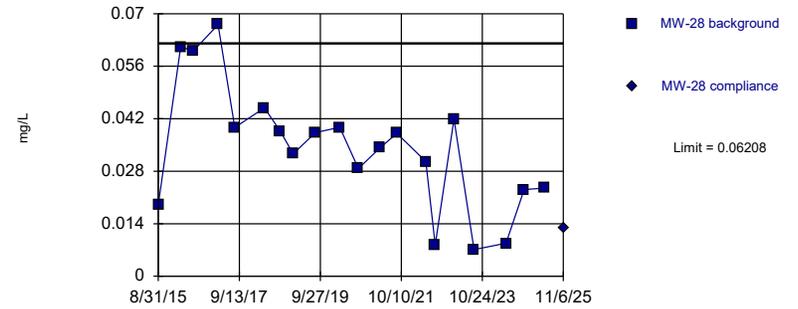


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Lead Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Parametric

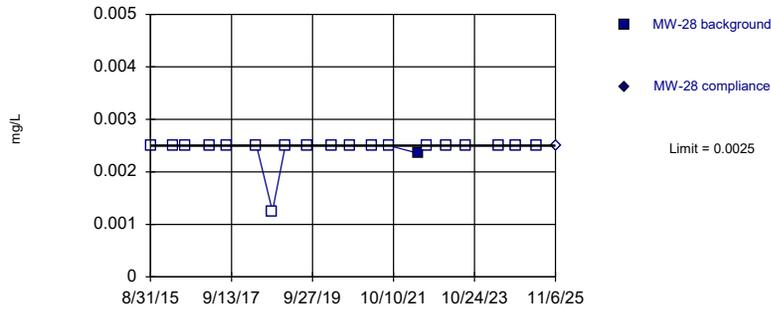


Background Data Summary: Mean=0.03428, Std. Dev.=0.01675, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9522, critical = 0.868. Kappa = 1.66 (c=15, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0005852.

Constituent: Nickel Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric

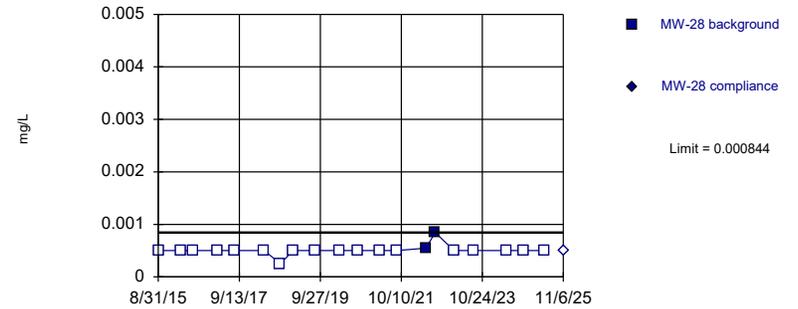


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Selenium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

Prediction Limit  
Intrawell Non-parametric



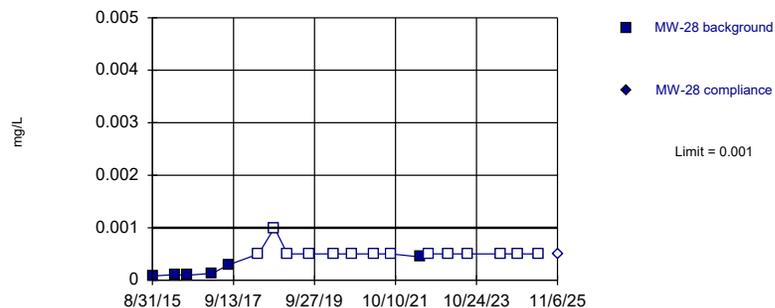
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 90% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Silver Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



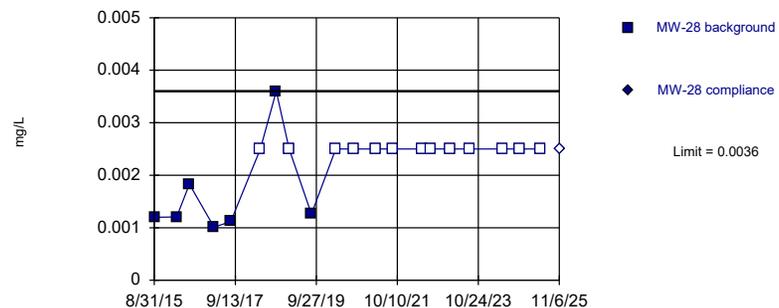
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 70% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Thallium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



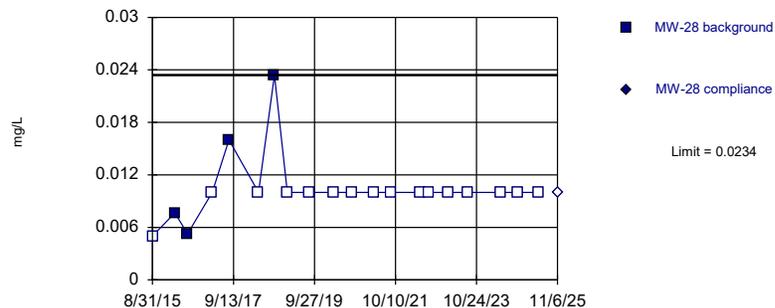
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 65% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Vanadium Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 80% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Zinc Analysis Run 1/9/2026 12:51 PM View: 2025 AWQR MW-28 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

# MW-29 Prediction Limit

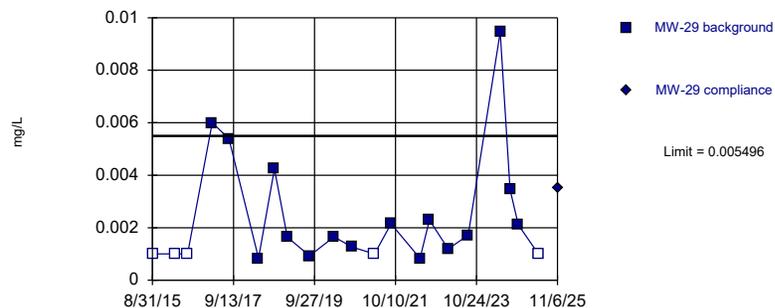
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master Printed 1/9/2026, 1:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	MW-29	0.005496	n/a	11/6/2025	0.0035	No	21	n/a	23.81	In(x)	0.0007979	Param Intra 1 of 3
Barium (mg/L)	MW-29	0.0184	n/a	11/6/2025	0.0158	No	20	n/a	0	No	0.0007979	Param Intra 1 of 3
Cadmium (mg/L)	MW-29	0.00025	n/a	11/6/2025	0.0001ND	No	20	n/a	85	n/a	0.0005627	NP Intra (NDs) 1 of 3
Chromium (mg/L)	MW-29	0.00341	n/a	11/6/2025	0.0025ND	No	20	n/a	95	n/a	0.0005627	NP Intra (NDs) 1 of 3
Cobalt (mg/L)	MW-29	0.004496	n/a	11/6/2025	0.00327	No	20	n/a	0	No	0.0007979	Param Intra 1 of 3
Copper (mg/L)	MW-29	0.0049	n/a	11/6/2025	0.0025ND	No	20	n/a	75	n/a	0.0005627	NP Intra (NDs) 1 of 3
<b>Lead (mg/L)</b>	<b>MW-29</b>	<b>0.000898</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.00132</b>	<b>Yes</b>	<b>20</b>	<b>n/a</b>	<b>60</b>	<b>n/a</b>	<b>0.0005627</b>	<b>NP Intra (NDs) 1 of 3</b>
<b>Nickel (mg/L)</b>	<b>MW-29</b>	<b>0.01229</b>	<b>n/a</b>	<b>11/6/2025</b>	<b>0.0124</b>	<b>Yes</b>	<b>19</b>	<b>n/a</b>	<b>0</b>	<b>No</b>	<b>0.0007979</b>	<b>Param Intra 1 of 3</b>
Selenium (mg/L)	MW-29	0.0025	n/a	11/6/2025	0.0025ND	No	20	n/a	95	n/a	0.0005627	NP Intra (NDs) 1 of 3
Vanadium (mg/L)	MW-29	0.00632	n/a	11/6/2025	0.0025ND	No	20	n/a	85	n/a	0.0005627	NP Intra (NDs) 1 of 3
Zinc (mg/L)	MW-29	0.0297	n/a	11/6/2025	0.01ND	No	20	n/a	60	n/a	0.0005627	NP Intra (NDs) 1 of 3

Within Limit

### Prediction Limit

Intrawell Parametric



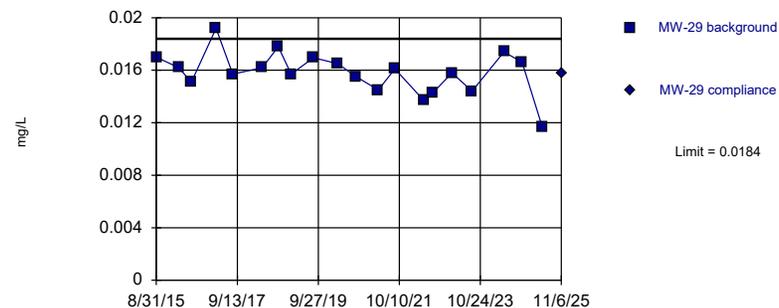
Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-6.279, Std. Dev.=0.6827, n=21, 23.81% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8799, critical = 0.873. Kappa = 1.576 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Arsenic Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



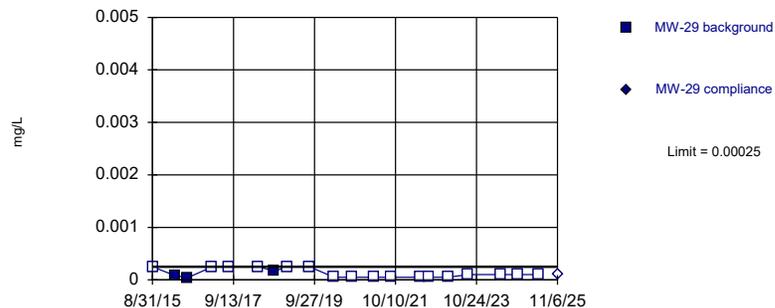
Background Data Summary: Mean=0.01582, Std. Dev.=0.001624, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9716, critical = 0.868. Kappa = 1.588 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



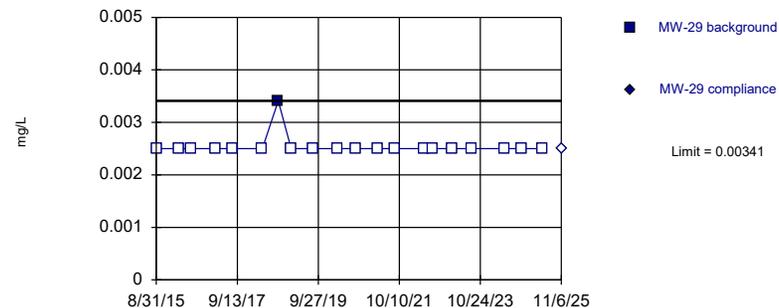
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 85% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Cadmium Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



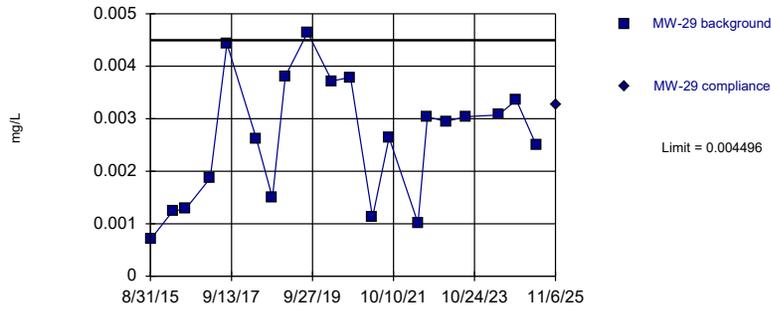
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Chromium Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Parametric



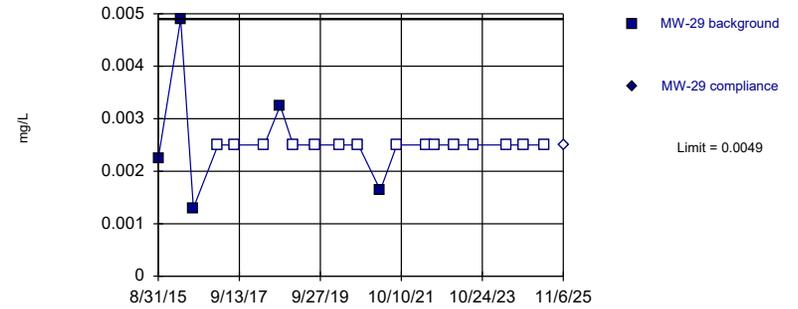
Background Data Summary: Mean=0.002615, Std. Dev.=0.001185, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9493, critical = 0.868. Kappa = 1.588 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Cobalt Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



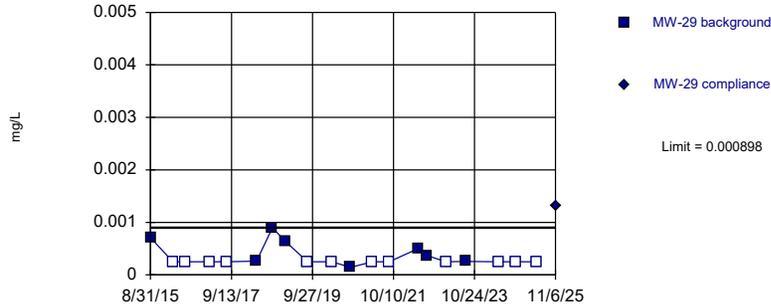
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 75% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Copper Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Exceeds Limit

### Prediction Limit

Intrawell Non-parametric



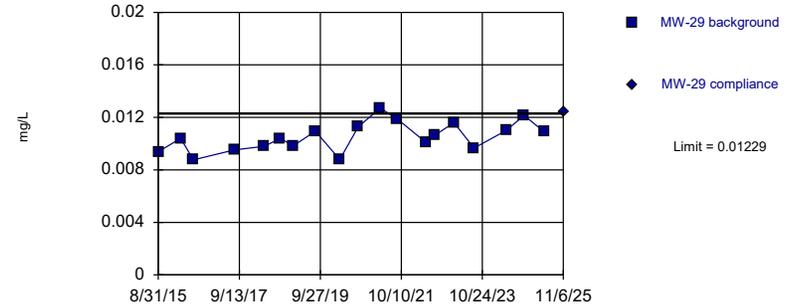
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 60% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Lead Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Exceeds Limit

### Prediction Limit

Intrawell Parametric



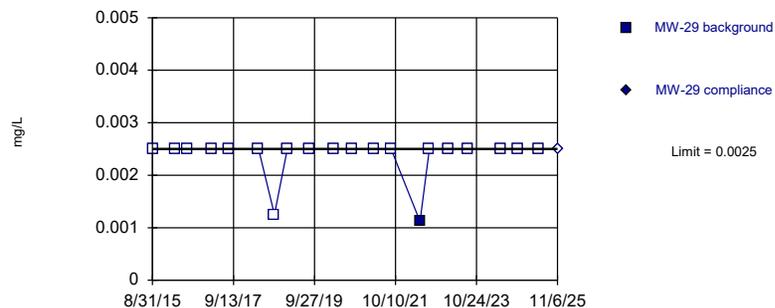
Background Data Summary: Mean=0.01052, Std. Dev.=0.001105, n=19. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9773, critical = 0.863. Kappa = 1.609 (c=11, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Nickel Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



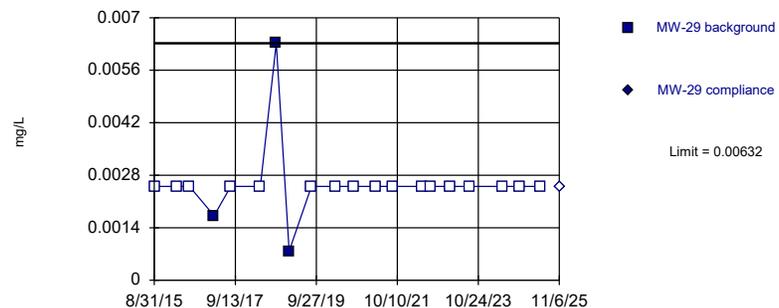
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 95% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Selenium Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



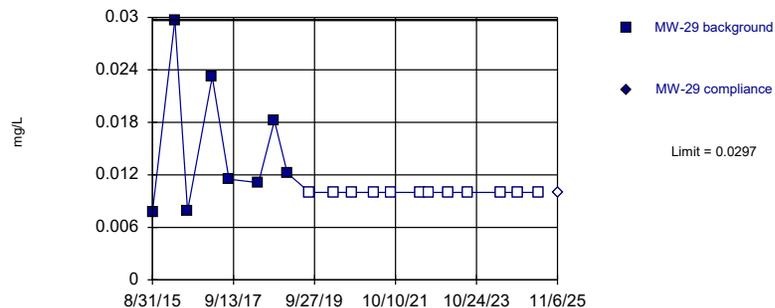
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 85% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Vanadium Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

Within Limit

### Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 60% NDs. Well-constituent pair annual alpha = 0.001125. Individual comparison alpha = 0.0005627 (1 of 3).

Constituent: Zinc Analysis Run 1/9/2026 1:34 PM View: 2025 AWQR MW-29 Intra PL  
Great River SLF Client: SCS Engineers Data: Sanitas GRRWA Ph2-master

**Appendix E**

**2025 Leachate Control System Performance Evaluation Report**

**2025 LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION REPORT**

**FOR**

**GREAT RIVER REGIONAL WASTE AUTHORITY SANITARY LANDFILL**

**FORT MADISON, IOWA**

**SUBMITTAL DATE: MARCH 2026**

**PREPARED FOR:**

**GREAT RIVER REGIONAL WASTE AUTHORITY**

**PREPARED BY:**

**SCS ENGINEERS**

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FIGURE 1 LEACHATE CONTROL SYSTEM

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ATTACHMENT B HISTORICAL LEACHATE COLUMN THICKNESS TABLES AND GRAPHS

## Section 1.0

# Description of Existing Leachate Control System

SCS Engineers (SCS), on behalf of the Great River Regional Waste Authority (GRRWA), has prepared this Leachate Control System Performance Evaluation Report (LCSPER) for the active Phase 2 municipal solid waste landfill (MSWLF) units at the GRRWA Sanitary Landfill (Landfill). This LCSPER was prepared to comply with the requirements of the Iowa Administrative Code (IAC) 567 113.7(5)"b"(14) and additional Iowa Department of Natural Resources (DNR) requirements specified in the operating permit, most recently renewed on January 15, 2026 (Doc #115716). This LCSPER describes the leachate control system, discusses maintenance activities, provides an evaluation of the effectiveness of the system, and, if necessary, provides recommendations for additional control measures. The reporting period for this LCSPER is from January through December 2025.

During this reporting period, monthly measurements of leachate head in the Phase 1 MSWLF unit were discontinued (Doc #112279). An Environmental Covenant was enacted for the Phase 1 MSWLF unit (Doc #114571). The Phase 1 MSWLF unit leachate collection system consists of a toe drain installed at the south (downgradient) end of the MSWLF unit in the summer of 2019 (Doc #95656).

### 1.1 Description of Control System

The leachate control system of the Landfill is depicted in **Figure 1**, Leachate Control System. The Landfill property consists of approximately 221 acres generally located within the NW  $\frac{1}{4}$  and SW  $\frac{1}{4}$  of Section 27 and the NW  $\frac{1}{4}$  of Section 34, T68N, R4W in Lee County, Iowa.

The Phase 2 MSWLF unit, which is comprised of Regions 1, 2, and 3, began accepting waste on April 20, 1993, and has been actively receiving waste since that time. Leachate piezometers/extraction wells LEW-08-1, LPZ-5R, LPZ-6, LPZ-7, LW-6, LEW-7, LEW-8, LEW-9, LEW-10, and LEW-11 were installed to monitor and/or manage leachate head in Region 1. Leachate sumps are used to monitor leachate head in Region 2, which is comprised of cells R2-1, R2-2, and R2-3. The sumps and lift station L-1 on the south side of Phase 2, Region 1, are automatically pumped at pre-set levels.

The leachate collection system in Region 1 of the Phase 2 MSWLF unit consists of a leachate collection layer and collection pipes located above the liner constructed in 1993. In addition, leachate extraction pumps were installed in extraction wells LW-6, LEW-08-1, LEW-7, LEW-8, LEW-9, LEW-10, and LEW-11. Leachate extraction wells LEW-7, LEW-8, LEW-9, LEW-10, and LEW-11, as well as leachate piezometers LPZ-6 and LPZ-7, were installed in Region 1 in June 2015. The extraction wells are pumped as needed. Extracted leachate from Region 1 is gravity-drained to lift station L-1. Leachate is then pumped from lift station L-1 to the storage lagoon.

Segment A-1 of the Leachate Seep Tie-in Line (Doc #51682) was installed in the northwest corner of the Region 1 area in 2005. In March 2020, a toe drain was installed on the south side of the Region 1 area (Doc #97832).

In November 2020, extraction wells LEW-08-1, LEW-7, and LW-6 were replaced with leachate extraction wells LEW-08-1R, LEW-7R, and LW-6R, respectively. Piping was installed from LEW-7R to LEW-08-1R to LW-6R and attached to the existing conveyance line to lift station L-1.

The leachate collection system in Region 2 of the Phase 2 MSWLF unit consists of a leachate collection layer and collection pipes located above the liners in Cells R2-1 (constructed in 2007), R2-2 (constructed in 2010), and R2-3 (constructed in 2012). Extracted leachate from the Region 2 cells is collected in sumps at the south end of the Region 2 Cells, R2-1 and R2-2, and pumped to lift station L-1.

The leachate collection system in Region 3 of the Phase 2 MSWLF unit consists of leachate collection layers and collection pipes located above the liners in Cell R3-1, constructed in 2021, and Cell R3-2, constructed in 2024. Extracted leachate from Cell R3-1 discharges to a lift station located east of Cell R3-1. Extracted leachate from Cell R3-2 is collected in a sump, which is pumped to the lift station located east of Cell R3-1. The leachate is then conveyed to a lift station located southeast of Cell R2-2, and finally to lift station L-1. Leachate levels are monitored by leachate head risers LPZ-R3-1 and LPZ-R3-2.

During this reporting system, use of the SCADA system and associated telemetry components was discontinued around October 2025. Level measurements will be performed by hand for Region 2 or with transducers and a portable transducer reader for Region 3.

## 1.2 Effectiveness of the Leachate Control System

### Phase 2 MSWLF Unit, Region 1

**Table 12 in Attachment A** provides leachate level measurements and column thicknesses for the Region 1 portion of the Phase 2 MSWLF unit for this reporting period. **Table B-1 in Attachment B** provides a summary of leachate column thicknesses for the period of record. Leachate levels at the Phase 2 MSWLF unit were hand measured during this reporting period. Graphs in **Attachment B** show the trends in leachate column thickness.

The pump in lift station L-1 on the south side of Phase 2, Region 1 turns on automatically when the leachate level reaches a pre-determined elevation set to maintain free draining of the leachate collection pipes in the bottom of the cells.

Leachate Point	Comments
LEW-08-1R	Generally stable levels throughout the reporting period.
LPZ-5R	Generally stable to slightly increasing levels throughout the reporting period.
LW-6R	Slightly decreasing levels throughout the reporting period.
LPZ-7	Generally stable levels throughout the reporting period.
LEW-7R	Slightly decreasing levels throughout the reporting period.
LEW-8	Generally stable levels until a substantial increase in July 2025, expected to be due to the pump being turned off due to damage to the well.
LEW-9	Generally stable levels until a failed pump was replaced around July 2025, which resulted in lower levels through the end of the reporting period.
LEW-10	Generally stable levels until a malfunctioning transducer was replaced that resulted in stable lower levels through the end of the reporting period.
LEW-11	Generally stable to slightly declining levels throughout the reporting period.

The table above indicates generally stable leachate levels in Phase 2, Region 1 with the noted exceptions. It should be noted that the leachate levels in leachate extraction wells LEW-9, LEW-10, and LEW-11 remain below the pre-pumping levels, as illustrated by the significant reduction in leachate thicknesses since the beginning of leachate extraction in the Phase 2 MSWLF unit Region 1, based on a comparison to the levels on the far left side of the graphs.

The significant increases in leachate column thicknesses in the leachate extraction wells LEW-7R and LEW-8 in 2024 and 2025, respectively, were caused by the pumps being turned off due to apparent damage to the wells. The damage appears to be too deep to repair without excavating the wells. The landfill operator anticipates a drilling contractor on-site in the coming months for an unrelated project that may be able to repair the wells.

Leachate sump L-1 for the Phase 2 MSWLF unit Region 1 remained below the compliance elevation of 21 feet during this reporting period following the replacement of the pump that had become inoperable in December 2024. A summary of leachate column thicknesses for the period of record is provided in **Table B-1** in **Attachment B**.

### **Phase 2 MSWLF Unit, Region 2**

**Table 12** in **Attachment A** provides leachate level measurements and column thicknesses for the Region 2 portion of the Phase 2 MSWLF unit for the reporting period. **Table B-2** in **Attachment B** provides a summary of leachate column thicknesses for the period of record.

The side slope riser pumps on the south side of Phase 2, Region 2 turn on automatically when the leachate levels reach a predetermined elevation set to maintain less than 12 inches of head over the liner.

The leachate level measurements for the Phase 2 MSWLF unit Region 2 leachate sumps are provided in **Attachment B, Table B-2** and graphs included in **Attachment B**. The leachate sumps for the R2-1 Cell (R2-1) and the R2-2 Cell (R2-2) were below the compliance elevation of 4 feet during this reporting period, except in July 2025, when precipitation was greater than normal. The July 2025 rainfall in Fort Madison, reported by the Iowa State University Mesonet, was 10.31 inches; the average July rainfall from 2020 through 2024 was 3.10 inches. The leachate thickness in R2-1 was also slightly above the compliance limit in June 2025.

### **Phase 2 MSWLF Unit, Region 3**

Leachate head riser LPZ-R3-1 was installed during the construction of Cell R3-1 in 2021 and leachate head riser LPZ-R3-2 was installed during the construction of Cell R3-2 in 2024. It was determined during review of the data from this reporting period that incorrect points were measured by landfill personnel during this reporting period, so data is unavailable. Transducers will be used to measure leachate levels in the Region 3 leachate measurement points beginning in 2026.

## **1.3 Approved Changes to System**

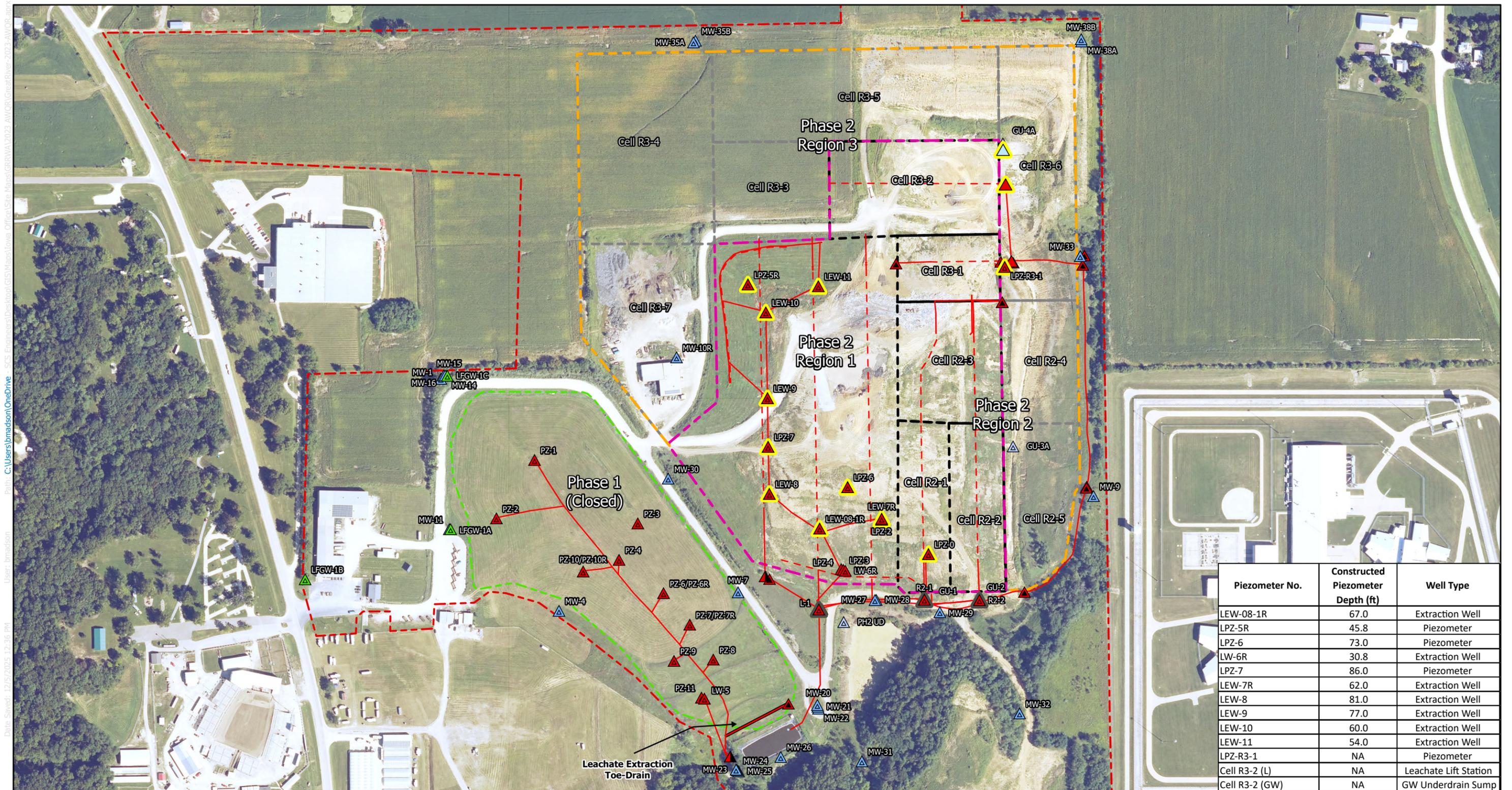
Changes to the Phase 2 MSWLF leachate control system during this reporting period are listed below. Dates are approximate.

- January 2025 – The lagoon pump froze; it was replaced in February 2025.
- March 2025 – Hand measurements of lift station L-1 began.
- May 2025 – The pump in LEW-9 failed and was replaced.
- July 2025 – The radio in LEW-11 failed and was replaced.
- September 2025 – The transducer in LEW-10 failed and was replaced.
- October 2025 – The ump was replaced in the lift station located southeast of Cell R2-2.
- November 2025 – The transducer in LEW-11 failed.
- November 2025 – A screen was installed in the sideslope riser of the lagoon to help control clogging of the pump.
- December 2025 – The lagoon pump was replaced.

#### 1.4 Proposed Changes to System

SCS recommends continuing to perform the following items to maintain the effectiveness of the leachate control system:

- Continue monthly monitoring of the leachate levels as required in the facility permit.
- Maintain good vegetation over the final cover and intermediate cover over the inactive areas.
- Continue operation and maintenance of the leachate control system in accordance with the approved Leachate Control System Plan. Leachate extraction pumps should be repaired/serviced as necessary.
- Continue recording the volume of leachate conveyed to and treated at the City of Fort Madison publicly-owned treatment works (POTW).
- Continue cleaning the leachate collection system once every three years, or more frequently if leachate head or the volume of leachate collected indicates cleaning is necessary. Cleaning occurred on October 30, 2023 and will occur next in 2026.



## Leachate Monitoring Points

Legend	
Leachate Monitoring Point - Leachate Lift Station	Leachate Monitoring Point (SCADA)
Leachate Monitoring Point - Groundwater Underdrain Sump	Leachate Piezometer and/or Extraction Well
Leachate Monitoring Point - Leachate Piezometer and/or Extraction Well	Lift Station
Cleanout	Manhole
Soil Leachate Pipe Ph1	Underdrain Monitoring Point
Leachate Pipe - Solid	Landfill Gas Well
Leachate Pipe - Perforated	Approximate Future Waste Boundary - Phase 2
Monitoring Well	Approximate Location of Future Cell Boundary
Located Waste Boundary	Approximate Location of Existing Cell Boundaries
Approximate GRRWA Property Boundary	Approximate Location of Future Cell Boundary

GRRWA Sanitary Landfill  
 Fort Madison, Iowa  
 Project No: 27224317.26  
 Drawing Date: January 2026

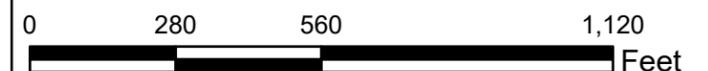
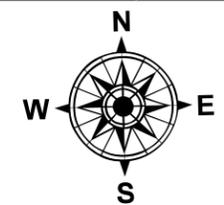


Figure 1

**Attachment A**

**Leachate Management Summary Table**

**Table 12**  
**Leachate Management Summary**  
**2025 Leachate Control System Performance Evaluation Report**  
**Great Regional Waste Authority Sanitary Landfill - Phase 1 and Phase 2 MSWLF Units**  
**Permit No. 56-SDP-07-80P**

Month	Phase 2, Region 1										Phase 2, Region 2		Phase 2, Region 3		Discharged to Ft. Madison POTW (gal)	Precipitation (in)
	LEW-08-1R	LPZ-5R	LW-6R	LW-7	LEW-7R	LEW-8	LEW-9	LEW-10	LEW-11	L-1**	R2-1*	R2-2*	LPZ-R3-1	LPZ-R3-2		
January 2025	31.9	17.7	56.1	49.2	64.6	25.3	41.2	32.3	16.2	30.45	1.98	2.53	NA	NA	0	0.51
February 2025	31.8	16.3	55.2	49.8	64.3	25.5	41.7	32.8	16.0	NA	1.94	2.36	NA	NA	15,294	NA
March 2025	32.5	17.7	55.8	49.5	64.0	25.3	41.4	32.3	15.3	8.17	1.99	2.23	NA	NA	190,098	2.06
April 2025	33.0	17.1	55.4	49.2	64.2	24.9	41.6	31.6	14.5	9.48	2.06	2.19	NA	NA	0	2.32
May 2025	32.7	16.7	55.0	49.5	63.9	25.5	41.4	32.3	16.3	7.20	2.01	2.21	NA	NA	235,920	2.88
June 2025	33.8	27.4	55.2	49.7	64.4	25.6	42.1	32.2	16.7	3.96	4.47	3.31	NA	NA	66,316	1.57
July 2025	34.5	18.6	55.0	50.3	63.8	64.1	23.2	24.9	16.2	18.58	6.91	5.27	NA	NA	49,501	10.31
August 2025	34.9	19.6	54.8	50.2	63.4	63.6	22.9	24.7	16.0	11.19	2.69	3.76	NA	NA	44,263	0.90
September 2025	34.0	19.1	54.3	49.7	63.3	63.2	23.1	24.5	16.0	3.84	1.94	2.18	NA	NA	158,143	1.02
October 2025	33.5	20.0	53.4	49.1	62.4	62.6	27.2	25.2	15.3	4.33	2.06	2.10	NA	NA	55,273	1.69
November 2025	33.3	19.7	53.1	49.5	61.6	64.2	28.5	25.1	15.0	4.38	NA	NA	NA	NA	76,761	0.66
December 2025	33.1	19.1	52.6	49.2	61.5	64.9	28.1	24.9	14.8	4.70	NA	NA	NA	NA	0	1.61
<b>Reporting Period Total</b>															891,569	25.53

NA - Not available. See report narrative for explanation.

\* - The compliance level of R2-1 and R2-2 is 4 feet.

\*\* - The compliance level of L-1 is 21 feet.

Measurements performed by Landfill staff.

- 1) All measurements are thickness in feet: head over liner in Phase 2.
- 2) Reporting Period: January 2025 - December 2025
- 3) Last Date of Cleaning and Inspection: October 2023.
- 7) Volume of Leachate Treated Off-Site: 891,569 gallons of leachate were discharged to the City of Ft. Madison POTW during this reporting period.
- 4) Date for Next Cleaning and Inspection: Leachate line cleaning and inspection will be performed in 2026.
- 5) Volume of Leachate Recirculated: Leachate is not recirculated.
- 6) Volume of Leachate Treated On-Site: Leachate is not treated on-site.
- 8) Leachate Quality Testing Results: Leachate testing is performed by the Ft. Madison POTW. Results are not provided to GRRWA.
- 9) Precipitation data from [https://mesonet.agron.iastate.edu/ASOS/reports/mon\\_prec.php?network=IA\\_ASOS&year=2025](https://mesonet.agron.iastate.edu/ASOS/reports/mon_prec.php?network=IA_ASOS&year=2025)

**Attachment B**

**Historical Leachate Column Thickness Tables and Graphs**

**TABLE B-1**  
**Phase 2 Region 1 Leachate Level Measurements**  
**Great River Regional Water Authority**  
**Fort Madison, Iowa**

CONSTRUCTED WELL DEPTH (ft)	LEW-08-1R		LPZ-5R		LPZ-6 <sup>(14)</sup>		LW-6R		LPZ-7		LEW-7R		LEW-8		LEW-9		LEW-10		LEW-11	
	78.0		45.8		79.8		38.0		72.9		90.0		81.0		77.0		60.0		54.0	
	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)	A(1) (ft)	B(1) (ft)	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)												
7/5/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/18/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/23/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/31/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/15/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/23/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/16/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/20/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/16/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/28/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/12/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/20/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/27/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/30/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/13/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/20/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/28/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/6/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/27/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/31/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/30/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/30/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/30/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/31/2003	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/28/2003	NI	NI	26.74	8.36	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/29/2003	NI	NI	26.00	9.10	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/3/2003	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/7/2003	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/27/2003	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/26/2003	NI	NI	26.55	8.55	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/23/2003	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/29/2004	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/27/2004	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/30/2004	NI	NI	26.83	8.27	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/29/2004	NI	NI	32.50	2.60	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/25/2004	NI	NI	32.45	2.65	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/29/2004	NI	NI	32.50	2.60	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/26/2004	NI	NI	42.16	Dry	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/31/2004	NI	NI	32.59	2.51	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/30/2004	NI	NI	32.62	2.48	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/26/2004	NI	NI	32.60	2.50	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/30/2004	NI	NI	28.56	6.54	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/31/2004	NI	NI	32.65	2.45	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/31/2005	NI	NI	32.58	2.52	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/28/2005	NI	NI	32.60	2.50	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/29/2005	NI	NI	32.50	2.60	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/28/2005	NI	NI	32.05	3.05	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/31/2005	NI	NI	32.05	3.05	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/29/2005	NI	NI	32.35	2.75	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/25/2005	NI	NI	32.41	2.69	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/24/2005	NI	NI	32.32	2.78	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/23/2006	NI	NI	39.43	Dry	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/14/2006	NI	NI	39.18	Dry	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/27/2006	NI	NI	36.68	Dry	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/20/2006	NI	NI	32.60	2.50	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/23/2007	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/14/2007	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/27/2007 <sup>(9)</sup>	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/26/2007	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/31/2008	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/29/2008	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/31/2008	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/13/2008	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/19/2009	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/24/2009	NI	NI	30.34	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/25/2009	NI	NI	NA	NA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/30/2009	NI	NI	40.44	Dry	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/25/2009	NI	NI	32.10	24.10	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/27/2009	NI	NI	32.42	23.78	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/29/2009 <sup>(11)</sup>	NI	NI	32.36	23.84	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/29/2009	NI	NI	32.68	23.52	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/30/2009	NI	NI	32.68	23.52	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/1/2009	NI	NI	13.00	43.20	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/29/2010	NI	NI	35.54	20.66	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/26/2010	NI	NI	32.90	23.30	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
3/30/2010	NI	NI	33.55	22.65	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/22/2010	NI	NI	33.55	22.65	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/27/2010	NI	NI	33.76	22.44	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/27/2010	NI	NI	34.54	21.66	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/21/2010	NI	NI	35.60	20.60	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
8/23/2010	NI	NI	35.78																	

**TABLE B-1**  
**Phase 2 Region 1 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

CONSTRUCTED WELL DEPTH (ft)	LEW-08-1R		LPZ-5R		LPZ-6 <sup>(14)</sup>		LW-6R		LPZ-7		LEW-7R		LEW-8		LEW-9		LEW-10		LEW-11	
	78.0		45.8		79.8		38.0		72.9		90.0		81.0		77.0		60.0		54.0	
	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)																		
7/5/2002	NI																			
1/27/2011	NI	NI	36.15	20.05	NI															
2/23/2011	NI	NI	33.55	22.65	NI															
3/1/2011	NI	NI	35.84	20.36	NI															
4/29/2011	NI	NI	35.65	20.55	NI															
5/23/2011	NI	NI	35.82	20.38	NI															
6/29/2011	NI	NI	35.62	20.58	NI															
7/25/2011	NI	NI	35.90	20.30	NI															
8/30/2011	NI	NI	36.08	20.12	NI															
9/27/2011	NI	NI	36.02	20.18	NI															
10/24/2011	NI	NI	36.45	19.75	NI															
11/28/2011	NI	NI	36.48	19.72	NI															
12/21/2011	NI	NI	36.58	19.62	NI															
1/30/2012	NI	NI	36.67	19.53	NI															
2/29/2012	NI	NI	36.54	19.66	NI															
3/28/2012	NI	NI	36.54	19.66	NI															
4/29/2012	NI	NI	NA	NA	NI															
5/31/2012	NI	NI	36.12	20.08	NI															
6/27/2012	NI	NI	36.12	20.08	NI															
7/30/2012	NI	NI	36.45	19.75	NI															
8/28/2012	NI	NI	36.72	19.48	NI															
9/27/2012	NI	NI	36.42	19.78	NI															
10/23/2012	NI	NI	36.50	19.70	NI															
11/27/2012	NI	NI	36.49	19.71	NI															
12/18/2012	NI	NI	36.45	19.75	NI															
1/28/2013	NI	NI	35.98	20.22	NI															
2/28/2013	NI	NI	36.02	20.18	NI															
3/25/2013	NI	NI	36.02	20.18	NI															
4/23/2013	NI	NI	36.00	20.20	NI															
5/29/2013	NI	NI	36.18	20.02	NI															
6/25/2013	NI	NI	35.95	20.25	NI															
7/23/2013	NI	NI	35.98	20.22	NI															
8/27/2013	NI	NI	36.04	20.16	NI															
9/25/2013	NI	NI	35.59	20.61	NI															
10/28/2013	NI	NI	36.00	20.20	NI															
11/24/2013	NI	NI	36.15	20.05	NI															
12/16/2013	NI	NI	35.54	20.66	NI															
1/24/2014	NI	NI	36.10	20.10	NI															
2/24/2014	NI	NI	37.14	19.06	NI															
3/27/2014	NI	NI	37.15	19.05	NI															
4/26/2014	NI	NI	37.14	19.06	NI															
5/29/2014	NI	NI	37.10	19.10	NI															
6/30/2014	NI	NI	37.15	19.05	NI															
7/28/2014	NI	NI	37.20	19.00	NI															
8/27/2014	NI	NI	37.20	19.00	NI															
9/29/2014	NI	NI	35.21	20.99	NI															
10/22/2014	NI	NI	35.41	20.79	NI															
11/26/2014	NI	NI	35.49	20.71	NI															
12/17/2014	NI	NI	36.01	20.19	NI															
1/26/2015	NI	NI	36.25	19.95	NI															
2/28/2015	NI	NI	35.40	20.80	NI															
3/30/2015	NI	NI	35.38	20.82	NI															
4/27/2015	NI	NI	36.04	20.16	NI															
5/27/2015	NI	NI	36.10	20.10	NI															
6/24/2015	NI	NI	36.05	20.15	NI															
7/10/2015	NI	NI	NA	NA	NA	NA	NI	NI	NA	NA	NI	NI	26.90	64.50	34.10	53.30	6.60	63.80	4.90	59.50
7/27/2015	NI	NI	36.07	20.13	NA	NA	NI	NI	NA	NA	NI	NI	NA							
8/27/2015	NI	NI	36.08	20.12	NI	NA														
9/24/2015	NI	NI	36.08	20.12	37.54	52.66	NI	NI	36.96	46.34	NI	NI	76.52	14.88	69.76	17.64	54.94	15.46	48.52	15.88
10/26/2015	NI	NI	36.08	20.12	36.05	54.15	NI	NI	37.26	46.04	NI	NI	76.62	14.78	69.74	17.66	55.08	15.32	48.50	15.90
11/20/2015	NI	NI	36.08	20.12	43.15	47.05	NI	NI	37.10	46.20	NI	NI	75.92	15.48	70.04	17.36	55.10	15.30	48.60	15.80
12/18/2015	NI	NI	37.00	19.20	44.15	46.05	NI	NI	38.91	44.39	NI	NI	74.96	16.44	70.14	17.26	55.28	15.12	48.85	15.55
1/28/2016	NI	NI	37.89	18.31	44.21	45.99	NI	NI	37.89	45.41	NI	NI	75.01	16.39	69.97	17.43	54.89	15.51	49.05	15.35
2/29/2016	NI	NI	35.89	20.31	44.21	45.99	NI	NI	38.01	45.29	NI	NI	74.95	16.45	69.72	17.68	47.68	22.72	46.74	17.66
3/29/2016	NI	NI	38.01	18.19	45.01	45.19	NI	NI	37.94	45.36	NI	NI	74.92	16.48	69.42	17.98	54.28	16.12	48.62	15.78
4/28/2016	NI	NI	38.45	17.75	44.90	45.30	NI	NI	40.00	43.30	NI	NI	73.91	17.49	70.14	17.26	54.20	16.20	48.70	15.70
5/28/2016	NI	NI	38.50	17.70	45.98	44.22	NI	NI	36.12	47.18	NI	NI	74.05	17.35	69.91	17.49	46.45	23.95	47.84	16.56
6/28/2016	NI	NI	38.01	18.19	43.01	47.19	NI	NI	36.00	47.30	NI	NI	74.00	17.40	69.90	17.50	46.28	24.12	46.28	18.12
7/27/2016	NI	NI	38.21	17.99	45.18	45.02	NI	NI	41.02	42.28	NI	NI	74.00	17.40	70.00	17.40	59.38	11.02	46.42	17.98
8/24/2016	NI	NI	39.54	16.66	45.72	44.48	NI	NI	36.54	46.76	NI	NI	73.94	17.46	69.84	17.56	51.71	18.69	44.64	19.76
9/28/2016	NI	NI	39.42	16.78	46.04	44.16	NI	NI	36.54	46.76	NI	NI	75.68	15.72	71.13	16.27	56.00	11.40	47.00	17.40
10/30/2016	NI	NI	38.75	17.45	46.00	44.20	NI	NI	36.48	46.82	NI	NI	75.70	15.70	70.15	17.25	55.42	14.98	46.75	17.65
11/29/2016	NI	NI	38.40	17.80	46.00	44.20	NI	NI	36.50	46.80	NI	NI	75.80	15.60	70.20	17.20	50.40	20.00	43.40	21.00
12/21/2016	NI	NI	38.40	17.80	45.95	44.25	NI	NI	36.48	46.82	NI	NI	75.68							

**TABLE B-1**  
**Phase 2 Region 1 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

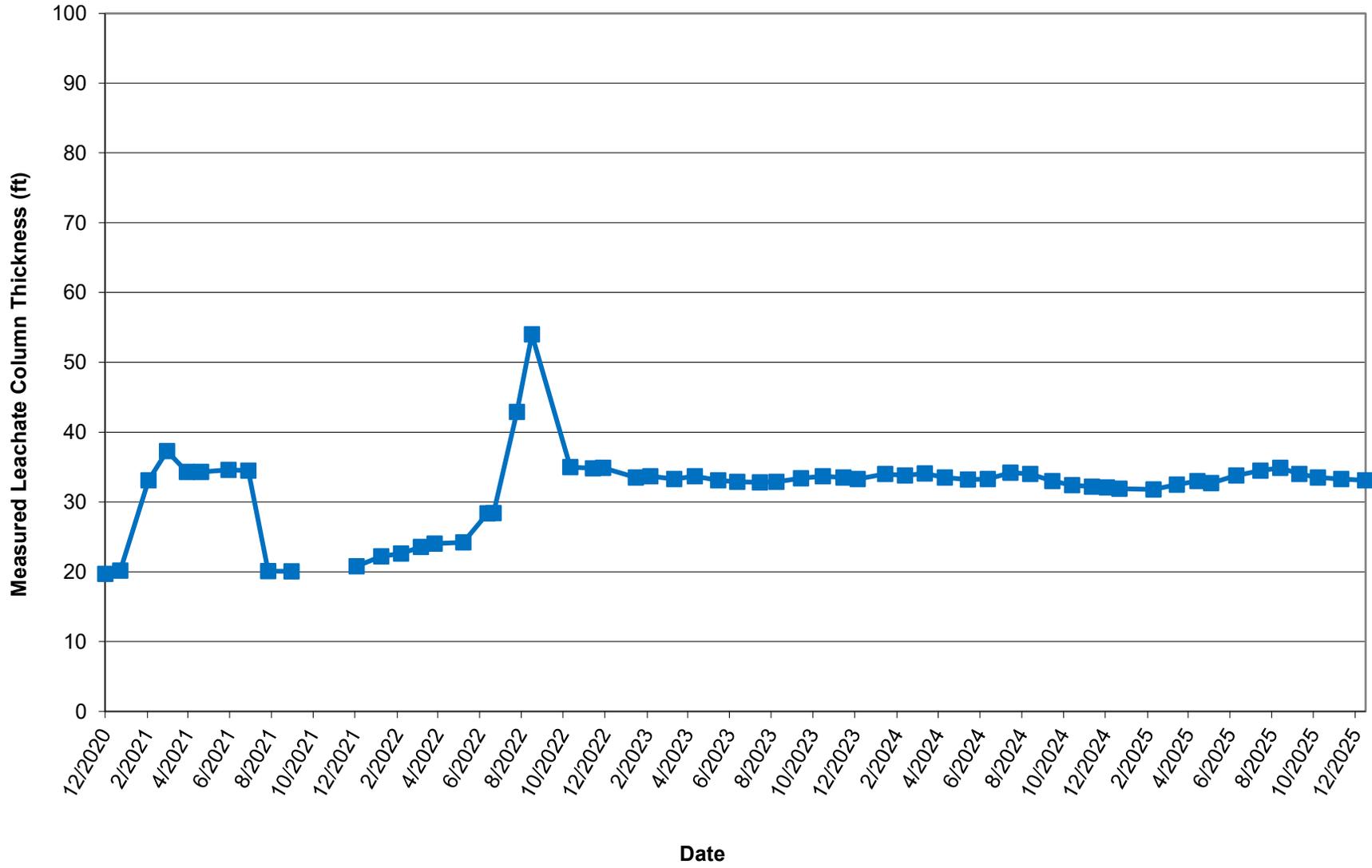
CONSTRUCTED WELL DEPTH (ft)	LEW-08-1R		LPZ-SR		LPZ-6 <sup>(14)</sup>		LW-6R		LPZ-7		LEW-7R		LEW-8		LEW-9		LEW-10		LEW-11	
	78.0		45.8		79.8		38.0		72.9		90.0		81.0		77.0		60.0		54.0	
	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)																		
7/5/2002	NI																			
1/29/2018	NI	NI	35.20	21.00	34.40	55.80	NI	NI	35.45	47.85	NI	NI	62.80	28.60	45.95	41.45	50.10	20.30	44.20	20.20
2/21/2018	NI	NI	35.15	21.05	34.42	55.78	NI	NI	35.50	47.80	NI	NI	67.84	23.56	46.01	41.39	50.18	20.22	44.22	20.18
3/26/2018	NI	NI	36.01	20.19	43.58	46.62	NI	NI	40.80	42.50	NI	NI	55.20	36.20	43.46	43.94	46.09	24.31	42.42	21.98
4/24/2018	NI	NI	35.18	21.02	43.25	46.95	NI	NI	39.90	43.40	NI	NI	70.10	21.30	46.80	40.60	50.12	20.28	43.08	21.32
5/30/2018	NI	NI	35.90	20.30	43.20	47.00	NI	NI	37.45	45.85	NI	NI	70.05	21.35	63.40	24.00	50.01	20.39	43.00	21.40
6/27/2018	NI	NI	35.00	21.20	44.00	46.20	NI	NI	60.00	23.30	NI	NI	70.00	21.40	46.70	40.70	50.00	20.40	42.90	21.50
7/18/2018	NI	NI	35.74	20.46	40.45	49.75	NI	NI	41.00	42.30	NI	NI	71.31	20.09	54.80	32.60	51.18	19.22	42.90	21.50
8/15/2018	NI	NI	36.08	20.12	45.42	54.78	NI	NI	41.02	42.28	NI	NI	71.45	19.95	51.50	35.90	49.90	20.50	42.95	21.45
9/11/2018	NI	NI	36.45	19.75	45.40	54.80	NI	NI	37.05	46.25	NI	NI	67.10	24.30	49.80	37.60	48.70	21.70	43.20	21.20
10/15/2018	NI	NI	35.18	21.02	43.20	57.00	NI	NI	37.09	46.21	NI	NI	66.92	24.48	46.80	40.60	45.30	25.10	42.51	21.89
11/14/2018	NI	NI	35.45	20.75	44.80	55.40	NI	NI	37.09	46.21	NI	NI	67.10	24.30	47.15	40.25	45.40	25.00	42.50	21.90
12/18/2018	NI	NI	35.40	20.80	44.70	45.50	NI	NI	36.89	46.41	NI	NI	67.00	24.40	47.00	40.40	51.10	19.30	42.11	22.29
1/29/2019	NI	NI	35.20	21.00	40.80	49.40	NI	NI	36.80	46.50	NI	NI	67.80	23.60	45.95	41.45	47.80	22.60	43.90	20.50
2/21/2019	NI	NI	35.10	21.10	41.90	48.30	NI	NI	35.42	47.88	NI	NI	67.50	23.90	45.80	41.60	47.65	22.75	43.25	21.15
3/26/2019	NI	NI	35.20	21.00	41.80	48.40	NI	NI	35.42	47.88	NI	NI	67.50	23.90	53.92	33.48	45.70	24.70	43.20	21.20
4/24/2019	NI	NI	35.15	21.05	41.20	49.00	NI	NI	35.65	47.65	NI	NI	67.30	24.10	53.49	33.91	45.60	24.80	42.90	21.50
5/30/2019	NI	NI	35.45	20.75	41.40	48.80	NI	NI	36.89	46.41	NI	NI	67.05	24.35	53.09	34.31	46.78	23.62	42.11	22.29
6/27/2019	NI	NI	35.40	20.80	41.25	48.95	NI	NI	36.24	47.06	NI	NI	67.28	24.12	53.40	34.00	46.00	24.40	42.10	22.30
7/18/2019	NI	NI	35.65	20.55	43.10	47.10	NI	NI	35.28	48.02	NI	NI	68.70	22.70	59.11	28.29	48.00	22.40	45.05	19.35
8/15/2019	NI	NI	35.70	20.50	43.10	57.10	NI	NI	35.96	47.34	NI	NI	73.95	17.45	67.30	20.10	51.20	19.20	45.42	18.98
9/11/2019	NI	NI	36.08	20.12	41.45	58.75	NI	NI	35.80	47.50	NI	NI	67.32	24.08	48.10	39.30	51.70	18.70	46.20	18.20
10/28/2019	NI	NI	35.90	20.30	42.10	58.10	NI	NI	36.10	47.20	NI	NI	65.95	25.45	61.05	26.35	48.40	22.00	46.01	18.39
11/19/2019	NI	NI	35.85	20.35	41.48	58.72	NI	NI	36.12	47.18	NI	NI	65.80	25.60	59.80	27.60	51.43	18.97	45.42	18.98
12/17/2019	NI	NI	35.86	20.34	41.10	59.10	NI	NI	35.85	47.45	NI	NI	63.75	27.65	67.53	19.87	51.30	19.10	45.48	18.92
1/8/2020	NI	NI	35.82	20.38	41.01	59.19	NI	NI	35.80	47.50	NI	NI	63.70	27.70	67.50	19.90	51.08	19.32	45.38	19.02
2/18/2020	NI	NI	35.70	20.50	41.10	59.10	NI	NI	36.01	47.29	NI	NI	63.75	27.65	62.50	24.90	51.00	19.40	45.15	19.25
3/17/2020	NI	NI	35.61	20.59	41.20	59.00	NI	NI	36.10	47.20	NI	NI	63.80	27.60	59.82	27.58	51.01	19.39	44.90	19.50
4/15/2020	NI	NI	36.01	20.19	41.15	59.05	NI	NI	35.80	47.50	NI	NI	64.01	27.39	59.80	27.60	51.30	19.10	43.98	20.42
5/6/2020	NI	NI	35.98	20.22	41.10	59.10	NI	NI	35.60	47.70	NI	NI	63.95	27.45	59.70	27.70	51.61	18.79	44.01	20.39
6/15/2020	NI	NI	32.60	23.60	41.15	59.05	NI	NI	35.78	47.52	NI	NI	63.80	27.60	59.62	27.78	51.40	19.00	45.54	18.86
7/14/2020	NI	NI	32.60	23.60	41.12	59.08	NI	NI	35.62	47.68	NI	NI	63.75	27.65	39.70	47.70	51.48	18.92	45.48	18.92
8/12/2020	NI	NI	36.73	19.47	NA	NM	NI	NI	35.87	47.43	NI	NI	65.90	25.50	33.10	54.30	51.85	18.55	45.28	19.12
9/15/2020	NI	NI	36.22	19.98	NA	NM	NI	NI	35.87	47.43	NI	NI	65.85	25.55	33.10	54.30	51.80	18.60	45.25	19.15
10/20/2020	NI	NI	36.80	19.40	NA	NM	NI	NI	36.10	47.20	NI	NI	70.95	20.45	68.90	18.50	51.60	18.80	42.80	21.60
11/18/2020	NI	NI	36.75	19.45	NA	NM	NI	NI	36.05	47.25	NI	NI	71.00	20.40	68.85	18.55	42.92	27.48	42.54	21.86
12/14/2020	68.30	19.70	36.58	19.62	33.82	66.38	28.58	54.72	36.55	46.75	67.50	23.90	70.95	20.45	68.89	18.51	51.61	18.79	46.12	18.28
1/11/2021	67.82	20.18	36.60	19.60	33.80	66.40	29.01	54.29	36.20	47.10	67.42	23.98	70.85	20.55	68.90	18.50	51.60	18.80	46.00	18.40
2/23/2021	54.90	33.10	36.85	19.35	33.82	66.38	18.54	64.76	36.80	46.50	45.90	45.50	70.80	20.60	68.85	18.55	51.64	18.76	46.08	18.32
3/19/2021	50.70	37.30	36.75	19.45	32.92	67.28	18.05	65.25	35.95	47.35	42.70	48.70	70.65	20.75	71.70	15.70	51.55	18.85	44.80	19.60
4/13/2021	53.70	34.30	36.86	20.34	33.00	67.20	19.01	64.29	35.82	47.48	45.18	46.22	70.59	20.81	69.95	17.45	51.40	19.00	44.72	19.68
5/13/2021	53.68	34.32	36.65	19.55	33.10	67.10	19.00	64.30	36.00	47.40	45.08	46.32	70.75	20.65	71.80	15.60	51.60	18.80	44.65	19.75
6/21/2021	53.42	34.58	35.72	20.48	32.89	67.31	18.95	64.35	35.91	47.39	45.15	46.25	69.98	21.42	71.72	15.68	51.68	18.72	44.70	19.70
7/13/2021	53.50	34.50	36.01	20.19	32.45	67.75	19.05	64.25	35.01	48.29	45.10	46.30	70.65	20.75	71.75	15.65	51.55	18.85	44.50	19.90
8/17/2021	67.91	20.09	36.10	20.10	35.82	64.38	25.30	58.00	38.40	44.90	67.61	23.79	69.89	21.51	49.70	37.70	44.70	25.70	45.10	19.30
9/16/2021	67.95	20.05	36.01	20.19	35.82	64.38	26.82	56.48	39.10	44.20	67.80	23.60	69.85	21.55	49.86	37.54	45.60	24.80	46.01	18.39
10/14/2021	NM	NA	35.45	20.75	35.82	64.38	NA	NA	39.45	43.85	NM	NA	70.10	21.30	49.71	37.69	46.01	24.39	45.42	18.98
11/18/2021	NA	NA	36.08	20.12	35.84	64.36	NA	NA	39.15	44.15	NA	NA	70.05	21.35	49.80	37.60	45.90	24.50	46.10	18.30
12/19/2021	67.20	20.80	36.10	20.10	35.84	64.36	25.40	57.90	40.15	43.15	49.15	42.25	70.00	21.40	49.40	38.00	45.80	24.60	46.75	17.65
1/24/2022	65.80	22.20	36.05	20.15	34.70	65.50	25.30	58.00	40.01	43.29	49.10	42.30	70.00	21.40	49.20	38.20	45.70	24.70	46.65	17.75
2/22/2022	65.40	22.60	36.85	19.35	33.82	66.38	24.15	59.15	39.75	43.55	49.75	41.65	70.15	21.25	49.75	37.65	45.90	24.50	46.82	17.58
3/23/2022	64.45	23.55	35.85	20.35	34.50	65.70	24.95	58.35	39.42	43.88	49.95	41.45	69.82	21.58	48.90	38.50	45.01	25.39	46.01	18.39
4/12/2022	63.95	24.05	35.60	20.60	34.38	65.82	25.01	58.29	39.40	43.90	50.01	41.39	68.90	22.50	48.10	39.30	44.42	25.98	45.10	19.30
5/24/2022	63.80	24.20	35.10	21.10	34.05	66.15	24.92	58.38	38.95	44.35	49.80	41.60	67.82	23.58	47.95	39.45	44.38	26.02	45.01	19.39
6/28/2022	59.62	28.38	34.90	21.30	34.10	66.10	23.85	59.45	32.00	51.30	68.45	22.95	57.22	34.18	54.80	32.60	42.80	27.60	43.70	20.70
7/7/2022	59.60	28.40	34.85	21.35	34.08	66.12	23.85	59.45	32.02	51.28	67.24	24.16	57.30	34.10	54.71	32.69	42.79	27.61	43.70	20.70
8/10/2022	45.10	42.90	36.20	20.00	21.00	79.20	22.30	61.00												

**TABLE B-1**  
**Phase 2 Region 1 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

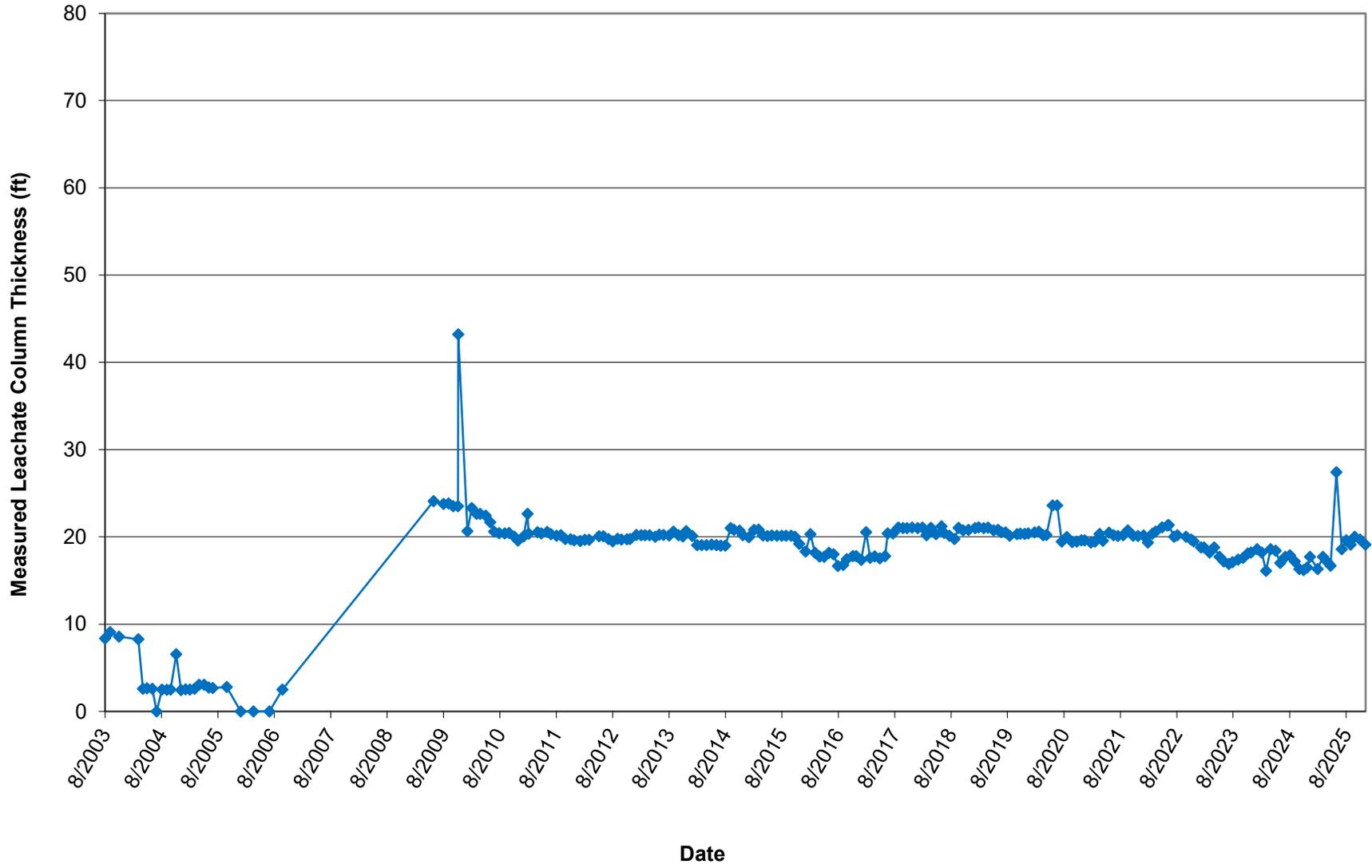
CONSTRUCTED WELL DEPTH (ft)	LEW-08-1R		LPZ-SR		LPZ-6 <sup>(24)</sup>		LW-6R		LPZ-7		LEW-7R		LEW-8		LEW-9		LEW-10		LEW-11	
	78.0		45.8		79.8		38.0		72.9		90.0		81.0		77.0		60.0		54.0	
	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)	A(1) (ft)	B(1) (ft)	A <sup>(1)</sup> (ft)	B <sup>(1)</sup> (ft)												
7/5/2002	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/6/2025	56.10	31.90	38.50	17.70	Damaged	NA	27.20	56.10	34.10	49.20	26.80	64.60	66.10	25.30	46.20	41.20	38.10	32.30	48.20	16.20
2/25/2025	56.20	31.80	39.90	16.30	Damaged	NA	28.10	55.20	33.50	49.80	27.10	64.30	65.90	25.50	45.70	41.70	37.60	32.80	48.40	16.00
3/31/2025	55.50	32.50	38.50	17.70	Damaged	NA	27.50	55.80	33.80	49.50	27.40	64.00	66.10	25.30	46.00	41.40	38.10	32.30	49.10	15.30
4/30/2025	55.00	33.00	39.10	17.10	Damaged	NA	27.90	55.40	34.10	49.20	27.20	64.20	66.50	24.90	45.80	41.60	38.80	31.60	49.90	14.50
5/20/2025	55.30	32.70	39.50	16.70	Damaged	NA	28.30	55.00	33.80	49.50	27.50	63.90	65.90	25.50	46.00	41.40	38.10	32.30	48.10	16.30
6/26/2025	54.20	33.80	28.80	27.40	Damaged	NA	28.10	55.20	33.60	49.70	27.00	64.40	65.80	25.60	45.30	42.10	38.20	32.20	47.70	16.70
7/31/2025	53.50	34.50	37.60	18.60	Damaged	NA	28.30	55.00	33.00	50.30	27.60	63.80	27.30	64.10	64.20	23.20	45.50	24.90	48.20	16.20
8/29/2025	53.10	34.90	36.60	19.60	Damaged	NA	28.50	54.80	33.10	50.20	28.00	63.40	27.80	63.60	64.50	22.90	45.70	24.70	48.40	16.00
9/26/2025	54.00	34.00	37.10	19.10	Damaged	NA	29.00	54.30	33.60	49.70	28.10	63.30	28.20	63.20	64.30	23.10	45.90	24.50	48.40	16.00
10/23/2025	54.50	33.50	36.20	20.00	Damaged	NA	29.90	53.40	34.20	49.10	29.00	62.40	28.80	62.60	60.20	27.20	45.20	25.20	49.10	15.30
11/26/2025	54.70	33.30	36.50	19.70	Damaged	NA	30.20	53.10	33.80	49.50	29.80	61.60	27.20	64.20	58.90	28.50	45.30	25.10	49.40	15.00
12/31/2025	54.90	33.10	37.10	19.10	Damaged	NA	30.70	52.60	34.10	49.20	29.90	61.50	26.50	64.90	59.30	28.10	45.50	24.90	49.60	14.80

Notes:  
1) Leachate level data provided by landfill personnel.  
2) NM = Not measured; NA = Not available; NI = Not Installed.

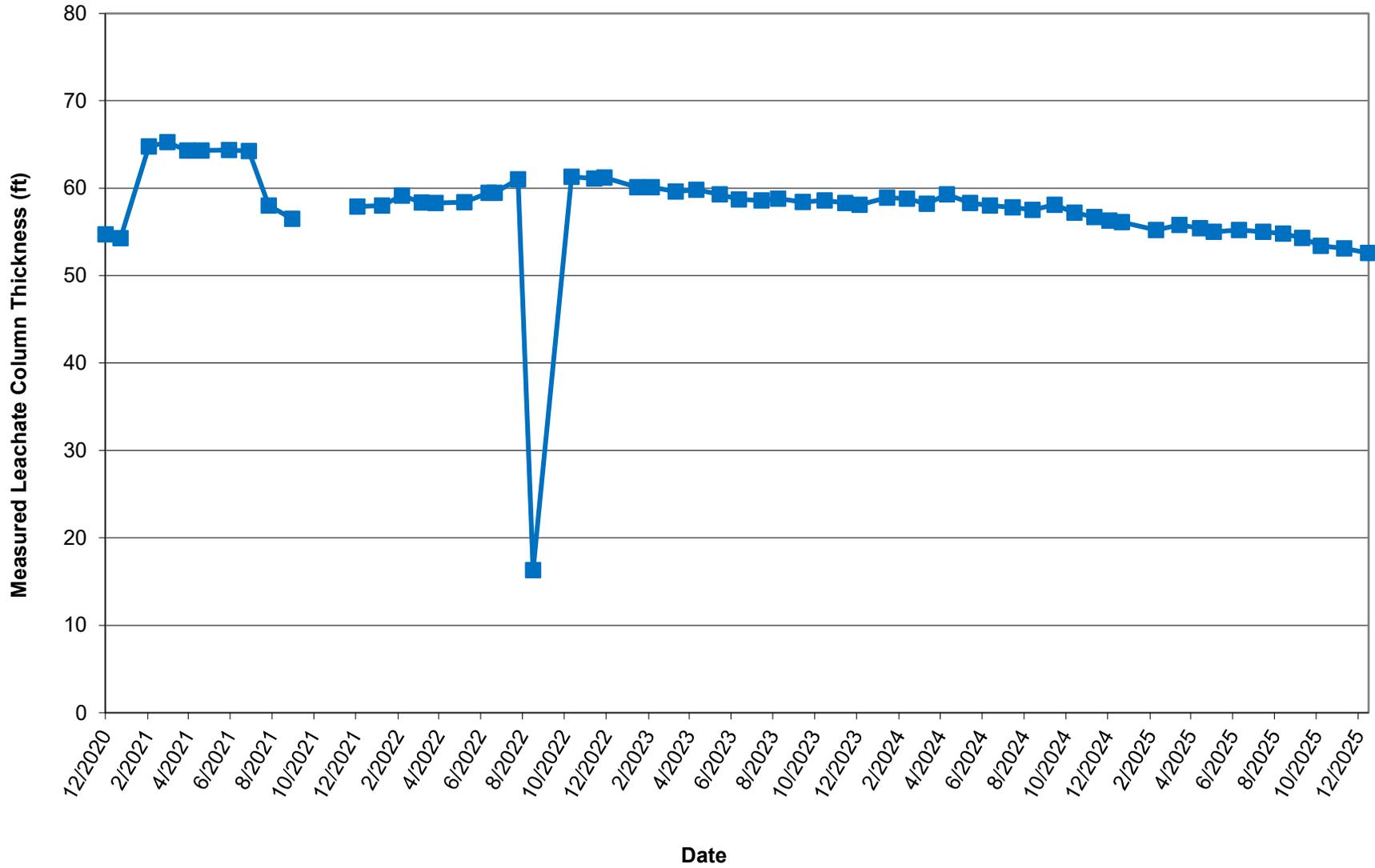
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Phase 2, Region 1**



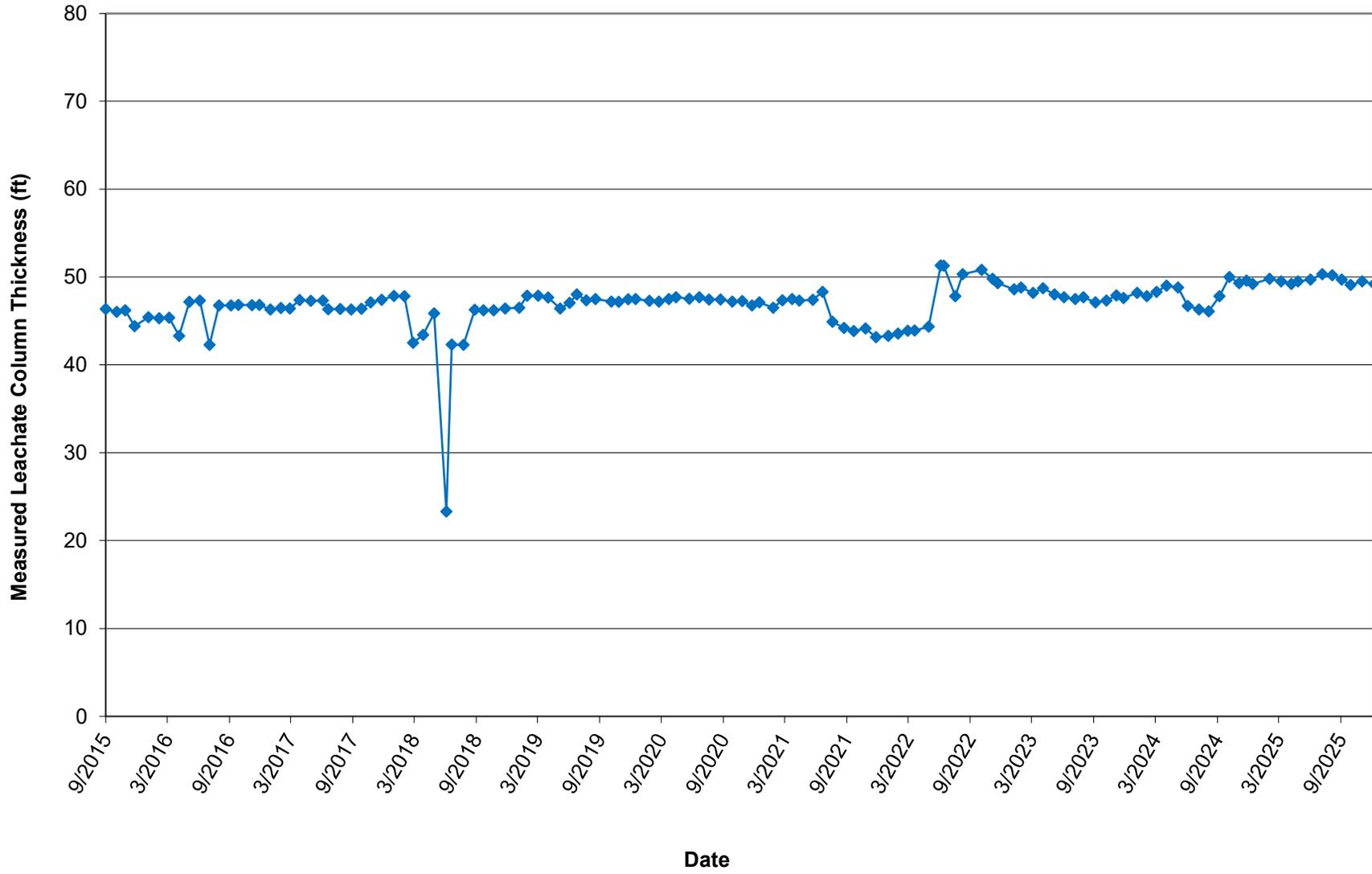
LPZ-5R  
Phase 2, Region 1



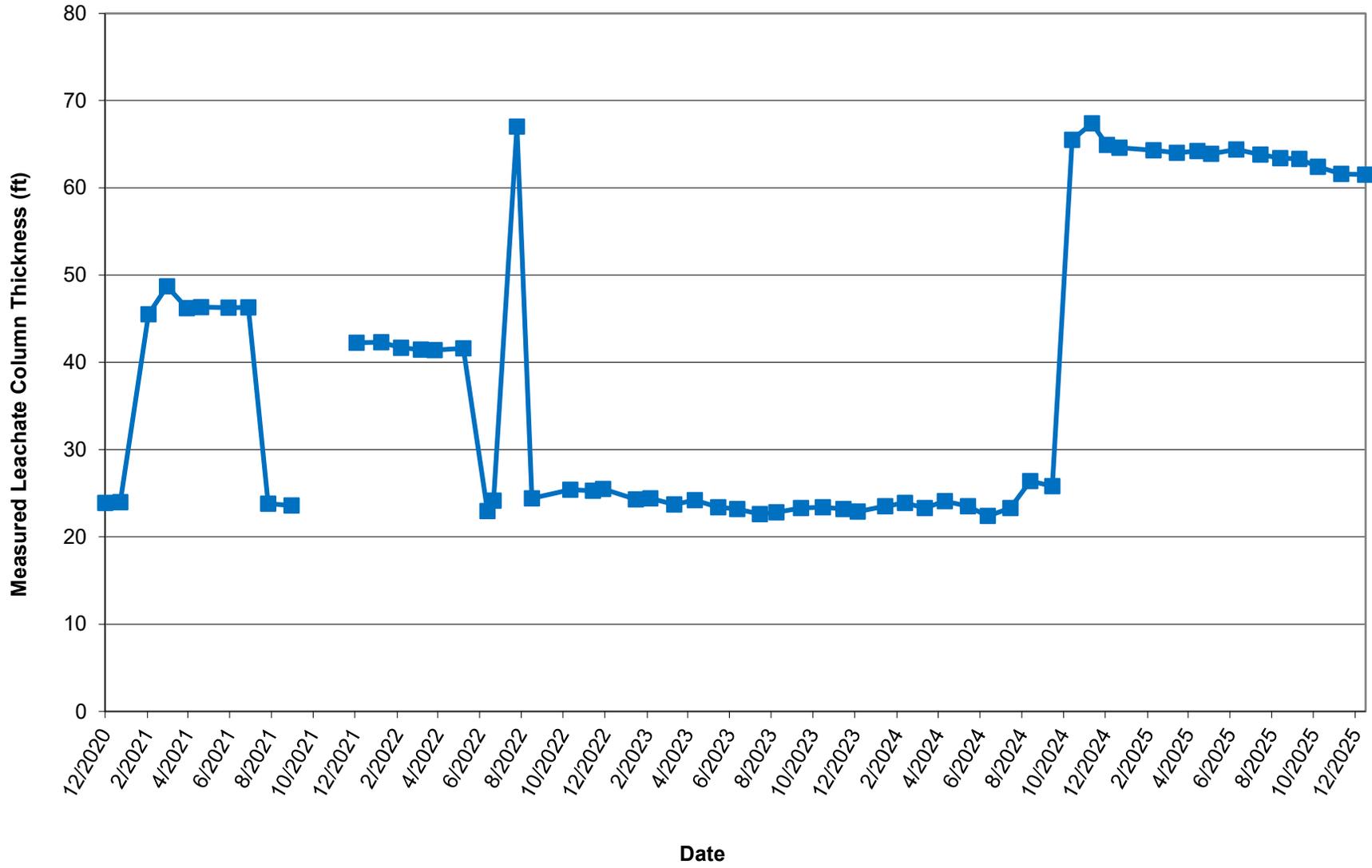
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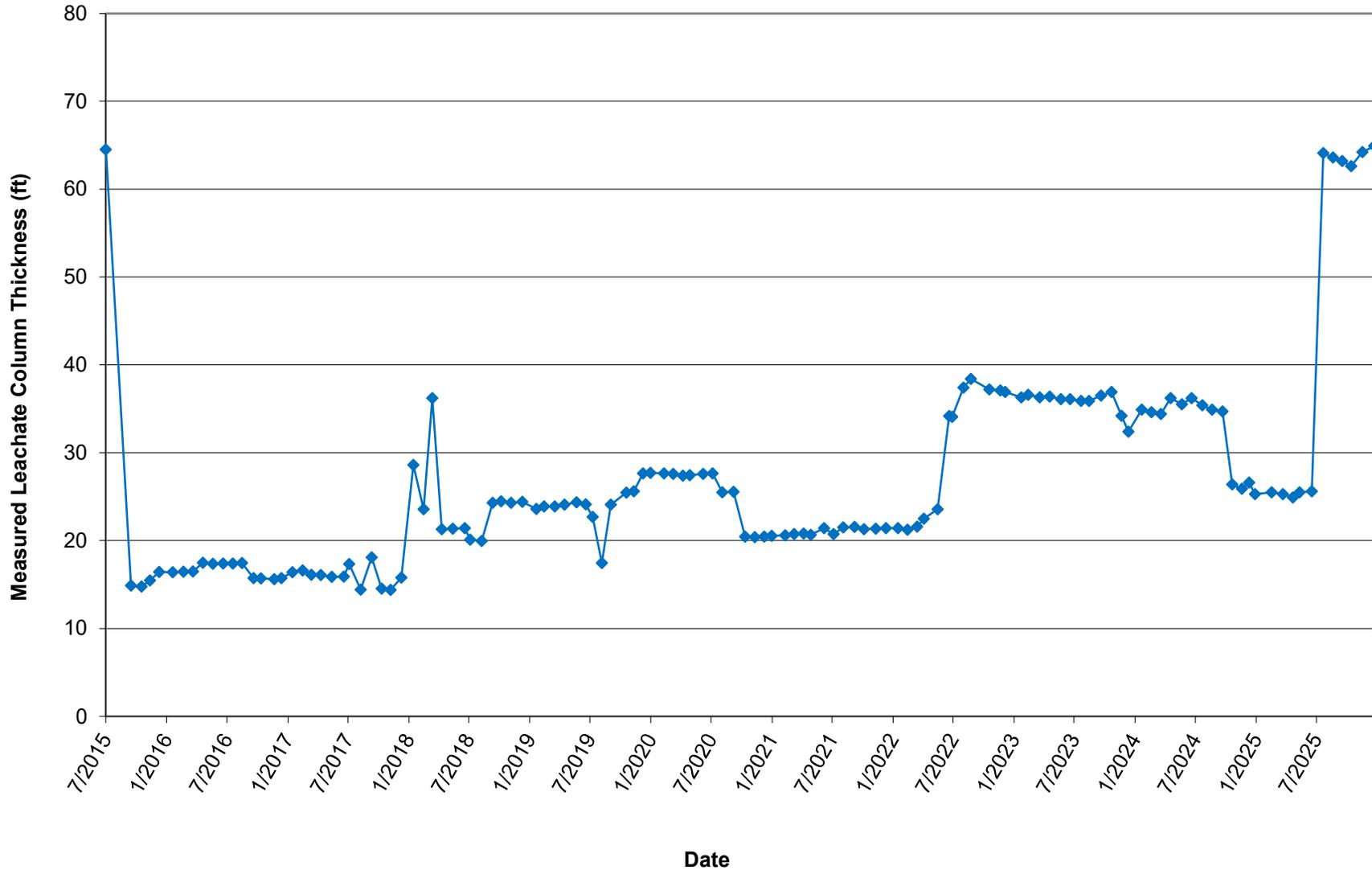
**LPZ-7  
Phase 2, Region 1**



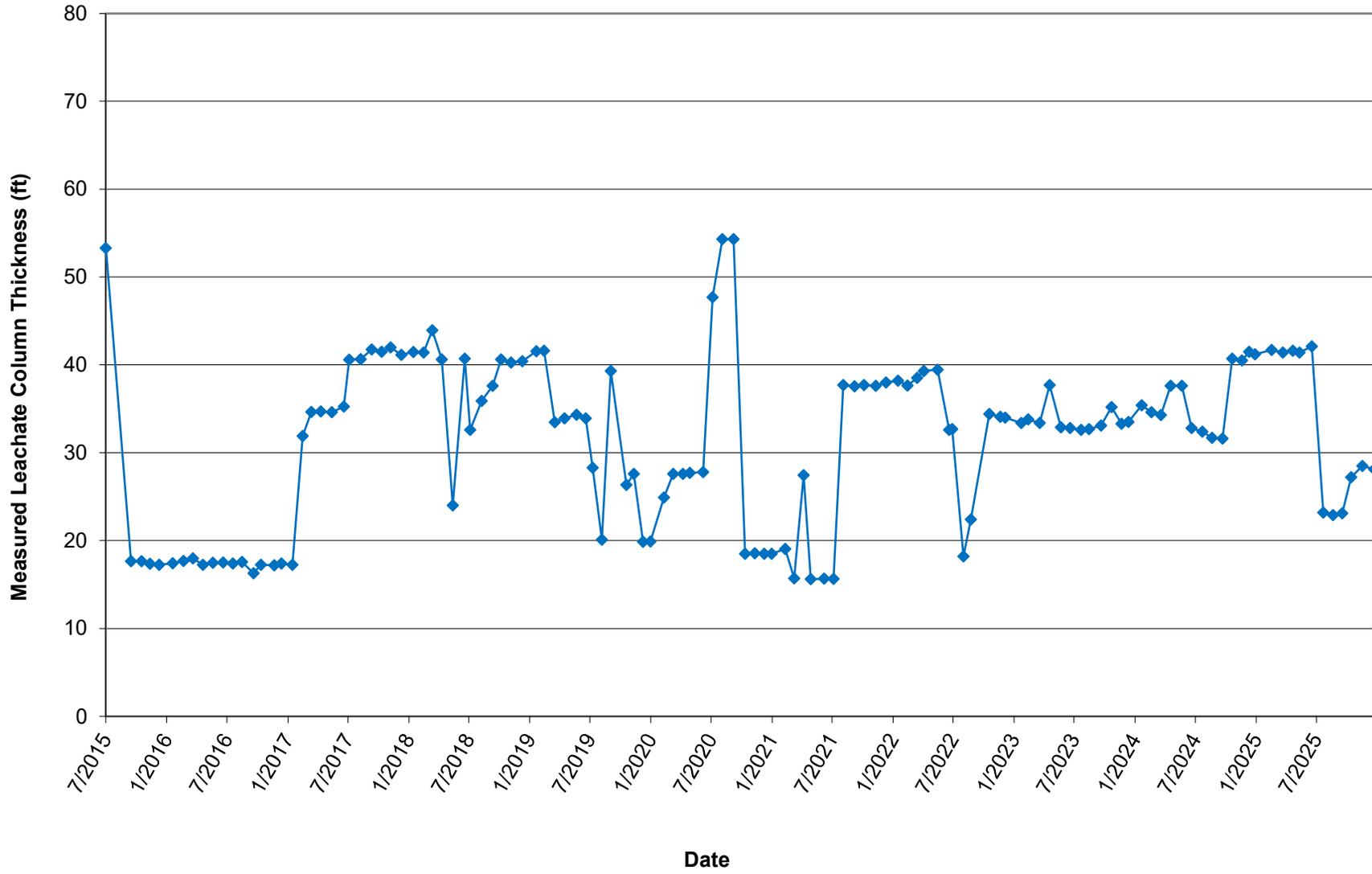
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Phase 2, Region 1**



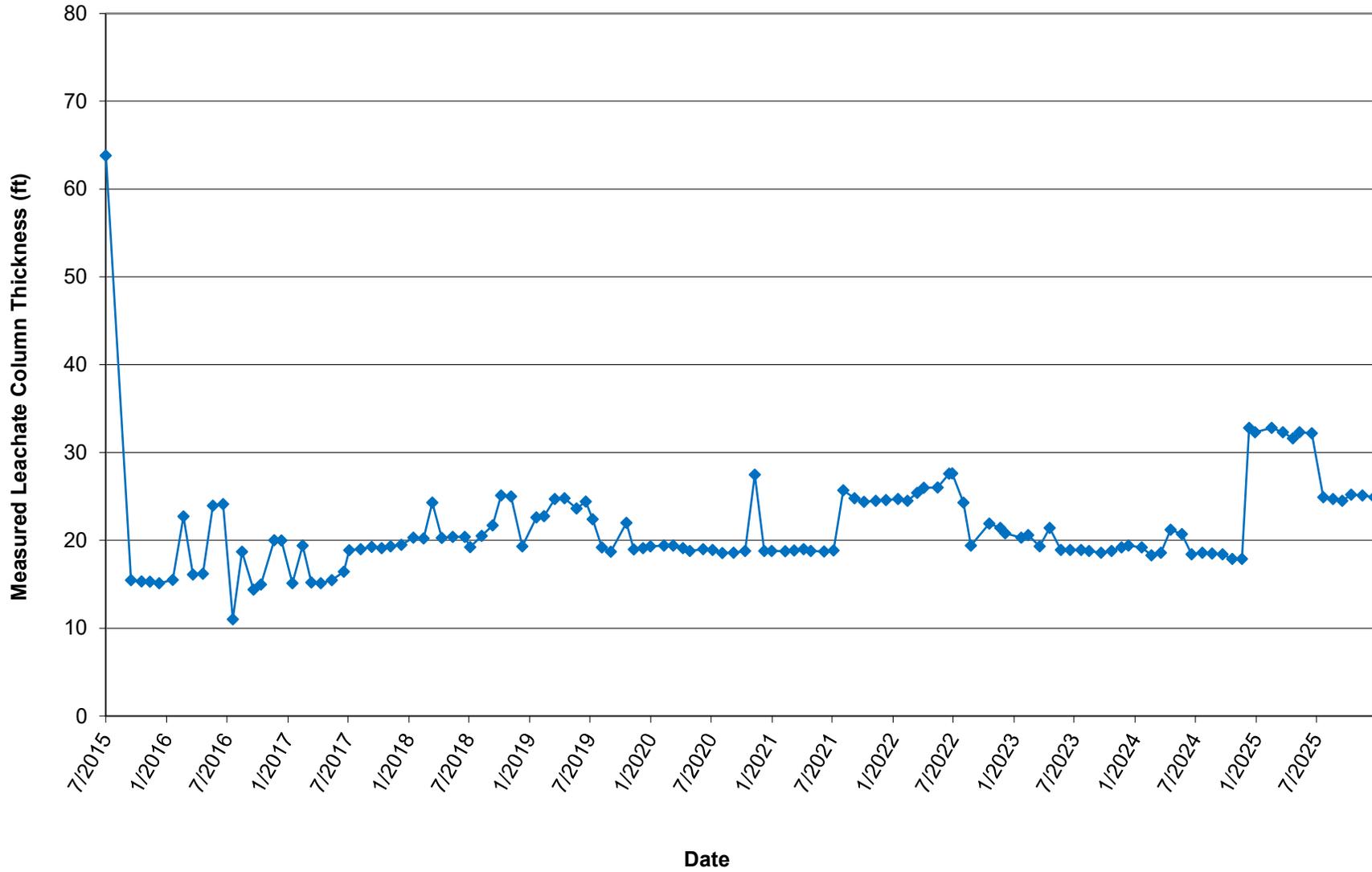
**LEW-8  
Phase 2, Region 1**



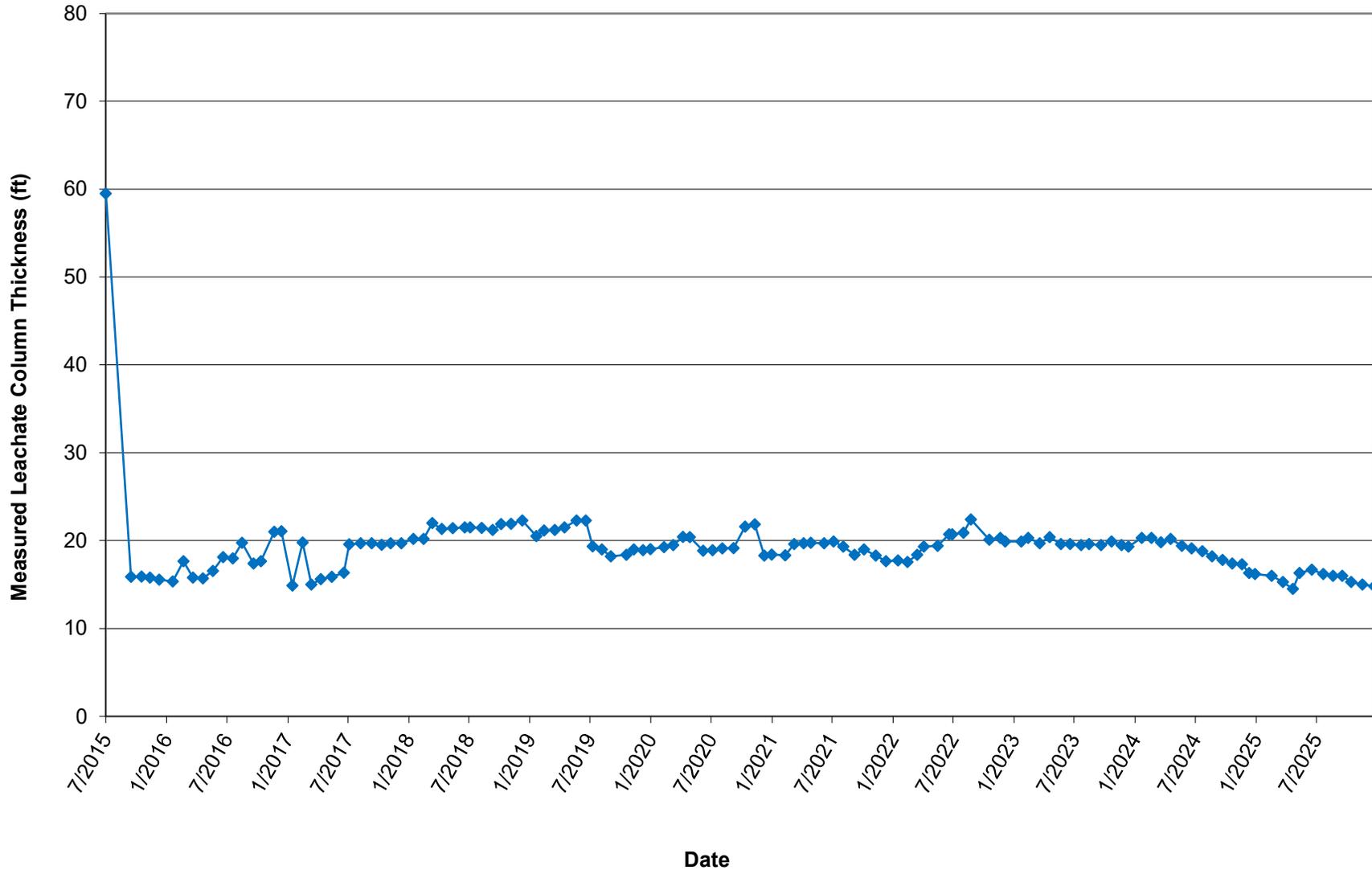
**LEW-9  
Phase 2, Region 1**



**LEW-10  
Phase 2, Region 1**



**LEW-11  
Phase 2, Region 1**



**TABLE B-2**  
**Phase 2 Regions 2 and 3 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

DATE	LEACHATE PIEZOMETER		LEACHATE SUMP		
	LPZ-R3-1	LPZ-R3-2	R2-1	R2-2	L-1
1/1/2015	NI	NI	NR	NR	8.29
2/1/2015	NI	NI	1.21	0.94	7.09
3/1/2015	NI	NI	1.21	1.69	6.90
4/1/2015	NI	NI	1.22	2.11	9.40
5/1/2015	NI	NI	1.23	2.06	17.67
6/1/2015	NI	NI	1.22	2.20	8.82
7/1/2015	NI	NI	1.22	3.04	14.42
8/1/2015	NI	NI	1.21	2.09	6.31
9/1/2015	NI	NI	1.21	2.09	6.38
10/1/2015	NI	NI	1.80	2.12	6.41
11/1/2015	NI	NI	1.88	2.33	6.33
12/1/2015	NI	NI	1.93	6.23	6.22
1/1/2016	NI	NI	1.92	2.89	6.25
2/1/2016	NI	NI	2.03	1.72	6.21
3/1/2016	NI	NI	1.96	2.89	6.29
4/1/2016	NI	NI	2.01	6.32	6.58
5/1/2016	NI	NI	1.95	9.24	6.35
6/1/2016	NI	NI	2.04	2.28	6.26
7/1/2016	NI	NI	2.02	2.25	6.27
8/1/2016	NI	NI	2.02	2.26	6.14
9/1/2016	NI	NI	4.16	2.26	6.26
10/1/2016	NI	NI	2.47	2.26	20.99
11/1/2016	NI	NI	1.96	2.43	7.13
12/1/2016	NI	NI	2.03	2.32	6.20
1/1/2017	NI	NI	2.03	2.25	6.21
2/1/2017	NI	NI	2.02	2.26	6.20
3/1/2017	NI	NI	2.01	2.25	6.17
4/1/2017	NI	NI	2.01	2.25	6.22
5/1/2017	NI	NI	2.01	2.26	6.25
6/1/2017	NI	NI	2.01	2.27	6.25
7/1/2017	NI	NI	2.03	2.27	6.30
8/1/2017	NI	NI	2.05	2.27	6.28
9/1/2017	NI	NI	2.05	2.27	6.20
10/1/2017	NI	NI	2.06	2.26	6.21
11/1/2017	NI	NI	3.10	2.87	6.25
12/1/2017	NI	NI	2.01	2.65	13.20
1/1/2018	NI	NI	2.01	2.65	11.03
2/1/2018	NI	NI	2.31	2.58	7.32
3/1/2018	NI	NI	4.05	3.41	24.96
4/1/2018	NI	NI	2.13	2.26	6.67
5/1/2018	NI	NI	2.53	2.27	6.38
6/1/2018	NI	NI	2.07	2.26	6.33
7/1/2018	NI	NI	2.12	2.27	6.08
8/1/2018	NI	NI	2.14	2.27	6.27
9/1/2018	NI	NI	2.72	2.70	13.00
10/1/2018	NI	NI	2.09	2.26	6.15
11/1/2018	NI	NI	2.10	2.26	6.22
12/1/2018	NI	NI	2.08	2.27	6.29
1/1/2019	NI	NI	2.07	2.43	6.32
2/1/2019	NI	NI	2.02	2.43	6.23
3/1/2019	NI	NI	2.03	2.31	6.31
4/1/2019	NI	NI	2.01	2.25	6.58
5/1/2019	NI	NI	NA	NA	30.99
6/1/2019	NI	NI	6.07	2.28	6.30
7/1/2019	NI	NI	3.30	2.35	7.02
8/1/2019	NI	NI	8.18	NA	6.56
9/1/2019	NI	NI	9.34	2.00	6.29
10/1/2019	NI	NI	7.27	2.79	12.23
11/1/2019	NI	NI	2.49	2.49	12.94
12/1/2019	NI	NI	2.08	2.32	6.42

**TABLE B-2**  
**Phase 2 Regions 2 and 3 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

DATE	LEACHATE PIEZOMETER		LEACHATE SUMP		
	LPZ-R3-1	LPZ-R3-2	R2-1	R2-2	L-1
1/1/2020	NI	NI	2.14	2.40	6.27
2/1/2020	NI	NI	2.14	2.28	6.30
3/1/2020	NI	NI	2.03	2.28	15.91
4/1/2020	NI	NI	1.87	2.27	NA
5/1/2020	NI	NI	1.84	2.28	NA
6/1/2020	NI	NI	1.83	2.28	14.66
7/1/2020	NI	NI	1.84	2.29	8.11
8/1/2020	NI	NI	1.87	2.29	6.29
9/1/2020	NI	NI	1.89	2.29	7.18
10/1/2020	NI	NI	1.95	2.29	6.51
11/1/2020	NI	NI	1.92	2.29	6.22
12/1/2020	NI	NI	2.01	2.32	6.52
1/1/2021	NI	NI	2.17	2.34	11.32
2/1/2021	NI	NI	1.91	2.74	14.75
3/1/2021	NI	NI	1.85	2.25	NA
4/1/2021	NI	NI	1.80	2.25	NA
5/1/2021	NI	NI	3.00	2.64	7.49
6/1/2021	NI	NI	1.78	2.25	6.10
7/1/2021	NA	NI	1.81	2.26	6.06
8/1/2021	NA	NI	2.24	2.40	6.41
9/1/2021	NA	NI	1.79	2.26	6.15
10/1/2021	NA	NI	NA	NA	9.87
11/1/2021	NA	NI	1.46	2.09	27.50
12/1/2021	Dry	NI	NA	NA	NA
1/1/2022	Dry	NI	NA	NA	5.98
2/1/2022	0.10	NI	NA	NA	NA
3/1/2022	0.09	NI	NA	NA	NA
4/1/2022	0.09	NI	NA	NA	NA
5/1/2022	0.52	NI	NA	NA	NA
6/1/2022	3.30	NI	NA	NA	NA
7/1/2022	3.67	NI	NA	NA	NA
8/1/2022	0.71	NI	4.43	NA	16.94
9/1/2022	0.06	NI	6.52	2.46	5.63
10/1/2022	0.06	NI	3.56	3.66	7.57
11/1/2022	0.06	NI	1.99	2.64	6.42
12/1/2022	0.05	NI	2.01	2.40	5.32
1/1/2023	0.05	NI	2.03	2.29	5.34
2/1/2023	0.05	NI	2.05	2.27	5.22
3/1/2023	0.19	NI	2.05	2.25	5.81
4/1/2023	0.05	NI	2.02	2.26	5.77
5/1/2023	0.05	NI	1.93	NA	5.90
6/1/2023	0.05	NI	2.52	NA	5.29
7/1/2023	0.05	NI	5.93	3.44	5.36
8/1/2023	0.06	NI	7.28	2.27	5.90
9/1/2023	0.08	NI	1.87	2.29	5.29
10/1/2023	0.14	NI	2.03	2.33	5.31
11/1/2023	0.13	NI	2.09	2.33	5.21
12/1/2023	0.11	NI	2.14	2.32	5.21
1/1/2024	0.62	NI	3.03	3.10	5.21
2/1/2024	NA	NI	1.97	2.29	5.19
3/1/2024	NA	NI	2.11	2.28	NA
4/1/2024	NA	NI	2.11	2.28	7.20
5/1/2024	NA	NI	2.14	2.29	5.67
6/1/2024	NA	NI	2.15	2.31	5.23
7/1/2024	NA	NI	2.15	2.30	5.53
8/1/2024	NA	NI	2.16	2.31	5.87
9/1/2024	NA	NI	2.17	2.31	8.69
10/1/2024	NA	NI	2.15	2.32	NA
11/1/2024	NA	NI	2.13	2.32	17.88
12/1/2024	NA	NI	2.05	2.34	27.54

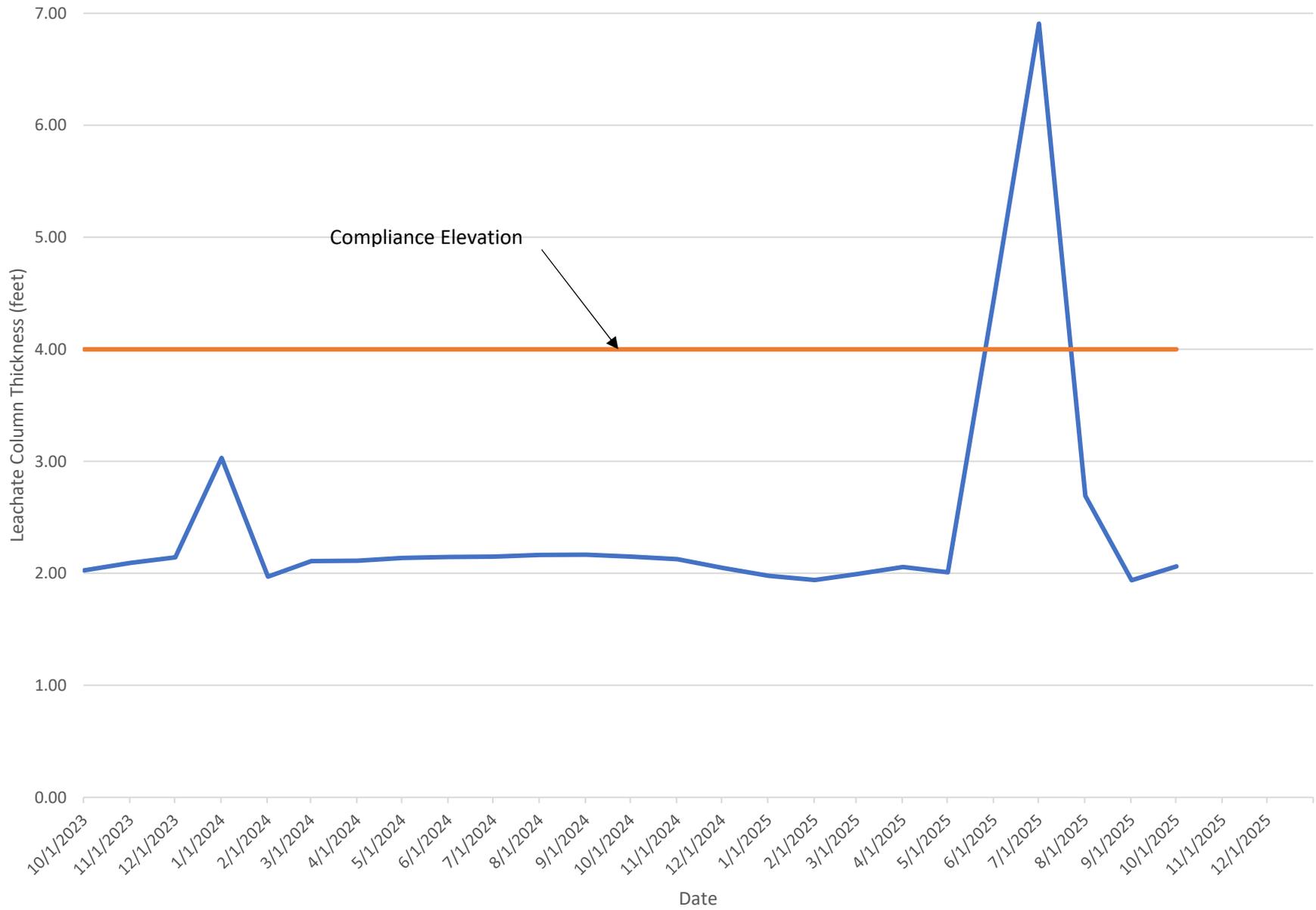
**TABLE B-2**  
**Phase 2 Regions 2 and 3 Leachate Level Measurements**  
**Great River Regional Waste Authority**  
**Fort Madison, Iowa**

DATE	LEACHATE PIEZOMETER		LEACHATE SUMP		
	LPZ-R3-1	LPZ-R3-2	R2-1	R2-2	L-1
1/1/2025	NA	NA	1.98	2.53	30.45
2/1/2025	NA	NA	1.94	2.36	NA
3/1/2025	NA	NA	1.99	2.23	8.17
4/1/2025	NA	NA	2.06	2.19	9.48
5/1/2025	NA	NA	2.01	2.21	7.20
6/1/2025	NA	NA	4.47	3.31	3.96
7/1/2025	NA	NA	6.91	5.27	18.58
8/1/2025	NA	NA	2.69	3.76	11.19
9/1/2025	NA	NA	1.94	2.18	3.84
10/1/2025	NA	NA	2.06	2.10	4.33
11/1/2025	NA	NA	NA	NA	4.38
12/1/2025	NA	NA	NA	NA	4.70

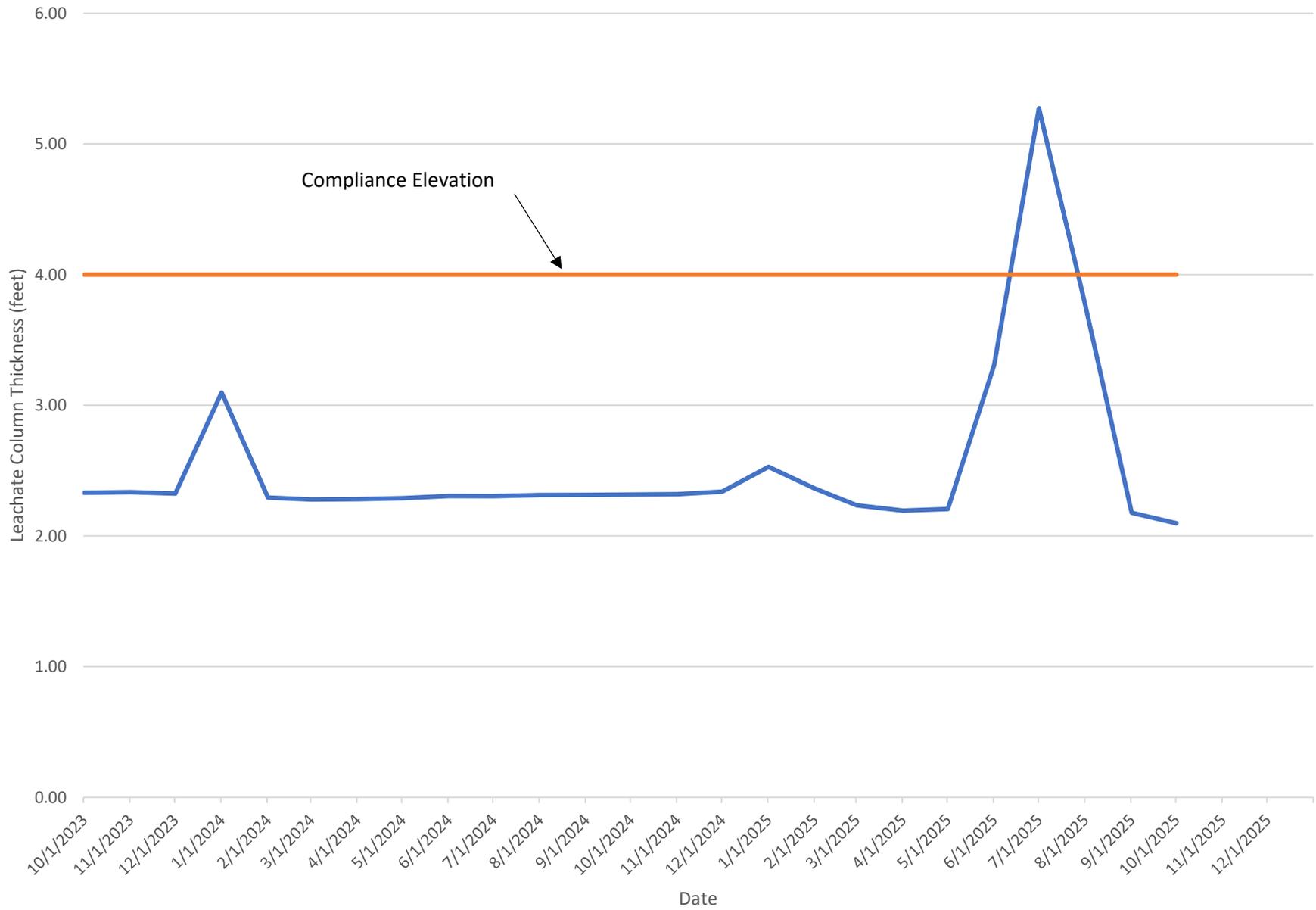
Notes:

- 1) Leachate column thickness in feet.
- 2) NR = Not recorded; NA = Not available; NI = Not installed.

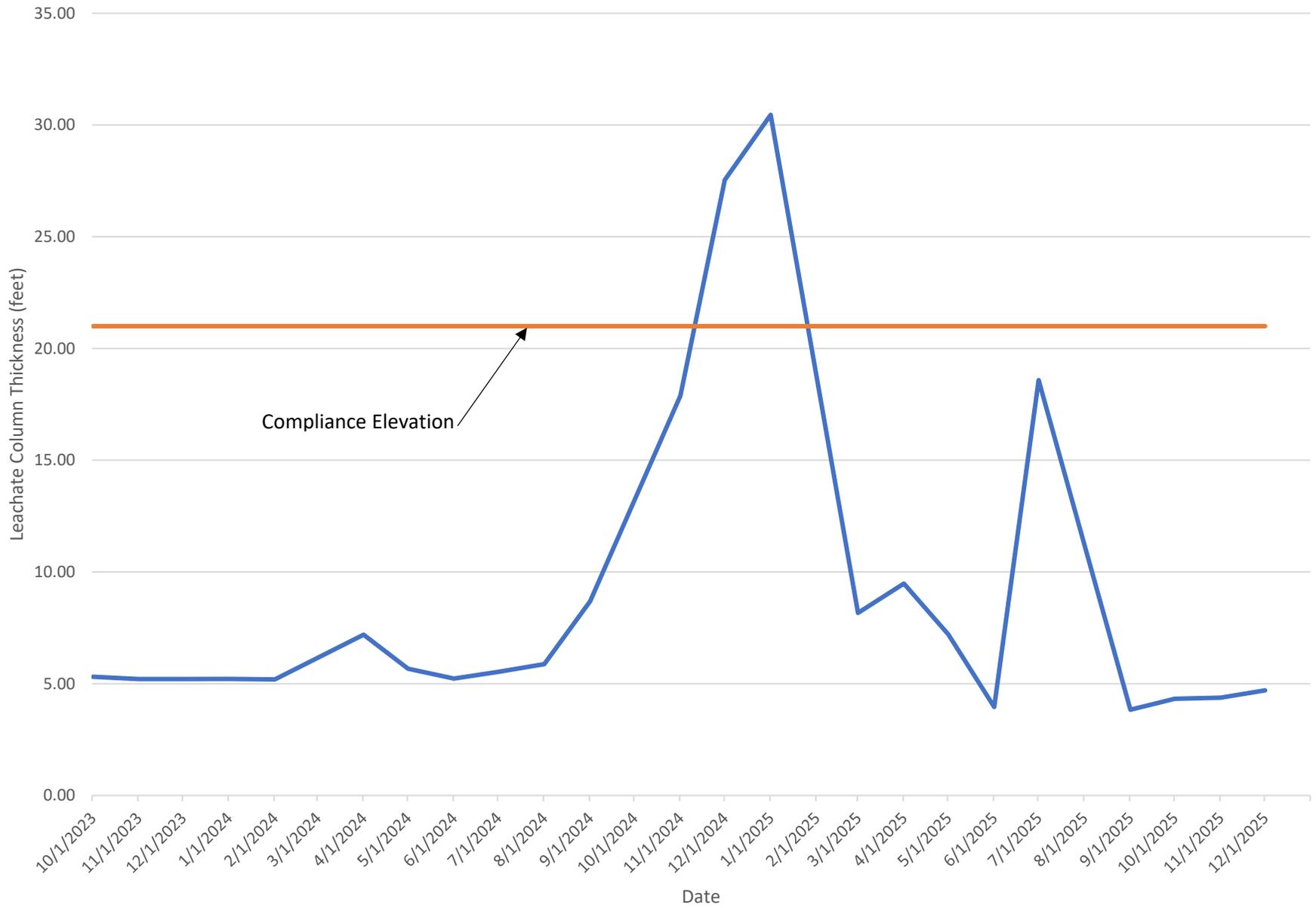
### Cell R2-1 Leachate Sump



# Cell R2-2 Leachate Sump



### Phase 2 Region 1 Leachate Sump (L-1)



**Appendix F**  
**2025 Landfill Gas Annual Report**

**Gas Monitoring Summary**  
**2025 Gas Monitoring Report**  
**Great River Regional Waste Authority Sanitary Landfill**  
**Phase 2 MSWLF Unit**  
**Permit No. 56-SDP-07-80P**

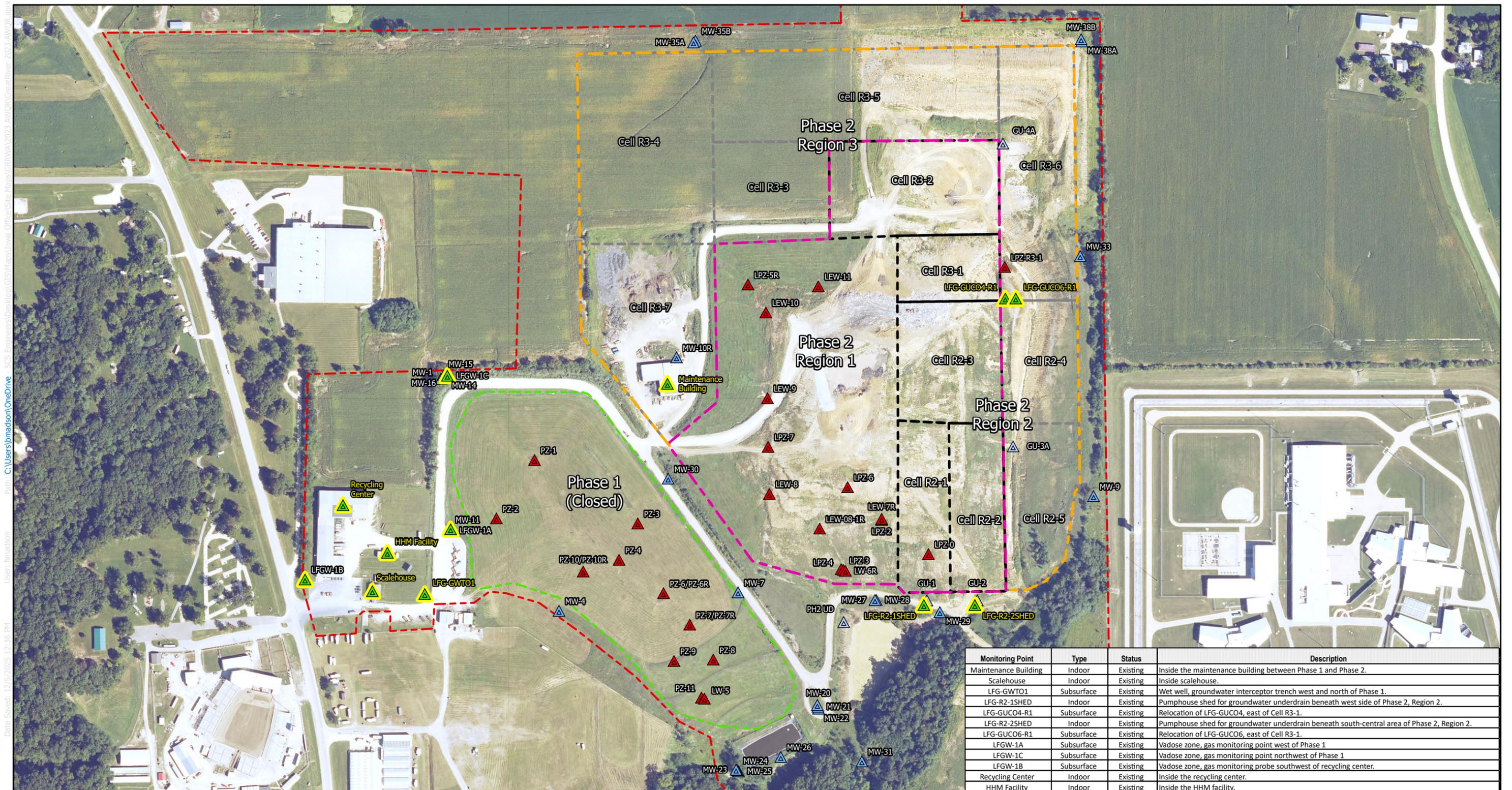
Monitoring Points				Methane Results (% LEL)							
Point ID	Name	Type	Description	3/31/2025	S (Y/N)	6/26/2025	S (Y/N)	9/26/2025	S (Y/N)	12/31/2025	S (Y/N)
5	Maintenance Building	Indoor	Interior of Maintenance Building	0		0		0		0	
6	Scalehouse	Indoor	Interior of scalehouse	0		0		0		0	
7	LFG-GWT01	Subsurface	Wet Well, groundwater interceptor trench west and north of Phase 1	0		0		0		0	
12	LFG-GWT03	Subsurface	Vadose zone, groundwater interceptor trench east and north of Phase 2, Region 2 MSWLF unit	0		0		0		0	
13	LFG-R2-1SHED	Subsurface	Pumphouse shed for leachate/groundwater sump access for Cells R2-1 and R2-3 of the Phase 2, Region 2 MSWLF unit and groundwater underdrain beneath west side of Phase 2, Region 2 MSWLF unit	0		0		0		0	
15R1	LFG-GUCO4-R1	Subsurface	Relocation of LFG-GUCO4. east of Cell R3-1.	0		0		0		0	
16	LFG-GUCO5	Subsurface	Pumphouse shed for leachate/groundwater sump access for Cells R2-2 and R2-3 of the Phase 2, Region 2 MSWLF unit and groundwater underdrain beneath south-central area of Phase 2, Region 2 MSWLF unit	0		0		0		0	
17R1	LFG-GUCO6-R1	Subsurface	Relocation of LFG-GUCO6. east of Cell R3-1.	0		0		0		0	
18	MW-22	Monitoring Well	Vadose zone, groundwater monitoring point between the leachate lagoon and sediment pond	0	N	0	N	0	N	0	N
24	LFG-GUP2R3-1	Subsurface	Groundwater underdrain cleanout on the east side of Cell R3-1.	0		0		0		0	

S(Y/N) - Was screen submerged, yes or no or blank is non-applicable

Methane monitoring is performed by Landfill staff.

There were no action level exceedances during this reporting period.

Gas monitoring beginning in 2026 will be in accordance with the gas monitoring network revision submitted December 5, 2025 (Doc #115128) and approved in the permit renewal dated January 15, 2026 (Doc #115716).



Monitoring Point	Type	Status	Description
Maintenance Building	Indoor	Existing	Inside the maintenance building between Phase 1 and Phase 2.
Scalehouse	Indoor	Existing	Inside scalehouse.
LFG-GWTO1	Subsurface	Existing	Wet well, groundwater interceptor trench west and north of Phase 1.
LFG-R2-1SHED	Indoor	Existing	Pumphouse shed for groundwater underdrain beneath west side of Phase 2, Region 2.
LFG-GUCO4-R1	Subsurface	Existing	Relocation of LFG-GUCO4, east of Cell R3-1.
LFG-R2-2SHED	Indoor	Existing	Pumphouse shed for groundwater underdrain beneath south-central area of Phase 2, Region 2.
LFG-GUCO6-R1	Subsurface	Existing	Relocation of LFG-GUCO6, east of Cell R3-1.
LFGW-1A	Subsurface	Existing	Vadose zone, gas monitoring point west of Phase 1
LFGW-1C	Subsurface	Existing	Vadose zone, gas monitoring point northwest of Phase 1
LFGW-1B	Subsurface	Existing	Vadose zone, gas monitoring probe southwest of recycling center.
Recycling Center	Indoor	Existing	Inside the recycling center.
HHM Facility	Indoor	Existing	Inside the HHM facility.

## Methane Monitoring Network

Legend			
	Methane Monitoring Point		Leachate Piezometer and/or Extraction Well
	Monitoring Well		Approximate Future Waste Boundary - Phase 2
	Underdrain Monitoring Point		Approximate Waste Boundary - Phase 2
	Landfill Gas Well		Located Waste Boundary
	Approximate GRRWA Property Boundary		Approximate Location Of Existing Cell Boundaries
	Approximate Location Of Future Cell Boundary		

GRRWA Sanitary Landfill  
 Fort Madison, Iowa  
 Project No: 27224317.26  
 Drawing Date: January 2026

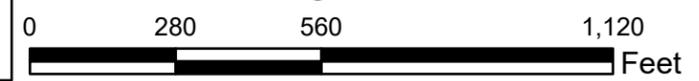
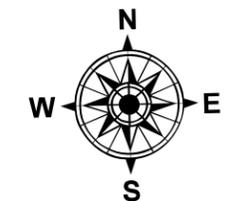


Figure 1



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**Appendix G**

**Monitoring Well Abandonment Forms – MW-34A and MW-34B**



IOWA DEPARTMENT OF NATURAL RESOURCES  
**Monitoring Well/Piezometer  
 Abandonment Form**

Disposal Site Name: Great River Regional Waste Permit No.: \_\_\_\_\_

Well/Piezometer No.: B2019/MW-34A

Applicable Requirements<sup>1</sup>:  567 IAC 113       567 IAC 139  
 567 IAC 114       Site Permit  
 567 IAC 115       Other: \_\_\_\_\_

**1. Location of Well<sup>2</sup>**

Site Coordinates: Northing: \_\_\_\_\_ Easting: \_\_\_\_\_  
 World Coordinates: Latitude: 40.657728 Longitude: -91.313390

**2. Well Description:**

Well depth: 24 ft  
 Depth to water: surface ft.  
 Well material: 2" pvc (PVC, stainless, iron, etc.)  
 Well diameter: 2 in.  
 Year or decade constructed: 2019  
 Abandonment date: 4-29-2024  
 Abandonment method: Auger drilled to the bottom of well. Pumped bentonite with a tremie line from the bottom up.

If plugged by owner, complete the following:

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

**Signature of Owner** \_\_\_\_\_

If plugged by certified well contractor, complete the following:

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

**Signature of Contractor:** *[Signature]* Cert No: 6715

Complete one form for each well plugged and submit within 30 days to the local county agent, DNR project officer, and Erik Day with the DNR's Water Supply Section at [erik.day@dnr.iowa.gov](mailto:erik.day@dnr.iowa.gov).

<sup>1</sup> Refer to the site's permit to determine applicable requirements. Note that some sites may only be regulated by their permit versus current landfill chapters. If the permit and rule are silent regarding applicable requirement, then 567 UAC Chapter 39 shall apply, which requires use of the Abandoned Water Well Plugging Record, not this form. If the applicable requirements have been modified and approved by the DNR, then note under Other.

<sup>2</sup> The location does not need to be surveyed by a licensed surveyor. A handheld GPS reading accurate to +/- 30 feet is acceptable and include with this form an aerial photograph showing the location. The site coordinates should be the same coordinate system currently used for survey control and mapping of the site.



IOWA DEPARTMENT OF NATURAL RESOURCES  
**Monitoring Well/Piezometer  
 Abandonment Form**

Disposal Site Name: Great River Regional Waste Permit No.: \_\_\_\_\_

Well/Piezometer No.: B2019/MW-34B

Applicable Requirements<sup>1</sup>:  567 IAC 113  567 IAC 139  
 567 IAC 114  Site Permit  
 567 IAC 115  Other: \_\_\_\_\_

**1. Location of Well<sup>2</sup>**

Site Coordinates: Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

World Coordinates: Latitude: 40.657746 Longitude: -91.313398

**2. Well Description:**

Well depth: 79 ft

Depth to water: surface ft.

Well material: 2" pvc (PVC, stainless, iron, etc.)

Well diameter: 2 in.

Year or decade constructed: 2019

Abandonment date: 4-29-2024

Abandonment method: Auger drilled to the bottom of well. Pumped bentonite with a tremie line from the bottom up.

If plugged by owner, complete the following:

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

Signature of Owner \_\_\_\_\_

If plugged by certified well contractor, complete the following:

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

Signature of Contractor: *Zule Papp* Cert No: 6715

Complete one form for each well plugged and submit within 30 days to the local county agent, DNR project officer, and Erik Day with the DNR's Water Supply Section at [erik.day@dnr.iowa.gov](mailto:erik.day@dnr.iowa.gov).

<sup>1</sup> Refer to the site's permit to determine applicable requirements. Note that some sites may only be regulated by their permit versus current landfill chapters. If the permit and rule are silent regarding applicable requirement, then 567 UAC Chapter 39 shall apply, which requires use of the Abandoned Water Well Plugging Record, not this form. If the applicable requirements have been modified and approved by the DNR, then note under Other.

<sup>2</sup> The location does not need to be surveyed by a licensed surveyor. A handheld GPS reading accurate to +/- 30 feet is acceptable and include with this form an aerial photograph showing the location. The site coordinates should be the same coordinate system currently used for survey control and mapping of the site.