



REPORT

2022 Annual Groundwater Monitoring & Corrective Action Report

RD Morrow Generating Station, Purvis, Lamar County, Mississippi, USA

Submitted to:



Cooperative Energy

7037 US Hwy 49, Hattiesburg, MS 39402

Submitted by:

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January 31, 2023



Executive Summary

This report presents the *2022 Annual Groundwater Monitoring & Corrective Action Report, R.D. Morrow, Sr. Generating Station*, Purvis, Lamar County, Mississippi. Groundwater monitoring and reporting for the Morrow facility is performed in accordance with the United States Environmental Protection Agency (US EPA) Coal Combustion Residual (CCR) Rule published in the Code of Federal Regulations Title 40 Part 257 (40 CFR Part 257, Subpart D) dated April 17, 2015, 40 CFR § 257.50 through § 257.107. As required in 40 CFR § 257.90(e), this Annual Report describes the status of the groundwater monitoring program, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and presents key activities for the upcoming year.

The *R.D. Morrow, Sr. Generating Station* (Site or RD Morrow) has a single CCR unit. The CCR Landfill Unit has continued Assessment Monitoring in accordance with § 257.95, filing the Notice of Establishment of Assessment Monitoring Program on May 16, 2018. Due to the constituent concentrations exceeding the statistical limits, as described more fully within this report, the Site began and ended the 2022 annual reporting period in assessment monitoring.

2022 Groundwater Monitoring Activities for the CCR Landfill Unit

- The Assessment of Corrective Measures (ACM) began on May 15, 2019. The corrective measures assessment was ongoing throughout 2022. Semi-annual remedy progress reports in the spring and fall of 2022 discuss these efforts.
- Groundwater monitoring sampling events for the CCR Landfill Unit were conducted in February (Annual), and in April (Semi-annual) and September 2022 (Semi-annual). Groundwater samples were collected and analyzed for both Appendix III and Appendix IV constituents from the Landfill unit CCR monitoring well network.
- Pursuant to 40 CFR § 257.90 (e)(6)(iii)-(iv), the following table presents the Appendix III and IV constituents with SSIs or SSLs, respectively, for the CCR Landfill Unit.

Statistically Significant Increases (SSIs)		
Appendix III Constituent	April 2022	September 2022
Boron	MW-3, MW-4, MW-5	MW-3, MW-4, MW-5
Calcium	MW-3, MW-4, MW-5	MW-3, MW-4, MW-5
pH	MW-3, MW-5	MW-3, MW-5
Sulfate	MW-3, MW-4, MW-5	MW-3, MW-4, MW-5
TDS	MW-3, MW-4, MW-5	MW-3, MW-4, MW-5
Statistically Significant Levels (SSLs)		
Appendix IV Constituent	April 2022	September 2022
Lithium	MW-5	MW-5
Molybdenum	MW-5	MW-5

- In accordance with 40 CFR § 257.96(e), Cooperative Energy held a public meeting on September 27, 2022, at the Purvis Community Center in Purvis, Mississippi, to discuss the results of the corrective measures assessment for the CCR Landfill Unit.
- At the end of 2022, Cooperative Energy was in the process of finalizing its selection of a remedy and report describing the selected remedy in accordance with the requirements of § 257.97.

Based on review of the Appendix III and Appendix IV statistical results completed for the groundwater monitoring and corrective action program during the 2022 reporting period, the CCR Landfill Unit will remain in assessment monitoring.

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Certification

This *2022 Annual Groundwater Monitoring & Corrective Action Report, R.D. Morrow, Sr. Generating Station*, Purvis, Lamar County, Mississippi, USA has been prepared to comply with the United States Environmental Protection Agency (EPA) Coal Combustion Residuals (CCR) rule (40 CFR Part 257 Subpart D, published in 80 FR 21302-21501 (April 17, 2015) under the direction of a licensed professional engineer, with WSP USA Inc.

WSP USA Inc.



Dayna L. Kent
Senior Consultant, Geologist



Dawn L. Prell, CPG
Technical Principal, Hydrogeologist

I hereby certify that this *2022 Annual Groundwater Monitoring & Corrective Action Report, R.D. Morrow, Sr. Generating Station*, located at 304 Old Okahola School Road, Purvis, Lamar County, MS 39475 has been prepared to meet the requirements of 40 CFR § 257.90(e).



Daniel Smith, PE
Senior Associate, Engineer-Civil
Mississippi PE No, 32180

dlk/dlp

1.0 INTRODUCTION

This *2022 Annual Groundwater Monitoring and Corrective Action Report* (Annual Report) has been prepared by WSP USA Inc. (WSP) for the RD Morrow Generating Station (RD Morrow or Site) operated by Cooperative Energy.

1.1 Purpose

The United States Environmental Protection Agency (US EPA) Coal Combustion Residual (CCR) Rule was published in the Code of Federal Regulations Title 40 Part 257 (40 CFR Part 257, Subpart D) on April 17, 2015. The Rule identifies an effective date of October 19, 2015. The CCR Rule regulates CCRs as non-hazardous waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA) and applies to new and existing landfills and surface impoundments.

As required in 40 CFR § 257.90(e), this Annual Report describes the status of the groundwater monitoring program, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and presents project key activities for the upcoming year. Groundwater monitoring and reporting for RD Morrow are performed in accordance with the requirements of 40 CFR § 257.90 through § 257.98. This report documents the activities completed during the 2022 calendar year.

1.2 Site Description and Background

RD Morrow is located in the community of Okahola, a rural area of Lamar County, approximately 4.5 miles north of the City of Purvis and 8 miles southwest of Hattiesburg. Old Okahola School Road bisects the property into a northern and southern parcel. The location of the Site property and surrounding area are shown on Figure 1, Site Location Map.

The CCR Landfill Unit is the only CCR unit currently subject to the CCR Rule. Previously, a surface impoundment unit was subject to the CCR Rule and remained in detection monitoring until completion of closure by removal. The associated wells were decommissioned and abandoned in 2022. Figure 2 identifies the CCR Landfill Unit within the south parcel at RD Morrow.

1.3 CCR Landfill Unit Groundwater Monitoring Well Network

The groundwater monitoring network for the CCR Landfill Unit consists of five (5) detection monitoring wells and one (1) assessment monitoring well, as shown on Figure 2. CCR monitoring wells are included in the monitoring network screened within the reworked Citronelle sequence underlying the CCR Landfill Unit. In accordance with 40 CFR § 257.91, the CCR Landfill Unit groundwater monitoring network contains monitoring wells, installed at the waste boundary, and represents the quality of groundwater in the uppermost aquifer. The network for the events covered by this Annual Report include:

- One upgradient detection monitoring well: MW-2
- Four downgradient detection monitoring wells: MW-3, MW-4, MW-5, and MW-6
- One assessment monitoring well: MW-10.
- There were no changes to the landfill certified detection groundwater monitoring network or the assessment monitoring network during the 2022 calendar year.

- Additional monitoring well-related activities to ensure continued compliance with 40 CFR § 257.91(e) included a visual inspection of well conditions for the CCR Landfill Unit monitoring well network prior to sampling, recording the site conditions, and any site maintenance to provide safe access for sampling. The network wells were found to be of sound integrity and in proper working order during each of the sampling events and did not require any repairs.

2.0 CCR LANDFILL UNIT GROUNDWATER MONITORING ACTIVITIES

In accordance with 40 CFR § 257.90(e), the following describes monitoring-related activities performed during the 2022 calendar year. Groundwater sampling was performed in accordance with 40 CFR § 257.93, as follows:

2.1 CCR Landfill Unit Assessment Monitoring

Cooperative Energy posted a Notice of Establishment of Assessment Monitoring Program for RD Morrow CCR Landfill Unit, dated May 16, 2018. Groundwater samples were collected for both Appendix III and Appendix IV constituents from each of the monitoring wells. In February 2022, Cooperative Energy conducted the annual Appendix IV monitoring event pursuant to 40 CFR § 257.95(b). The results were analyzed to determine which constituents were detected and required resampling, as required by 40 CFR § 257.95(d)(1). The 2022 semi-annual monitoring events were then conducted in April and September 2022.

2.2 Groundwater Sampling and Laboratory Analysis

The following sections describe methods used to conduct groundwater monitoring at the CCR Landfill Unit.

2.2.1 Groundwater Level Measurements

Prior to sampling, Environmental Management Services, Inc. recorded groundwater elevations from each detection and assessment monitoring well on April 26, and September 22, 2022. The April and September 2022 elevation data was used to develop potentiometric surface elevation contour maps to confirm the groundwater flow direction and to confirm that the groundwater monitoring well network for the CCR Landfill Unit remains sufficient to monitor groundwater downgradient of the unit. The direction of groundwater flow has not changed, which has been consistent since the inception of the CCR monitoring program at RD Morrow. Groundwater flows south, based on 2022 groundwater elevation contour maps, included as Figures 3A, First Semi-Annual 2022 Potentiometric Surface Elevation Contour Map (April 26, 2022) and 3B, Second Semi-Annual 2022 Potentiometric Surface Elevation Contour Map (September 22, 2022). No changes to the monitoring well network are necessary based on groundwater elevation data.

2.2.2 Groundwater Gradient and Flow Velocity

Groundwater flow rates at the Site were calculated based on hydraulic gradients, hydraulic conductivity from previous slug test results, and an estimated effective porosity of the screened horizon. Based on slug test data at the Site (EMS, 2020 and EMS, 2022), an average hydraulic conductivity value of 4.8 to 141.1 ft/day is used in the flow calculations. The hydraulic gradients were calculated between well pairs as shown below. Based on historical groundwater investigation (EMS, 2022), the effective porosity of 0.30 was used in the calculation.

Horizontal flow velocity was calculated using the commonly used derivative of Darcy's Law:

$$V = \frac{K * i}{n_e} \quad \text{Where:}$$

V = Groundwater flow velocity $\left(\frac{\text{feet}}{\text{day}}\right)$
 K = Average Hydraulic Conductivity of the aquifer $\left(\frac{\text{feet}}{\text{day}}\right)$
 i = Horizontal hydraulic gradient $\left(\frac{\text{feet}}{\text{feet}}\right)$
 n_e = Effective porosity

Using this equation and groundwater elevations collected during both April 2022 and September 2022 sampling events, horizontal groundwater velocities are calculated for various areas of the Site and shown below.

Table 2.2.2 Groundwater Flow Velocity								
Well Pairs	Date	Δ H (feet) ^[1]	Δ L (feet) ^[2]	Hydraulic Gradient ^[3] (Δ H/ Δ L)	Average Hydraulic Conductivity ^[4] , K (feet per day)	Assumed Effective Porosity ^[5] (n _e)	Average Linear Groundwater Velocity ^[6]	
							(feet per day)	(feet per year) ^[7]
MW-02 to MW-05	4/26/2022	5.29	884	0.00598	4.8	0.30	0.096	34.95
	9/22/2022	5.27		0.00596			0.095	34.82
MW-05 to MW-10	4/26/2022	12.26	1090	0.0112	4.8 to 141.1		0.180	1930.91
	9/22/2022	13.17		0.0121			0.193	2074.23

Notes:

1. ΔH = Change in groundwater elevation.
2. ΔL = Distance along flow path.
3. $I = \Delta H / \Delta L$. Hydraulic gradient determined from groundwater well pairs along with potentiometric surface elevation contour maps
4. K Range is based on the 38th Landfill Groundwater Monitoring Event Report by Environmental Management Services, Inc., dated April 23, 2022 and aquifer performance tests presented in the CCR Landfill Assessment Monitoring Well Installation Certification Report by Environmental Management Services, Inc., dated March 5, 2020.
5. Effective porosity based on the 38th Landfill Groundwater Monitoring Event Report by Environmental Management Services, Inc., dated April 23, 2020.
6. Velocity = $(I * K) / n_e$
7. Based on 365 days per year

As presented above, groundwater flow velocity at the Site ranges from approximately 0.096 to 0.180 ft/day (approximately 35 to 1931 ft/year) in April 2022, and from approximately 0.095 to 0.193 ft/day (approximately 35 to 2074 ft/year) in September 2022. These calculated groundwater velocities at the Site are generally consistent with historical calculations, therefore, confirming the groundwater monitoring network is properly located to monitor the uppermost aquifer for the CCR Landfill Unit.

2.2.3 Groundwater Sampling

Groundwater samples were collected from Site detection monitoring wells in April and September 2022. Monitoring wells were purged and sampled using low-flow sampling procedures. Sample stabilization criteria is identified on field sampling forms. Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in iced coolers, and submitted to the

laboratory following standard chain-of-custody protocol. Field data forms and Chain-of-Custody records are provided in Appendix A.

Groundwater samples were collected in accordance with 40 CFR § 257.93(a). Field sampling procedures included sample collection, field quality assurance/quality control (QA/QC), chain-of-custody controls, and field documentation. The groundwater samples for the CCR Landfill Unit for 2022 sampling events were analyzed for Appendix III and Appendix IV constituents, and results are summarized in Table 1 - Analytical Data Summary – CCR Landfill (February 2022), Table 2 - Analytical Data Summary – CCR Landfill (April 2022), and Table 3 - Analytical Data Summary – CCR Landfill (September 2022). Analytical methods used for groundwater monitoring parameters are provided in laboratory reports. Laboratory analyses were performed by Micro Methods Laboratory, Inc. and Pace Analytical Services, LLC and are included in Appendix A.

3.0 COMPARATIVE STATISTICAL ANALYSES

Pursuant to 40 CFR § 257.93(f), the statistical methodology selected for RD Morrow meets the criteria referenced in the CCR Rule and the 2009 EPA Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities Unified Guidance (EPA, 2009) and is consistent with the *Statistical Analysis Plan* (EMS, 2017).

Statistical analyses of Appendix III constituents were completed for the CCR Landfill Unit. In the sections below, Cooperative Energy provides a summary of the comparative statistical analyses completed in 2022, which includes the analyses for both semi-annual monitoring events conducted in 2022 for the CCR Landfill Unit.

3.1 Groundwater Protection Standards (GWPS)

Interwell tolerance limits were used to calculate background limits from pooled upgradient well data for Appendix IV parameters with a target of 95% confidence and 95% coverage in accordance with the *Statistical Analysis Plan* (EMS, 2017). Results of the statistical analyses following the September 2022 monitoring event are included in Appendix C.

A GWPS has been established for statistical comparison of each Appendix IV constituent for the CCR Landfill Unit. The Summary of Background Levels and GWPS table presented below, summarizes the site-specific background concentration for each monitoring event and the GWPS established under Federal rules. Where the background concentration is higher than the federal MCL, the background concentration is utilized as the GWPS for that constituent.

If the comparison of the constituent's lower confidence interval is greater than the GWPS, a statistically significant level (SSL) is identified for that well.

Table 3.1 Summary of Background Levels and GWPS						
Analyte ^[1]	Units	Site Specific Background		Federal MCL	GWPS	
		April 2022	September 2022		April 2022	September 2022
Barium	mg/L	0.029	0.029	2	2	2
Beryllium	mg/L	0.009616	0.009669	0.004	0.009616	0.009669
Cobalt	mg/L	0.1708	0.1749	0.006	0.1708	0.1749
Fluoride	mg/L	1.127	1.109	4	4	4
Lead	mg/L	0.009869	0.009752	0.015	0.015	0.015
Lithium	mg/L	1.42	1.42	0.04	1.42	1.42
Molybdenum	mg/L	0.0025	0.0025	0.1	0.1	0.1
Radium (226 + 228)	pCi/L	3.045	3.136	5	5	5

Notes:

mg/L - milligrams per liter

pCi/L - picocuries per liter

[1] Analytes not detected during the annual scan are not presented.

[2] The lithium GWPS was calculated using data from MW-02, MW-03 and MW-04 because naturally-occurring lithium is present in soils and bedrock at the Site. Therefore, it was necessary to adjust the lithium GWPS for the Site accordingly. See Golder, 2020, Alternate Source Demonstration RD Morrow Generating Station – Landfill CCR Unit, Purvis, Mississippi. Golder Prepared for Cooperative Energy, Inc. September 11, 2020.

3.2 CCR Landfill Unit Statistical Analyses

Analytical data from the April 2022 and September 2022 monitoring events for the CCR Landfill Unit monitoring network have been statistically analyzed in accordance with the site's certified statistical analysis method. Review of the Sanitas™ results indicates that verified exceedances of the established prediction limits for Appendix III constituents continue to be observed. Using the GWPS established according to 40 CFR § 257.95(h), SSLs were identified at MW-05 for lithium and molybdenum following the 2022 monitoring events.

4.0 ASSESSMENT OF CORRECTIVE MEASURES

Following the requirements of 40 CFR § 257.96, RD Morrow initiated an Assessment of Corrective Measures (ACM). Notification of this action was placed in the operating record on September 12, 2019 (Golder, 2019).

5.0 REMEDY SELECTION

Pursuant to 40 CFR § 257.97(a), at the end of December 2022, Cooperative Energy was completing its assessment of corrective measures and remedy selection process for groundwater corrective action. Remedy selection efforts were documented in the Semi-Annual Remedy Selection and Design Progress Reports (Progress Reports) for Cooperative Energy's RD Morrow Generating Station's CCR Landfill Unit in March and September 2022. These reports describe the progress made in selecting and designing a remedy and future planned activities. The progress reports for the 2022 annual period are listed below.

- First Semi-Annual 2022 Remedy Selection and Design Progress Report – Cooperative Energy, RD Morrow CCR Landfill, prepared by Golder Associates Inc., dated March 11, 2022.
- Second Semi-Annual 2022 Remedy Selection and Design Progress Report – Cooperative Energy, RD Morrow CCR Landfill, prepared by Golder Associates Inc., dated September 12, 2022.

On September 27, 2022, Cooperative Energy held a public meeting to discuss the results of the corrective measures assessment. In advance, Cooperative Energy advertised the meeting by local newspaper, its website, and physical announcements in Lamar County (courthouse and public libraries).

6.0 PROGRAM TRANSITIONS

There were no groundwater monitoring program transitions for the CCR Landfill Unit in 2022.

7.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE IN 2022

There were no specific problems encountered with the CCR Landfill Unit monitoring well system in 2022.

8.0 CONCLUSIONS & FUTURE ACTIONS

This *2022 Annual Groundwater Monitoring and Corrective Action Report* has been prepared in accordance with 40 CFR § 257.90(e) and describes the status of the groundwater monitoring program during the 2022 calendar year and key actions for the upcoming calendar year 2023.

Project Key Activities for 2023

The proposed activities for the 2023 calendar year include:

- Semi-annual assessment monitoring will continue, as required by 40 CFR § 257.94 and 40 CFR § 257.95
- Selection of a remedy, including completion of the Remedy Selection Report
- Implementation of the final remedy selected for groundwater corrective action
- Completion of the Correction Action Groundwater Monitoring Plan; and
- Implementation of the long-term groundwater monitoring program.

9.0 REFERENCES

EMS, 2020. CCR Landfill Assessment Monitoring Well Installation Certification Report, RD Morrow Generating Plant, Lamar County, Mississippi. Environmental Management Services, Inc. Prepared for Cooperative Energy. March 5, 2020

EMS, 2022. 38th Landfill Groundwater Monitoring Event Report by Environmental Management Services, Inc, RD Morrow Generating Plant, Lamar County, Mississippi. Environmental Management Services, Inc. Prepared for Cooperative Energy. April 23, 2022

EMS, 2017. Statistical Analysis Plan, RD Morrow Generating Station, Lamar County, Mississippi. Environmental Management Services, Inc. Prepared for Cooperative Energy, Inc. December 21, 2017.

Golder, 2019, Assessment of Corrective Measures RD Morrow Generating Station – Landfill CCR Unit, Hattiesburg, Mississippi. Golder Prepared for Cooperative Energy, Inc. September 12, 2019.

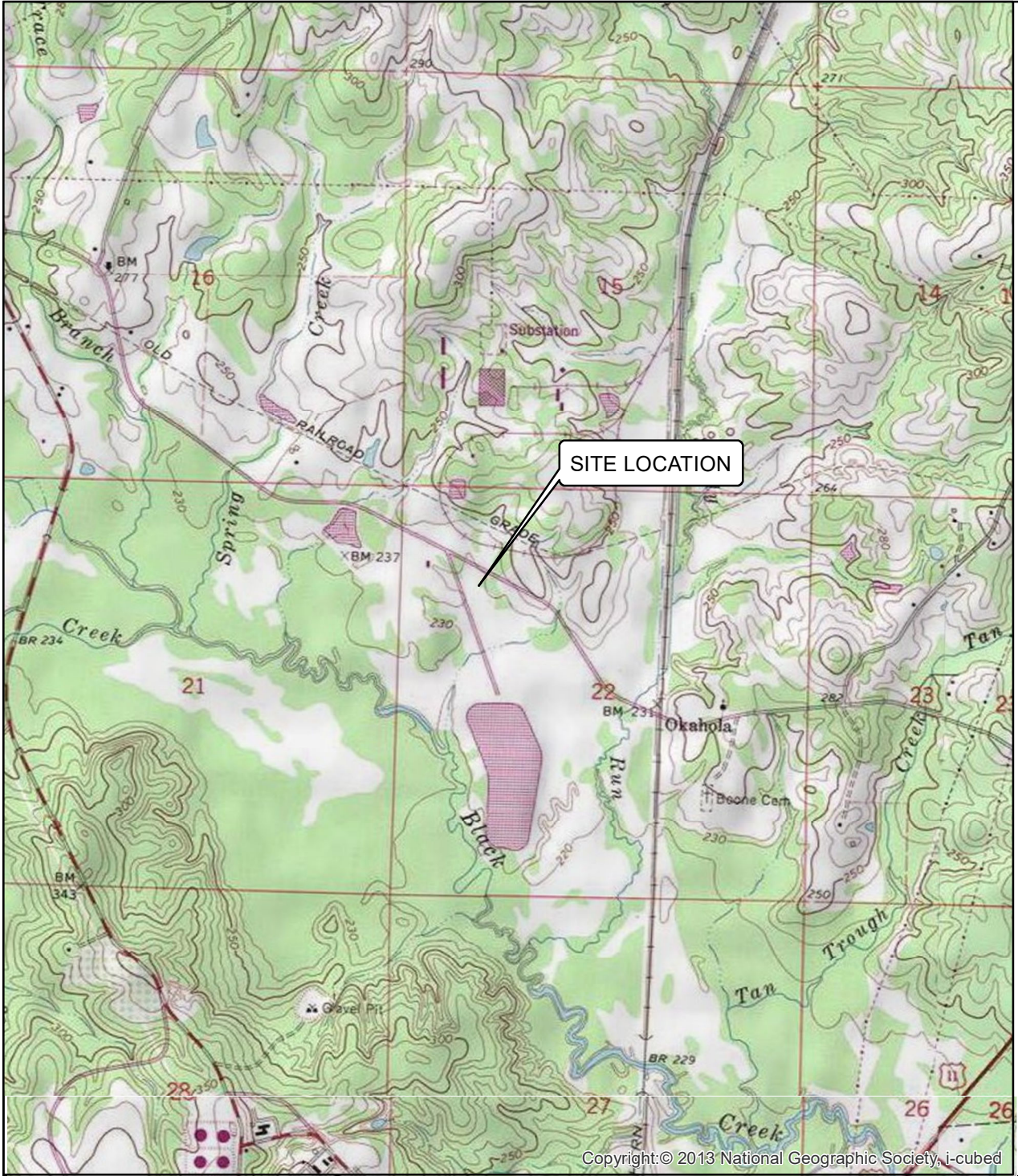
Golder, 2020, Alternate Source Demonstration RD Morrow Generating Station – Landfill CCR Unit, Purvis, Mississippi. Golder Prepared for Cooperative Energy, Inc. September 11, 2020.

USEPA, 2015, Federal Register. volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal

Combustion Residuals from Electric Utilities; Final Rule. [EPA HQ RCRA-2009-0640; FRL-9919-44-OSWER]. RIN-2050-AE81

[https://golderassociates.sharepoint.com/sites/104953/project files/200 reports/annual gwmcar/2022/2023.01.31_rd morrow annual report 2022.docx](https://golderassociates.sharepoint.com/sites/104953/project%20files/200%20reports/annual%20gwmcar/2022/2023.01.31_rd%20morrow%20annual%20report%202022.docx)

Figures



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MISSISSIPPI



CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2023-01-25

PREPARED DJC

DESIGN DLK

REVIEW DLK

APPROVED DLP

PROJECT No.
GL21453914

CONTROL
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LEGEND

- ⊕ MW-XX LANDFILL UNIT MONITORING WELL LOCATION
— X — FENCE

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC.,
MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT
COOPERATIVE ENERGY

CONSULTANT



YYYY-MM-DD	
2023-01-25	
DESIGNED	DLK
PREPARED	DJC
REVIEWED	DLK
APPROVED	DLP

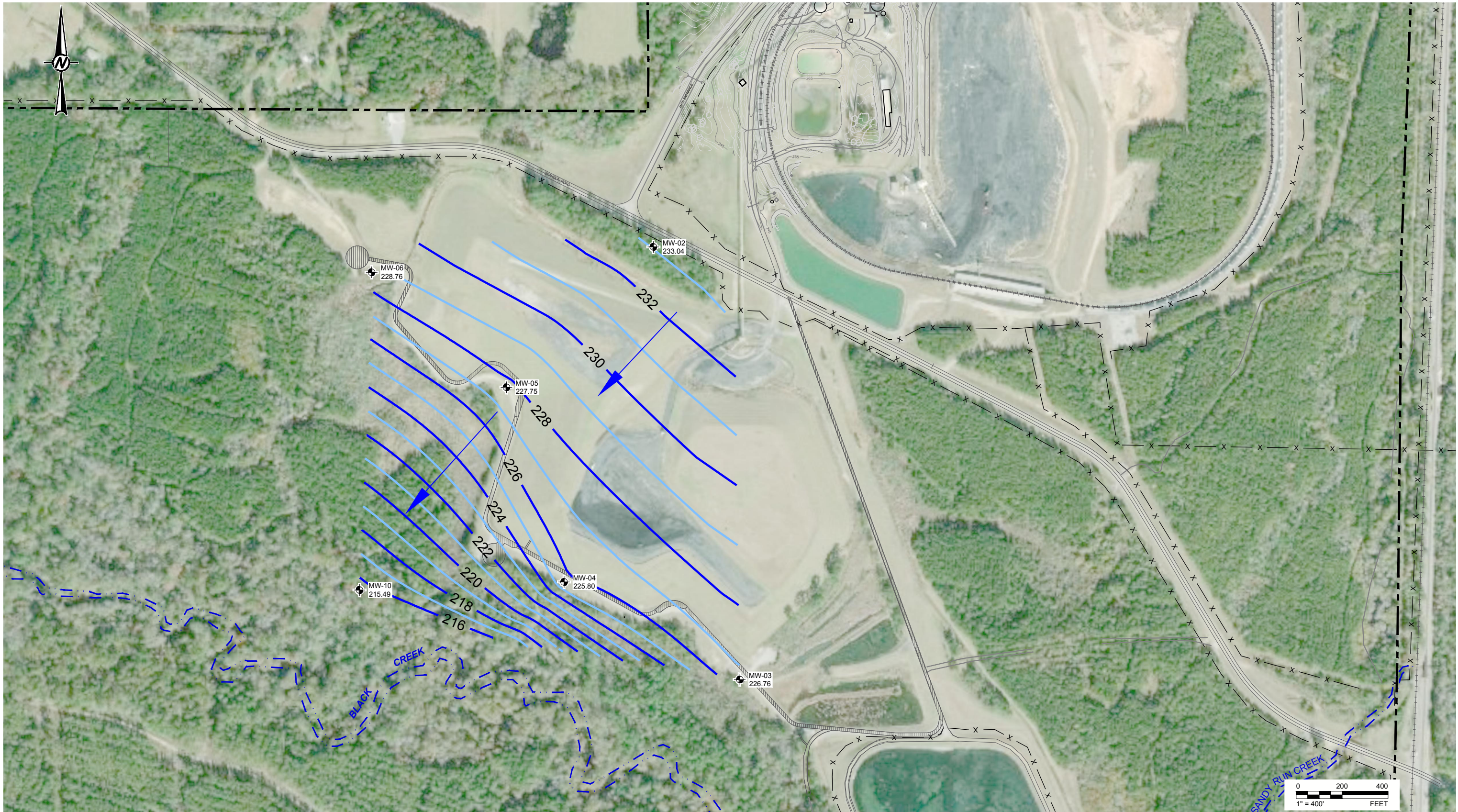
PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
WELL LOCATION MAP

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LEGEND

PROPERTY BOUNDARY

MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION

GROUNDWATER ELEVATION CONTOUR

GROUNDWATER FLOW DIRECTION

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC.,
MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT
COOPERATIVE ENERGY

CONSULTANT

YYYY-MM-DD	2023-01-25
DESIGNED	DLK
PREPARED	DJC
REVIEWED	DLK
APPROVED	DLP

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
FIRST SEMIANNUAL 2022 POTENTIOMETRIC
SURFACE ELEVATION CONTOUR MAP
APRIL 26, 2022

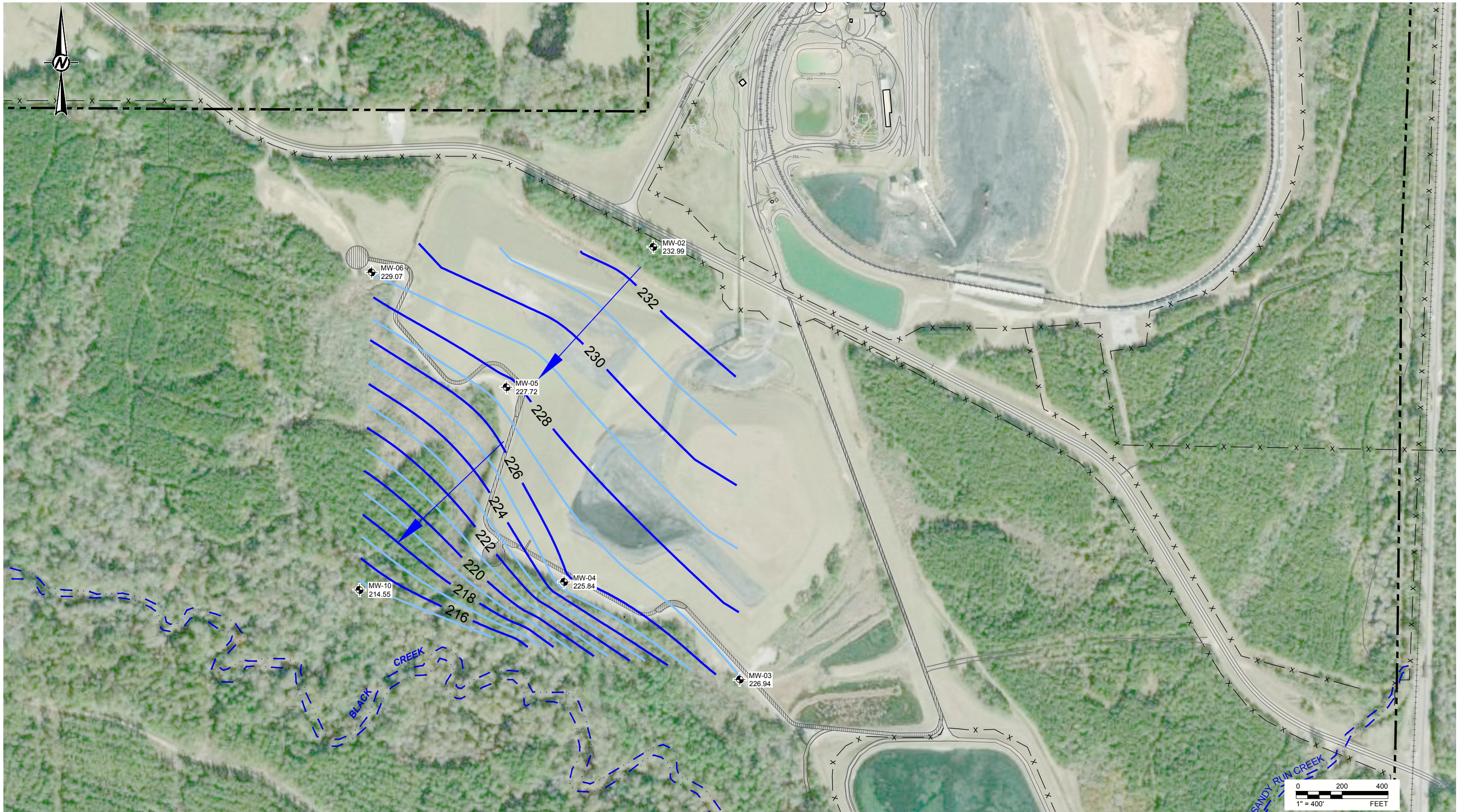
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LEGEND

PROPERTY BOUNDARY

MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION

GROUNDWATER ELEVATION CONTOUR

GROUNDWATER FLOW DIRECTION

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC.,
MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT
COOPERATIVE ENERGY

CONSULTANT

YYYY-MM-DD	2023-01-25
DESIGNED	DLK
PREPARED	DJC
REVIEWED	DLK
APPROVED	DLP

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
**SECOND SEMIANNUAL 2022 POTENTIOMETRIC
SURFACE ELEVATION CONTOUR MAP**
SEPTEMBER 22, 2022

PROJECT NO.	CONTROL	REV.
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Tables

TABLE 1: ANALYTICAL DATA SUMMARY - CCR Landfill (February 2022)
RD Morrow Generating Station - Purvis, Mississippi



Analyte	Units	DETECTION MONITORING WELLS					ASSESSMENT MONITORING WELL
		MW-02	MW-03	MW-04	MW-05	MW-06	MW-10
	Sample Date:	2/8/2022	2/8/2022	2/7/2022	2/7/2022	2/7/2022	2/7/2022
Appendix IV							
ANTIMONY, TOTAL	mg/L	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
ARSENIC, TOTAL	mg/L	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
BARIUM, TOTAL	mg/L	0.029	0.038	0.039	0.061	0.155	0.035
BERYLLIUM, TOTAL	mg/L	0.00470	<0.00400	<0.00400	<0.00400	<0.00400	0.00932
CADMIUM, TOTAL	mg/L	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
CHROMIUM, TOTAL	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
COBALT, TOTAL	mg/L	0.0956	0.0249	0.0263	0.0152	0.00156	0.0893
FLUORIDE, TOTAL	mg/L	0.51	<0.50	<0.50	<0.50	<0.50	<0.50
LEAD, TOTAL	mg/L	0.00241	0.00604	<0.00100	<0.00100	<0.00100	0.00256
LITHIUM, TOTAL	mg/L	<0.040	0.198	<0.040	2.14	<0.040	0.352
MERCURY, TOTAL	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
MOLYBDENUM, TOTAL	mg/L	<0.00500	<0.00500	<0.00500	2.59	<0.00500	<0.00500
RADIUM (226 + 228)	pCi/L	1.479U	2.186	1.535	1.439U	1.664	1.537
SELENIUM, TOTAL	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
THALLIUM, TOTAL	mg/L	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200

NOTES:

1. mg/L - Milligrams per Liter; pCi/L - picocuries per Liter
2. < - Constituent was analyzed for, but was not detected above the minimum reporting limit (MRL) and is considered a non-detect. Value is displayed as less than the MRL.
3. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
4. Detected values are BOLD and do not mean an exceedance is identified.
5. Analytes with strikethrough did not have detections in monitoring well network and do not need to be sampled for during the semi-annual monitoring events.

TABLE 2: ANALYTICAL DATA SUMMARY - CCR Landfill (April 2022)
RD Morrow Generating Station - Purvis, Mississippi

Analyte	Units	DETECTION MONITORING WELLS					ASSESSMENT MONITORING WELL
		MW-02	MW-03	MW-04	MW-05	MW-06	MW-10
	Sample Date:	4/27/2022	4/27/2022	4/26/2022	4/26/2022	4/26/2022	4/26/2022
Appendix III							
BORON, TOTAL	mg/L	0.934	5.77	8.32	12.4	0.053	5.42
CALCIUM, TOTAL	mg/L	74	464	433	617	2.40	101
CHLORIDE, TOTAL	mg/L	82.6	113	124	177	6.61	188
FLUORIDE, TOTAL	mg/L	0.57	<0.50	<0.50	<0.50	<0.50	0.65
pH	S.U.	4.59	5.35	4.94	6.56	4.91	3.74
SULFATE, TOTAL	mg/L	365	1920	1850	1760	10.3	731
TOTAL DISSOLVED SOLIDS	mg/L	649	2762	2788	3417	62	1114
Appendix IV							
ANTIMONY, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
ARSENIC, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
BARIUM, TOTAL	mg/L	0.023	0.032	0.028	0.050	0.112	0.025
BERYLLIUM, TOTAL	mg/L	<0.00400	<0.00400	<0.00400	<0.00400	<0.00400	0.00754
CADMIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
CHROMIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
COBALT, TOTAL	mg/L	0.0898	0.0249	0.0462	0.0143	0.00165	0.123
FLUORIDE, TOTAL	mg/L	0.57	<0.50	<0.50	<0.50	<0.50	0.65
LEAD, TOTAL	mg/L	0.00182	0.00289	0.00119	<0.00100	<0.00100	0.00290
LITHIUM, TOTAL	mg/L	<0.040	0.258	0.391	2.83	<0.040	0.429
MERCURY, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
MOLYBDENUM, TOTAL	mg/L	<0.00500	<0.00500	<0.00500	1.95	0.00579	<0.00500
RADIUM (226 + 228)	pCi/L	1.0191U	1.388	0.8084U	0.538U	0.793U	1.163
SELENIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
THALLIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required

NOTES:

1. mg/L - Milligrams per Liter; pCi/L - picocuries per Liter
2. < - Constituent was analyzed for, but was not detected above the minimum reporting limit (MRL) and is considered a non-detect. Value is displayed as less than the MRL.
3. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
4. Not Required - constituent analysis is not required per 40 CFR 257.96. Annual scan of the Appendix IV constituents is conducted along with semi-annual monitoring for those constituents in Appendix III and those Appendix IV constituents detected during the annual scan event.
5. Bolded data indicates an exceedance of the PL for appendix III constituents and a statistically significant level based on 95% confidence interval above the Groundwater Protection Standard (GWPS) for appendix IV constituents.

TABLE 3: ANALYTICAL DATA SUMMARY - CCR Landfill (September 2022)
RD Morrow Generating Station - Purvis, Mississippi

Analyte	Units	DETECTION MONITORING WELLS					ASSESSMENT MONITORING WELL
		MW-02	MW-03	MW-04	MW-05	MW-06	MW-10
	Sample Date:	9/23/2022	9/23/2022	9/22/2022	9/22/2022	9/22/2022	9/22/2022
Appendix III							
BORON, TOTAL	mg/L	0.863	7.38	9.32	12.7	0.055	4.16
CALCIUM, TOTAL	mg/L	56.6	416	417	588	2.19	81.3
CHLORIDE, TOTAL	mg/L	103	137	125	175	7.75	169
FLUORIDE, TOTAL	mg/L	0.52	<0.50	<0.50	<0.50	<0.50	0.55
pH	S.U.	4.20	5.33	5.06	6.49	4.71	3.77
SULFATE, TOTAL	mg/L	274	1640	1670	1770	12.1	449
TOTAL DISSOLVED SOLIDS	mg/L	565	3253	3167	4130	63	1245
Appendix IV							
ANTIMONY, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
ARSENIC, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
BARIUM, TOTAL	mg/L	0.025	0.042	0.039	0.061	0.116	0.024
BERYLLIUM, TOTAL	mg/L	<0.00400	<0.00400	<0.00400	<0.00400	<0.00400	0.00953
CADMIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
CHROMIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
COBALT, TOTAL	mg/L	0.0729	0.0249	0.0378	0.0109	0.00175	0.105
FLUORIDE, TOTAL	mg/L	0.52	<0.50	<0.50	<0.50	<0.50	0.55
LEAD, TOTAL	mg/L	0.00234	0.00540	0.00152	<0.00100	<0.00100	0.00313
LITHIUM, TOTAL	mg/L	<0.040	0.848	1.01	1.52	<0.040	0.300
MERCURY, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
MOLYBDENUM, TOTAL	mg/L	<0.00500	<0.00500	<0.00500	2.00	<0.00500	<0.00500
RADIUM (226 + 228)	pCi/L	1.2809U	3.125	1.935	1.3246U	1.677	2.3492
SELENIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
THALLIUM, TOTAL	mg/L	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required

NOTES:

1. mg/L - Milligrams per Liter; pCi/L - picocuries per Liter
2. < - Constituent was analyzed for, but was not detected above the minimum reporting limit (MRL) and is considered a non-detect. Value is displayed as less than the MRL.
3. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement. the sample amount and elapsed time of the measurement.
4. Not Required - constituent analysis is not required per 40 CFR 257.96. Annual scan of the Appendix IV constituents is conducted along with semi-annual monitoring for those constituents in Appendix III and those Appendix IV constituents detected during the annual scan event.
5. Bolded data indicates an exceedance of the PL for appendix III constituents and a statistically significant level based on 95% confidence interval above the Groundwater Protection Standard (GWPS) for appendix IV constituents.

APPENDIX A

Analytical Data and Field Data Forms



Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

March 15, 2022

Ken Ruckstuhl

Work Order # : 2202244

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369
RE: Cooperative Energy CCR Annual

Purchase Order #:

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 02/09/2022 10:48. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director
Micro-Methods Laboratory, Inc.



DISCLAIMER

The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
MW-2	2202244-01	Water	02/08/2022 14:45	Alan Niven	02/09/2022 10:48
MW-3	2202244-02	Water	02/08/2022 12:45	Alan Niven	02/09/2022 10:48
MW-4	2202244-03	Water	02/07/2022 15:15	Alan Niven	02/09/2022 10:48
MW-5	2202244-04	Water	02/07/2022 14:00	Alan Niven	02/09/2022 10:48
MW-6	2202244-05	Water	02/07/2022 12:30	Alan Niven	02/09/2022 10:48
MW-10	2202244-06	Water	02/07/2022 11:15	Alan Niven	02/09/2022 10:48
BD-1	2202244-07	Water	02/07/2022 16:00	Alan Niven	02/09/2022 10:48

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

Sample Receipt Conditions

Date/Time Received: 2/9/2022 10:48:00AM

Shipped by: Fed Ex

Received by: Sarah E. Tomek

Submitted by: Alan Niven

Date/Time Logged: 2/9/2022 12:42:00PM

Logged by: Sarah E. Tomek

Cooler ID: #1126

Receipt Temperature: 1.9 °C

<i>Cooler Custody Seals Present</i>	Yes
<i>Containers Intact</i>	Yes
<i>COC/Labels Agree</i>	Yes
<i>Labels Complete</i>	Yes
<i>COC Complete</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No
<i>Field Sheet/Instructions Included</i>	No
<i>Samples Rejected/Documented in Log</i>	No
<i>Temp Taken From Temp Blank</i>	Yes
<i>Temp Taken From Sample Container</i>	No
<i>Temp Taken From Cooler</i>	No
<i>COC meets acceptance criteria</i>	Yes

<i>Received on Ice but Not Frozen</i>	Yes
<i>No Ice, Short Trip</i>	No
<i>Obvious Contamination</i>	No
<i>Rush to meet HT</i>	No
<i>Received within HT</i>	Yes
<i>Proper Containers for Analysis</i>	Yes
<i>Correct Preservation</i>	Yes
<i>Adequate Sample for Analysis</i>	Yes
<i>Sample Custody Seals Present</i>	No
<i>Samples Missing from COC/Cooler</i>	No

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

 Cooler ID: #1130

 Receipt Temperature: 3.4 °C

<i>Cooler Custody Seals Present</i>	Yes	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc. defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

See attached results from Sub-Contract Laboratory

Total Metals-EPA 200.8 Rev 5.4

Qualifiers:

L1 LCS and/or LCSD Recovery Limit exceeded.

Beryllium [He], Cobalt [He]
2B28035-BS1

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-2
2202244-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Fluoride	0.51	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:20	02/09/2022 13:20	SM 4500-F C 2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.029	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:44	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 14:56	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 21:14	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	0.00470	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0956	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00241	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:29	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	

Environmental Management Services
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 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-3
2202244-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:22	02/09/2022 13:22	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.038	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:55	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.198	0.040	"	"	"	CLV	"	03/07/2022 15:07	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:26	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0249	0.00100	"	"	"	CLB	"	03/02/2022 21:50	"	
Lead [He]	0.00604	0.00100	"	"	"	CLB	"	03/09/2022 14:21	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	03/02/2022 22:26	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:42	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-4
2202244-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:24	02/09/2022 13:24	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.039	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:59	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 15:10	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 21:56	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0263	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:47	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-5
2202244-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:26	02/09/2022 13:26	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.061	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:02	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	2.14	0.040	"	"	"	CLV	"	03/07/2022 15:14	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:02	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0152	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	03/09/2022 14:26	"	
Molybdenum [He]	2.59	0.00500	"	5.0	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	1.0	"	CLB	"	03/02/2022 22:02	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:51	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-6
2202244-05 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:28	02/09/2022 13:28	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.155	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:06	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 15:18	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:08	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.00156	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:55	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
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MW-10
2202244-06 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:49	02/09/2022 13:49	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.035	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:10	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.352	0.040	"	"	"	CLV	"	03/07/2022 15:21	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:13	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	0.00932	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0893	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00256	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 14:26	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
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BD-1
2202244-07 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:52	02/09/2022 13:52	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.038	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:13	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.197	0.040	"	"	"	CLV	"	03/07/2022 15:25	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:20	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0253	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00517	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	03/09/2022 14:30	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	03/02/2022 22:20	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 14:31	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B09052 - Default Prep GenChem											
Blank (2B09052-BLK1)											
Fluoride	2/9/22 13:00	ND	0.50	mg/L							
LCS (2B09052-BS1)											
Fluoride	2/9/22 13:08	1.81	0.50	mg/L	2.00		90.5	83.3-107			
LCS Dup (2B09052-BSD1)											
Fluoride	2/9/22 13:10	1.85	0.50	mg/L	2.00		92.5	83.3-107	2.19	30	
Duplicate (2B09052-DUP1) Source: 2202196-03											
Fluoride	2/9/22 13:19	0.27	0.50	mg/L		0.25			10.4	20	
Matrix Spike (2B09052-MS1) Source: 2202196-03											
Fluoride	2/9/22 13:16	4.13	0.50	mg/L	4.00	0.25	97.1	79.3-113			
Matrix Spike Dup (2B09052-MSD1) Source: 2202196-03											
Fluoride	2/9/22 13:18	4.37	0.50	mg/L	4.00	0.25	103	79.3-113	5.65	30	



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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B10068 - EPA 200.2 DCN 1017 Rev 10											
Blank (2B10068-BLK1)											
Barium 455.403 [Radial]	3/1/22 16:33	ND	0.010	mg/L							
Lithium 610.362 [Axial]	3/7/22 14:45	ND	0.040	"							
LCS (2B10068-BS1)											
Barium 455.403 [Radial]	3/1/22 16:37	0.220	0.010	mg/L	0.200		110	85-115			
Lithium 610.362 [Axial]	3/7/22 14:49	0.227	0.040	"	0.200		113	85-115			
LCS Dup (2B10068-BSD1)											
Barium 455.403 [Radial]	3/1/22 16:40	0.226	0.010	mg/L	0.200		113	85-115	2.68	20	
Lithium 610.362 [Axial]	3/7/22 14:52	0.226	0.040	"	0.200		113	85-115	0.323	20	
Matrix Spike (2B10068-MS1) Source: 2202244-01											
Barium 455.403 [Radial]	3/1/22 16:48	0.257	0.010	mg/L	0.200	0.029	114	70-130			
Lithium 610.362 [Axial]	3/7/22 14:59	0.199	0.040	"	0.200	ND	99.6	70-130			
Matrix Spike Dup (2B10068-MSD1) Source: 2202244-01											
Barium 455.403 [Radial]	3/1/22 16:51	0.259	0.010	mg/L	0.200	0.029	115	70-130	0.721	20	
Lithium 610.362 [Axial]	3/7/22 15:03	0.195	0.040	"	0.200	ND	97.7	70-130	1.93	20	



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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B28035 - EPA 200.2 DCN 1017 Rev 10											
Blank (2B28035-BLK1)											
Antimony [He]	3/2/22 20:57	ND	0.00200	mg/L							
Arsenic [NG]	3/2/22 20:57	ND	0.00200	"							
Barium [He]	3/2/22 20:57	ND	0.00100	"							
Beryllium [He]	3/2/22 20:57	ND	0.00400	"							
Cadmium [He]	3/2/22 20:57	ND	0.00500	"							
Chromium [He]	3/2/22 20:57	ND	0.0100	"							
Cobalt [He]	3/2/22 20:57	ND	0.00100	"							
Lead [He]	3/2/22 20:57	ND	0.00100	"							
Molybdenum [He]	3/2/22 20:57	ND	0.00500	"							
Selenium [NG]	3/2/22 20:57	ND	0.0500	"							
Thallium [He]	3/4/22 13:16	ND	0.00200	"							
LCS (2B28035-BS1)											
Antimony [He]	3/2/22 21:03	0.228	0.00400	mg/L	0.200		114	85-115			
Arsenic [NG]	3/2/22 21:03	0.222	0.00400	"	0.200		111	85-115			
Barium [He]	3/2/22 21:03	0.224	0.00200	"	0.200		112	85-115			
Beryllium [He]	3/2/22 21:03	0.235	0.00200	"	0.200		117	85-115			L1
Cadmium [He]	3/2/22 21:03	0.226	0.00200	"	0.200		113	85-115			
Chromium [He]	3/2/22 21:03	0.216	0.00200	"	0.200		108	85-115			
Cobalt [He]	3/2/22 21:03	0.236	0.00200	"	0.200		118	85-115			L1
Lead [He]	3/2/22 21:03	0.216	0.00200	"	0.200		108	85-115			
Molybdenum [He]	3/2/22 21:03	0.198	0.00200	"	0.200		98.8	85-115			
Selenium [NG]	3/2/22 21:03	0.220	0.0100	"	0.200		110	85-115			
Thallium [He]	3/4/22 13:20	0.224	0.00400	"	0.200		112	85-115			
LCS Dup (2B28035-BSD1)											
Antimony [He]	3/2/22 21:09	0.217	0.00400	mg/L	0.200		108	85-115	5.25	20	
Arsenic [NG]	3/2/22 21:09	0.209	0.00400	"	0.200		104	85-115	6.19	20	
Barium [He]	3/2/22 21:09	0.215	0.00200	"	0.200		107	85-115	4.47	20	
Beryllium [He]	3/2/22 21:09	0.226	0.00200	"	0.200		113	85-115	3.91	20	
Cadmium [He]	3/2/22 21:09	0.215	0.00200	"	0.200		108	85-115	5.01	20	
Chromium [He]	3/2/22 21:09	0.205	0.00200	"	0.200		102	85-115	5.36	20	
Cobalt [He]	3/2/22 21:09	0.225	0.00200	"	0.200		112	85-115	4.79	20	
Lead [He]	3/2/22 21:09	0.199	0.00200	"	0.200		99.7	85-115	8.10	20	
Molybdenum [He]	3/2/22 21:09	0.189	0.00200	"	0.200		94.4	85-115	4.57	20	
Selenium [NG]	3/2/22 21:09	0.210	0.0100	"	0.200		105	85-115	5.06	20	
Thallium [He]	3/4/22 13:25	0.216	0.00400	"	0.200		108	85-115	3.68	20	

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2B28035 - EPA 200.2 DCN 1017 Rev 10

Matrix Spike (2B28035-MS1)

Source: 2202244-01

Antimony [He]	3/2/22 21:20	0.224	0.00400	mg/L	0.200	ND	112	70-130			
Arsenic [NG]	3/2/22 21:20	0.217	0.00400	"	0.200	ND	108	70-130			
Barium [He]	3/2/22 21:20	0.252	0.00200	"	0.200	0.028	112	70-130			
Beryllium [He]	3/2/22 21:20	0.223	0.00200	"	0.200	0.005	109	70-130			
Cadmium [He]	3/2/22 21:20	0.215	0.00200	"	0.200	0.0003	107	70-130			
Chromium [He]	3/2/22 21:20	0.205	0.00200	"	0.200	0.002	101	70-130			
Cobalt [He]	3/2/22 21:20	0.316	0.00200	"	0.200	0.096	110	70-130			
Lead [He]	3/2/22 21:20	0.215	0.00200	"	0.200	0.002	106	70-130			
Molybdenum [He]	3/2/22 21:20	0.207	0.00200	"	0.200	0.0004	103	70-130			
Selenium [NG]	3/2/22 21:20	0.237	0.0100	"	0.200	0.025	106	70-130			
Thallium [He]	3/4/22 14:21	0.227	0.00400	"	0.200	ND	114	70-130			

Matrix Spike Dup (2B28035-MSD1)

Source: 2202244-01

Antimony [He]	3/2/22 21:26	0.218	0.00400	mg/L	0.200	ND	109	70-130	3.00	20	
Arsenic [NG]	3/2/22 21:26	0.215	0.00400	"	0.200	ND	108	70-130	0.838	20	
Barium [He]	3/2/22 21:26	0.244	0.00200	"	0.200	0.028	108	70-130	3.46	20	
Beryllium [He]	3/2/22 21:26	0.217	0.00200	"	0.200	0.005	106	70-130	2.53	20	
Cadmium [He]	3/2/22 21:26	0.208	0.00200	"	0.200	0.0003	104	70-130	3.09	20	
Chromium [He]	3/2/22 21:26	0.197	0.00200	"	0.200	0.002	97.6	70-130	3.72	20	
Cobalt [He]	3/2/22 21:26	0.305	0.00200	"	0.200	0.096	105	70-130	3.47	20	
Lead [He]	3/2/22 21:26	0.198	0.00200	"	0.200	0.002	97.8	70-130	8.22	20	
Molybdenum [He]	3/2/22 21:26	0.203	0.00200	"	0.200	0.0004	101	70-130	1.88	20	
Selenium [NG]	3/2/22 21:26	0.234	0.0100	"	0.200	0.025	105	70-130	1.11	20	
Thallium [He]	3/4/22 14:17	0.221	0.00400	"	0.200	ND	111	70-130	2.61	20	



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Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B25019 - EPA 245.1 DCN 1017 Rev 10											
Blank (2B25019-BLK1)											
Mercury	2/28/22 15:09	ND	0.002	mg/L							
LCS (2B25019-BS1)											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500		102	85-115			
LCS Dup (2B25019-BSD1)											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500		100	85-115	1.98	20	
Matrix Spike (2B25019-MS1) Source: 2202244-01											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500	0.0005	88.0	70-130			
Matrix Spike Dup (2B25019-MSD1) Source: 2202244-01											
Mercury	2/28/22 15:09	0.006	0.002	mg/L	0.00500	0.0005	104	70-130	15.1	20	

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Certified Analyses Included in this Report

Analyte	Certification Code
<i>EPA 200.7 Rev 4.4 in Water</i>	
Aluminum 237.312 [Radial]	C01,C02
Aluminum 394.401 [Radial]	C01,C02
Aluminum 396.152 [Radial]	C01,C02
Antimony 206.833 [Axial]	C01,C02
Arsenic 193.759 [Axial]	C01,C02
Barium 455.403 [Radial]	C01,C02
Barium 493.409 [Radial]	C01,C02
Beryllium 313.042 [Axial]	C01,C02
Boron 249.773 [Radial]	C01,C02
Cadmium 228.802 [Axial]	C01,C02
Calcium 315.887 [Radial]	C01,C02
Chromium 283.563 [Axial]	C01,C02
Cobalt 228.616 [Axial]	C01,C02
Copper 324.754 [Axial]	C01,C02
Iron 259.940 [Axial]	C01,C02
Iron 259.940 [Radial]	C01,C02
Lead 220.353 [Axial]	C01,C02
Lithium 610.362 [Axial]	C01,C02
Magnesium 285.213 [Radial]	C01,C02
Manganese 257.610 [Axial]	C01,C02
Molybdenum 202.030 [Axial]	C01,C02
Nickel 231.604 [Axial]	C01,C02
Potassium 766.490 [Radial]	C01,C02
Phosphorus 178.284 [Axial]	C01,C02
Phosphorus 178.284 [Radial]	C01,C02
Selenium 196.090 [Axial]	C01,C02
Silver 328.068 [Axial]	C01,C02
Sodium 589.592 [Axial]	C01,C02
Sodium 589.592 [Radial]	C01,C02
Strontium 346.446 [Radial]	C01,C02
Strontium 421.552 [Radial]	C01,C02
Thallium 190.856 [Axial]	C01,C02
Tin 189.989 [Axial]	C01,C02
Titanium 334.941 [Axial]	C01,C02
Vanadium 309.311 [Axial]	C01,C02
Zinc 213.856 [Axial]	C01,C02
<i>EPA 200.8 Rev 5.4 in Water</i>	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02

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Arsenic [He]	C01
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02
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****Only compounds included in this list are associated with accredited analyses****

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Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2022
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2022
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2022
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2022
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2022
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/12/2022
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	02/13/2022
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/09/2022
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	02/13/2022
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	03/24/2022
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	03/24/2022

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verification Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

Analyst Initials Key

<u>FullName</u>	<u>Initials</u>
Camie Bourne	CLB
Charles L Vorhoff	CLV
Sarah E. Tomek	SET
Stella S Kleist	SSK
Teresa Meins	TKM
Tina Tomek	TPT



PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

Print Form

M-M Lab
WO #

2202244

Company Name: EMS		Project Manager: Ken Ruckstuhl	
Address: 7350 US Hwy 98		Purchase Order #:	
City: Hattiesburg	State: MS	Zip: 39402	Email Address: kruckstuhl@env-mgt.com
Phone: 601 544 3674		Sampler Name Printed: <i>Alan Niven</i>	
Fax: 601 544 0504		Sampler Name Signed: <i>Alan Niven</i>	
Project Name: Cooperative Energy CCR LF Annual		List Analyses Requested	
Project #: SOU2-21-001		Preservative: Appendix IV	
Sample Identification	Sampling Date/Time	Matrix Code	# of Containers
MW-2	2-8-22 14:45	W	4
MW-3	2-8-22 12:45	W	4
MW-4	2-7-22 15:15	W	3
MW-5	2-7-22 14:00	W	4
MW-6	2-7-22 11:30	W	4
MW-10	2-7-22 11:15	W	4
BD-1	2-7-22 16:00	W	4
Received on Ice <input checked="" type="checkbox"/> N Thermometer# 58		Cooler # 58	
Date & Time 2-8-22		By: <i>Alan Niven</i>	
Printed Name Alan Niven		Signature <i>Alan Niven</i>	
Relinquished by		Company EMS	
Relinquished by		Date 2-8-22	
Relinquished by		Time 17:00	
Relinquished by		Blank <input checked="" type="checkbox"/> Cooler	
Relinquished by		Sample 1130	
Relinquished by		Cooler # 1126	
Relinquished by		Temperature 3.4°C	
Relinquished by		See Work Order: 1.9°C	
Relinquished by		Annual Appendix IV - antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226/228	
Received by		Notes: COOLING # 1130	
Received by		Cooler # 1126	
Received by		Temperature 3.4°C	
Received by		See Work Order: 1.9°C	
Received by		Annual Appendix IV - antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226/228	

March 14, 2022

Tina Tomek
Micro-Methods Lab
6500 Sunplex Drive
Ocean Springs, MS 39564

RE: Project: 2202244
Pace Project No.: 30467306

Dear Tina Tomek:

Enclosed are the analytical results for sample(s) received by the laboratory on February 16, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



David A. Pichette
david.pichette@pacelabs.com
(724)850-5617
Project Manager

Enclosures

cc: Accounts Payable, Micro-Methods Lab



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2202244

Pace Project No.: 30467306

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Florida: Cert E871149 SEKS WET

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2202244
Pace Project No.: 30467306

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30467306001	2202244-01	Water	02/08/22 14:45	02/16/22 10:00
30467306002	2202244-02	Water	02/08/22 12:45	02/16/22 10:00
30467306003	2202244-03	Water	02/07/22 15:15	02/16/22 10:00
30467306004	2202244-04	Water	02/07/22 14:00	02/16/22 10:00
30467306005	2202244-05	Water	02/07/22 12:30	02/16/22 10:00
30467306006	2202244-06	Water	02/07/22 11:15	02/16/22 10:00
30467306007	2202244-07	Water	02/07/22 16:00	02/16/22 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2202244
Pace Project No.: 30467306

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30467306001	2202244-01	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306002	2202244-02	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306003	2202244-03	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306004	2202244-04	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306005	2202244-05	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306006	2202244-06	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306007	2202244-07	EPA 903.1	SLC	1
		EPA 904.0	JSM	1

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

Sample: 2202244-01		Lab ID: 30467306001	Collected: 02/08/22 14:45	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.359 ± 0.611 (1.08) C:NA T:94%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.12 ± 0.425 (0.653) C:91% T:90%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-02		Lab ID: 30467306002	Collected: 02/08/22 12:45	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.326 ± 0.554 (0.978) C:NA T:95%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.86 ± 0.523 (0.590) C:95% T:90%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-03		Lab ID: 30467306003	Collected: 02/07/22 15:15	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.165 ± 0.377 (0.607) C:NA T:92%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.37 ± 0.498 (0.737) C:92% T:78%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-04		Lab ID: 30467306004	Collected: 02/07/22 14:00	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.269 ± 0.584 (1.08) C:NA T:90%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.17 ± 0.448 (0.688) C:92% T:86%		pCi/L	03/09/22 11:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

Sample: 2202244-05		Lab ID: 30467306005	Collected: 02/07/22 12:30	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.224 ± 0.440 (0.803) C:NA T:98%		pCi/L	03/11/22 14:40	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.44 ± 0.473 (0.636) C:90% T:86%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-06		Lab ID: 30467306006	Collected: 02/07/22 11:15	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.507 ± 0.577 (0.910) C:NA T:87%		pCi/L	03/11/22 14:40	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.03 ± 0.395 (0.602) C:89% T:92%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-07		Lab ID: 30467306007	Collected: 02/07/22 16:00	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.0826 ± 0.428 (0.889) C:NA T:85%		pCi/L	03/11/22 14:40	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.76 ± 0.561 (0.747) C:80% T:88%		pCi/L	03/09/22 11:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

QC Batch:	487439	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007		
METHOD BLANK:	2357380	Matrix:	Water
Associated Lab Samples:	30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0709 ± 0.324 (0.763) C:NA T:96%	pCi/L	03/11/22 14:01	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

QC Batch:	487441	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples: 30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007			
METHOD BLANK: 2357385		Matrix: Water	
Associated Lab Samples: 30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007			

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.805 ± 0.361 (0.590) C:88% T:87%	pCi/L	03/09/22 11:54	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2202244
Pace Project No.: 30467306

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical-7
1638 Roseytown Rd. Suites 2, 3, 4
Greensburg, PA 15601
Phone: (724) 850-5600
Fax: -

WO#: 30467306



Work Order: 2202244

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Sample ID: 2202244-01 Water Sampled: 02/08/2022 14:45 Sample Name: MW-2

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/08/2022 14:45

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-02 Water Sampled: 02/08/2022 12:45 Sample Name: MW-3

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/08/2022 12:45

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-03 Water Sampled: 02/07/2022 15:15 Sample Name: MW-4

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 15:15

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B) 1000mL Plastic w/HNO3 (G) 1000mL Plastic w/HNO3 (H)

Sample ID: 2202244-04 Water Sampled: 02/07/2022 14:00 Sample Name: MW-5

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 14:00

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-05 Water Sampled: 02/07/2022 12:30 Sample Name: MW-6

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 12:30

Released By Snah Jmeh Date 2/10/22 @ 1630

Released By

UPS

Released By

Released By

Released By

Released By

Date

2/16/22 1000

Date

Date

Date

Date

Received By VPS Date 2/10/22 @ 1630

Received By

Rebecca C 2/16/22 1000

Received By

Received By

Received By

Received By

Date

2/16/22 1000

Date

Date

Date

Date



MICRO-METHODS
LABORATORY, INC.

**SUBCONTRACT
ORDER**

(Continued)

#-30467306

Work Order: 2202244 (Continued)

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-06 Water Sampled: 02/07/2022 11:15 Sample Name: MW-10

006

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 11:15

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-07 Water Sampled: 02/07/2022 16:00 Sample Name: BD-1

007

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 16:00

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Smahfomeh 2/10/22 @ 1630
Released By Date

UPS 2/10/22 1000
Released By Date

Released By Date

Released By Date

Released By Date

UPS 2/10/22 @ 1630
Received By Date

Rebecca C 2/10/22 1000
Received By Date

Received By Date

Received By Date

Received By Date

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Micro-Methods Lab

Project # 30467306

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 123530630360437276

Label <u>TMS</u>
LIMS Login <u>TMS</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and initials of person examining contents: <u>2/23/22 BAE</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. <u>no name or signature</u>
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID Matrix: <u>LWT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				<u>pHCO</u>
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed <u>BAE</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>BAE</u> Date: <u>2/23/22</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

March 15, 2022

Ken Ruckstuhl

Work Order # : 2202244

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369
RE: Cooperative Energy CCR Annual

Purchase Order #:

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 02/09/2022 10:48. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director
Micro-Methods Laboratory, Inc.



DISCLAIMER

The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
MW-2	2202244-01	Water	02/08/2022 14:45	Alan Niven	02/09/2022 10:48
MW-3	2202244-02	Water	02/08/2022 12:45	Alan Niven	02/09/2022 10:48
MW-4	2202244-03	Water	02/07/2022 15:15	Alan Niven	02/09/2022 10:48
MW-5	2202244-04	Water	02/07/2022 14:00	Alan Niven	02/09/2022 10:48
MW-6	2202244-05	Water	02/07/2022 12:30	Alan Niven	02/09/2022 10:48
MW-10	2202244-06	Water	02/07/2022 11:15	Alan Niven	02/09/2022 10:48
BD-1	2202244-07	Water	02/07/2022 16:00	Alan Niven	02/09/2022 10:48

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

Sample Receipt Conditions

Date/Time Received: 2/9/2022 10:48:00AM

Shipped by: Fed Ex

Received by: Sarah E. Tomek

Submitted by: Alan Niven

Date/Time Logged: 2/9/2022 12:42:00PM

Logged by: Sarah E. Tomek

Cooler ID: #1126

Receipt Temperature: 1.9 °C

<i>Cooler Custody Seals Present</i>	Yes
<i>Containers Intact</i>	Yes
<i>COC/Labels Agree</i>	Yes
<i>Labels Complete</i>	Yes
<i>COC Complete</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No
<i>Field Sheet/Instructions Included</i>	No
<i>Samples Rejected/Documented in Log</i>	No
<i>Temp Taken From Temp Blank</i>	Yes
<i>Temp Taken From Sample Container</i>	No
<i>Temp Taken From Cooler</i>	No
<i>COC meets acceptance criteria</i>	Yes

<i>Received on Ice but Not Frozen</i>	Yes
<i>No Ice, Short Trip</i>	No
<i>Obvious Contamination</i>	No
<i>Rush to meet HT</i>	No
<i>Received within HT</i>	Yes
<i>Proper Containers for Analysis</i>	Yes
<i>Correct Preservation</i>	Yes
<i>Adequate Sample for Analysis</i>	Yes
<i>Sample Custody Seals Present</i>	No
<i>Samples Missing from COC/Cooler</i>	No

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

 Cooler ID: #1130

 Receipt Temperature: 3.4 °C

<i>Cooler Custody Seals Present</i>	Yes	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc. defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

See attached results from Sub-Contract Laboratory

Total Metals-EPA 200.8 Rev 5.4

Qualifiers:

L1 LCS and/or LCSD Recovery Limit exceeded.

Beryllium [He], Cobalt [He]
2B28035-BS1

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-2
2202244-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Fluoride	0.51	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:20	02/09/2022 13:20	SM 4500-F C 2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.029	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:44	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 14:56	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 21:14	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	0.00470	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0956	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00241	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:29	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-3
2202244-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:22	02/09/2022 13:22	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.038	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:55	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.198	0.040	"	"	"	CLV	"	03/07/2022 15:07	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:26	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0249	0.00100	"	"	"	CLB	"	03/02/2022 21:50	"	
Lead [He]	0.00604	0.00100	"	"	"	CLB	"	03/09/2022 14:21	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	03/02/2022 22:26	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:42	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-4
2202244-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:24	02/09/2022 13:24	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.039	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 16:59	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 15:10	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 21:56	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0263	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:47	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-5
2202244-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:26	02/09/2022 13:26	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.061	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:02	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	2.14	0.040	"	"	"	CLV	"	03/07/2022 15:14	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:02	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0152	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	03/09/2022 14:26	"	
Molybdenum [He]	2.59	0.00500	"	5.0	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	1.0	"	CLB	"	03/02/2022 22:02	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:51	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-6
2202244-05 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:28	02/09/2022 13:28	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.155	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:06	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	03/07/2022 15:18	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:08	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.00156	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 13:55	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

MW-10
2202244-06 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:49	02/09/2022 13:49	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.035	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:10	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.352	0.040	"	"	"	CLV	"	03/07/2022 15:21	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:13	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	0.00932	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0893	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00256	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	"	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 14:26	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
 03/15/2022 11:01

BD-1
2202244-07 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2B09052	SSK	02/09/2022 13:52	02/09/2022 13:52	SM 4500-F C 2011	
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Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.038	0.010	mg/L	1.0	2B10068	CLV	02/11/2022 09:00	03/01/2022 17:13	EPA 200.7 Rev 4.4	
Lithium 610.362 [Axial]	0.197	0.040	"	"	"	CLV	"	03/07/2022 15:25	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Antimony [He]	ND	0.00200	mg/L	1.0	2B28035	CLB	"	03/02/2022 22:20	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	CLB	"	"	"	
Beryllium [He]	ND	0.00400	"	"	"	CLB	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	CLB	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	CLB	"	"	"	
Cobalt [He]	0.0253	0.00100	"	"	"	CLB	"	"	"	
Lead [He]	0.00517	0.00100	"	"	"	CLB	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLB	"	03/09/2022 14:30	"	
Selenium [NG]	ND	0.0500	"	"	"	CLB	"	03/02/2022 22:20	"	
Thallium [He]	ND	0.00200	"	"	"	CLB	"	03/04/2022 14:31	"	

Mercury by EPA 200 Series Methods CVAAS

Mercury	ND	0.002	mg/L	1.0	2B25019	TKM	02/25/2022 09:00	02/28/2022 15:09	EPA 245.1 Rev 3.0	
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6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Annual
Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B09052 - Default Prep GenChem											
Blank (2B09052-BLK1)											
Fluoride	2/9/22 13:00	ND	0.50	mg/L							
LCS (2B09052-BS1)											
Fluoride	2/9/22 13:08	1.81	0.50	mg/L	2.00		90.5	83.3-107			
LCS Dup (2B09052-BSD1)											
Fluoride	2/9/22 13:10	1.85	0.50	mg/L	2.00		92.5	83.3-107	2.19	30	
Duplicate (2B09052-DUP1) Source: 2202196-03											
Fluoride	2/9/22 13:19	0.27	0.50	mg/L		0.25			10.4	20	
Matrix Spike (2B09052-MS1) Source: 2202196-03											
Fluoride	2/9/22 13:16	4.13	0.50	mg/L	4.00	0.25	97.1	79.3-113			
Matrix Spike Dup (2B09052-MSD1) Source: 2202196-03											
Fluoride	2/9/22 13:18	4.37	0.50	mg/L	4.00	0.25	103	79.3-113	5.65	30	



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Project Manager: Ken Ruckstuhl

Reported:
03/15/2022 11:01

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B10068 - EPA 200.2 DCN 1017 Rev 10											
Blank (2B10068-BLK1)											
Barium 455.403 [Radial]	3/1/22 16:33	ND	0.010	mg/L							
Lithium 610.362 [Axial]	3/7/22 14:45	ND	0.040	"							
LCS (2B10068-BS1)											
Barium 455.403 [Radial]	3/1/22 16:37	0.220	0.010	mg/L	0.200		110	85-115			
Lithium 610.362 [Axial]	3/7/22 14:49	0.227	0.040	"	0.200		113	85-115			
LCS Dup (2B10068-BSD1)											
Barium 455.403 [Radial]	3/1/22 16:40	0.226	0.010	mg/L	0.200		113	85-115	2.68	20	
Lithium 610.362 [Axial]	3/7/22 14:52	0.226	0.040	"	0.200		113	85-115	0.323	20	
Matrix Spike (2B10068-MS1) Source: 2202244-01											
Barium 455.403 [Radial]	3/1/22 16:48	0.257	0.010	mg/L	0.200	0.029	114	70-130			
Lithium 610.362 [Axial]	3/7/22 14:59	0.199	0.040	"	0.200	ND	99.6	70-130			
Matrix Spike Dup (2B10068-MSD1) Source: 2202244-01											
Barium 455.403 [Radial]	3/1/22 16:51	0.259	0.010	mg/L	0.200	0.029	115	70-130	0.721	20	
Lithium 610.362 [Axial]	3/7/22 15:03	0.195	0.040	"	0.200	ND	97.7	70-130	1.93	20	



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Project Number: SOU2-21-001
Project Manager: Ken Ruckstuhl

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B28035 - EPA 200.2 DCN 1017 Rev 10											
Blank (2B28035-BLK1)											
Antimony [He]	3/2/22 20:57	ND	0.00200	mg/L							
Arsenic [NG]	3/2/22 20:57	ND	0.00200	"							
Barium [He]	3/2/22 20:57	ND	0.00100	"							
Beryllium [He]	3/2/22 20:57	ND	0.00400	"							
Cadmium [He]	3/2/22 20:57	ND	0.00500	"							
Chromium [He]	3/2/22 20:57	ND	0.0100	"							
Cobalt [He]	3/2/22 20:57	ND	0.00100	"							
Lead [He]	3/2/22 20:57	ND	0.00100	"							
Molybdenum [He]	3/2/22 20:57	ND	0.00500	"							
Selenium [NG]	3/2/22 20:57	ND	0.0500	"							
Thallium [He]	3/4/22 13:16	ND	0.00200	"							
LCS (2B28035-BS1)											
Antimony [He]	3/2/22 21:03	0.228	0.00400	mg/L	0.200		114	85-115			
Arsenic [NG]	3/2/22 21:03	0.222	0.00400	"	0.200		111	85-115			
Barium [He]	3/2/22 21:03	0.224	0.00200	"	0.200		112	85-115			
Beryllium [He]	3/2/22 21:03	0.235	0.00200	"	0.200		117	85-115			L1
Cadmium [He]	3/2/22 21:03	0.226	0.00200	"	0.200		113	85-115			
Chromium [He]	3/2/22 21:03	0.216	0.00200	"	0.200		108	85-115			
Cobalt [He]	3/2/22 21:03	0.236	0.00200	"	0.200		118	85-115			L1
Lead [He]	3/2/22 21:03	0.216	0.00200	"	0.200		108	85-115			
Molybdenum [He]	3/2/22 21:03	0.198	0.00200	"	0.200		98.8	85-115			
Selenium [NG]	3/2/22 21:03	0.220	0.0100	"	0.200		110	85-115			
Thallium [He]	3/4/22 13:20	0.224	0.00400	"	0.200		112	85-115			
LCS Dup (2B28035-BSD1)											
Antimony [He]	3/2/22 21:09	0.217	0.00400	mg/L	0.200		108	85-115	5.25	20	
Arsenic [NG]	3/2/22 21:09	0.209	0.00400	"	0.200		104	85-115	6.19	20	
Barium [He]	3/2/22 21:09	0.215	0.00200	"	0.200		107	85-115	4.47	20	
Beryllium [He]	3/2/22 21:09	0.226	0.00200	"	0.200		113	85-115	3.91	20	
Cadmium [He]	3/2/22 21:09	0.215	0.00200	"	0.200		108	85-115	5.01	20	
Chromium [He]	3/2/22 21:09	0.205	0.00200	"	0.200		102	85-115	5.36	20	
Cobalt [He]	3/2/22 21:09	0.225	0.00200	"	0.200		112	85-115	4.79	20	
Lead [He]	3/2/22 21:09	0.199	0.00200	"	0.200		99.7	85-115	8.10	20	
Molybdenum [He]	3/2/22 21:09	0.189	0.00200	"	0.200		94.4	85-115	4.57	20	
Selenium [NG]	3/2/22 21:09	0.210	0.0100	"	0.200		105	85-115	5.06	20	
Thallium [He]	3/4/22 13:25	0.216	0.00400	"	0.200		108	85-115	3.68	20	

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 Project: Cooperative Energy CCR Annual
 Project Number: SOU2-21-001
 Project Manager: Ken Ruckstuhl

 Reported:
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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2B28035 - EPA 200.2 DCN 1017 Rev 10

Matrix Spike (2B28035-MS1)

Source: 2202244-01

Antimony [He]	3/2/22 21:20	0.224	0.00400	mg/L	0.200	ND	112	70-130			
Arsenic [NG]	3/2/22 21:20	0.217	0.00400	"	0.200	ND	108	70-130			
Barium [He]	3/2/22 21:20	0.252	0.00200	"	0.200	0.028	112	70-130			
Beryllium [He]	3/2/22 21:20	0.223	0.00200	"	0.200	0.005	109	70-130			
Cadmium [He]	3/2/22 21:20	0.215	0.00200	"	0.200	0.0003	107	70-130			
Chromium [He]	3/2/22 21:20	0.205	0.00200	"	0.200	0.002	101	70-130			
Cobalt [He]	3/2/22 21:20	0.316	0.00200	"	0.200	0.096	110	70-130			
Lead [He]	3/2/22 21:20	0.215	0.00200	"	0.200	0.002	106	70-130			
Molybdenum [He]	3/2/22 21:20	0.207	0.00200	"	0.200	0.0004	103	70-130			
Selenium [NG]	3/2/22 21:20	0.237	0.0100	"	0.200	0.025	106	70-130			
Thallium [He]	3/4/22 14:21	0.227	0.00400	"	0.200	ND	114	70-130			

Matrix Spike Dup (2B28035-MSD1)

Source: 2202244-01

Antimony [He]	3/2/22 21:26	0.218	0.00400	mg/L	0.200	ND	109	70-130	3.00	20	
Arsenic [NG]	3/2/22 21:26	0.215	0.00400	"	0.200	ND	108	70-130	0.838	20	
Barium [He]	3/2/22 21:26	0.244	0.00200	"	0.200	0.028	108	70-130	3.46	20	
Beryllium [He]	3/2/22 21:26	0.217	0.00200	"	0.200	0.005	106	70-130	2.53	20	
Cadmium [He]	3/2/22 21:26	0.208	0.00200	"	0.200	0.0003	104	70-130	3.09	20	
Chromium [He]	3/2/22 21:26	0.197	0.00200	"	0.200	0.002	97.6	70-130	3.72	20	
Cobalt [He]	3/2/22 21:26	0.305	0.00200	"	0.200	0.096	105	70-130	3.47	20	
Lead [He]	3/2/22 21:26	0.198	0.00200	"	0.200	0.002	97.8	70-130	8.22	20	
Molybdenum [He]	3/2/22 21:26	0.203	0.00200	"	0.200	0.0004	101	70-130	1.88	20	
Selenium [NG]	3/2/22 21:26	0.234	0.0100	"	0.200	0.025	105	70-130	1.11	20	
Thallium [He]	3/4/22 14:17	0.221	0.00400	"	0.200	ND	111	70-130	2.61	20	



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Project Manager: Ken Ruckstuhl

Reported:
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Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2B25019 - EPA 245.1 DCN 1017 Rev 10											
Blank (2B25019-BLK1)											
Mercury	2/28/22 15:09	ND	0.002	mg/L							
LCS (2B25019-BS1)											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500		102	85-115			
LCS Dup (2B25019-BSD1)											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500		100	85-115	1.98	20	
Matrix Spike (2B25019-MS1) Source: 2202244-01											
Mercury	2/28/22 15:09	0.005	0.002	mg/L	0.00500	0.0005	88.0	70-130			
Matrix Spike Dup (2B25019-MSD1) Source: 2202244-01											
Mercury	2/28/22 15:09	0.006	0.002	mg/L	0.00500	0.0005	104	70-130	15.1	20	

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 Reported:
 03/15/2022 11:01

Certified Analyses Included in this Report

Analyte	Certification Code
<i>EPA 200.7 Rev 4.4 in Water</i>	
Aluminum 237.312 [Radial]	C01,C02
Aluminum 394.401 [Radial]	C01,C02
Aluminum 396.152 [Radial]	C01,C02
Antimony 206.833 [Axial]	C01,C02
Arsenic 193.759 [Axial]	C01,C02
Barium 455.403 [Radial]	C01,C02
Barium 493.409 [Radial]	C01,C02
Beryllium 313.042 [Axial]	C01,C02
Boron 249.773 [Radial]	C01,C02
Cadmium 228.802 [Axial]	C01,C02
Calcium 315.887 [Radial]	C01,C02
Chromium 283.563 [Axial]	C01,C02
Cobalt 228.616 [Axial]	C01,C02
Copper 324.754 [Axial]	C01,C02
Iron 259.940 [Axial]	C01,C02
Iron 259.940 [Radial]	C01,C02
Lead 220.353 [Axial]	C01,C02
Lithium 610.362 [Axial]	C01,C02
Magnesium 285.213 [Radial]	C01,C02
Manganese 257.610 [Axial]	C01,C02
Molybdenum 202.030 [Axial]	C01,C02
Nickel 231.604 [Axial]	C01,C02
Potassium 766.490 [Radial]	C01,C02
Phosphorus 178.284 [Axial]	C01,C02
Phosphorus 178.284 [Radial]	C01,C02
Selenium 196.090 [Axial]	C01,C02
Silver 328.068 [Axial]	C01,C02
Sodium 589.592 [Axial]	C01,C02
Sodium 589.592 [Radial]	C01,C02
Strontium 346.446 [Radial]	C01,C02
Strontium 421.552 [Radial]	C01,C02
Thallium 190.856 [Axial]	C01,C02
Tin 189.989 [Axial]	C01,C02
Titanium 334.941 [Axial]	C01,C02
Vanadium 309.311 [Axial]	C01,C02
Zinc 213.856 [Axial]	C01,C02
<i>EPA 200.8 Rev 5.4 in Water</i>	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02

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Arsenic [He]	C01
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02
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****Only compounds included in this list are associated with accredited analyses****

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Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2022
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2022
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2022
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2022
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2022
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/12/2022
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	02/13/2022
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/09/2022
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	02/13/2022
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	03/24/2022
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	03/24/2022

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verification Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.



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03/15/2022 11:01

Analyst Initials Key

<u>FullName</u>	<u>Initials</u>
Camie Bourne	CLB
Charles L Vorhoff	CLV
Sarah E. Tomek	SET
Stella S Kleist	SSK
Teresa Meins	TKM
Tina Tomek	TPT

PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

Print Form

M-M Lab
WO #
2202244

Company Name: **EMS**

Address: **7350 US Hwy 98**

City: **Hattiesburg** State: **MS** Zip: **39402**

Phone: **601 544 3674**

Fax: **601 544 0504**

Project Manager: **Ken Ruckstuhl**

Purchase Order #:

Email Address: **kruckstuhl@env-mgt.com**

Sampler Name Printed: **Alan Niven**

Sampler Name Signed: *Alan Niven*

Project Name: **Cooperative Energy CCR LF Annual**

SOU2-21-001

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	Appendix IV
MW-2	2-8-22 14:45	W	4	G	X
MW-3	2-8-22 12:45	W	4	G	X
MW-4	2-7-22 15:15	W	3	G	X
MW-5	2-7-22 14:00	W	4	G	X
MW-6	2-7-22 11:30	W	4	G	X
MW-10	2-7-22 11:15	W	4	G	X
BD-1	2-7-22 16:00	W	4	G	X

Received on Ice ☒ N Thermometer# **58** Cooler # **58** Receipt Temp Corrected (°C)

All Temps are Corrected Values

Date & Time	By:	Signature	Company	Date	Time
Relinquished by	Alan Niven	<i>Alan Niven</i>	EMS	2-8-22	17:00
Received by	FeleEx				
Relinquished by	FeleEx				
Received by	FeleEx				
Relinquished by	FeleEx				
Received by	FeleEx				
Relinquished by	FeleEx				
Received by	FeleEx				

Notes: **COOLING # 1130** **3.4°C**
COOLING # 1126 **1.9°C**
See Work Order:
Annual Appendix IV - antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226/228

Turn Around Time & Reporting
Our normal turn around time is 10 working days
xNormal ☐ *All rush order requests must be prior approved.
Next Day* ☐ Phone ☐
2nd Day* ☐ Mail ☐
Other* ☐ Fax ☐
Email ☐

Field Testing

Matrix:

W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:

1 = H2SO4
2 = H3PO4
3 = NaOH
4 = ZnCl4H10O6
5 = ZnCl4H10O6 & NaOH
6 = HNO3
7 = Na2S2O3
8 = HCl
9 = NaHSO4

March 14, 2022

Tina Tomek
Micro-Methods Lab
6500 Sunplex Drive
Ocean Springs, MS 39564

RE: Project: 2202244
Pace Project No.: 30467306

Dear Tina Tomek:

Enclosed are the analytical results for sample(s) received by the laboratory on February 16, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



David A. Pichette
david.pichette@pacelabs.com
(724)850-5617
Project Manager

Enclosures

cc: Accounts Payable, Micro-Methods Lab



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2202244

Pace Project No.: 30467306

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Florida: Cert E871149 SEKS WET

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2202244
Pace Project No.: 30467306

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30467306001	2202244-01	Water	02/08/22 14:45	02/16/22 10:00
30467306002	2202244-02	Water	02/08/22 12:45	02/16/22 10:00
30467306003	2202244-03	Water	02/07/22 15:15	02/16/22 10:00
30467306004	2202244-04	Water	02/07/22 14:00	02/16/22 10:00
30467306005	2202244-05	Water	02/07/22 12:30	02/16/22 10:00
30467306006	2202244-06	Water	02/07/22 11:15	02/16/22 10:00
30467306007	2202244-07	Water	02/07/22 16:00	02/16/22 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2202244
Pace Project No.: 30467306

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30467306001	2202244-01	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306002	2202244-02	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306003	2202244-03	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306004	2202244-04	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306005	2202244-05	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306006	2202244-06	EPA 903.1	SLC	1
		EPA 904.0	JSM	1
30467306007	2202244-07	EPA 903.1	SLC	1
		EPA 904.0	JSM	1

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

Sample: 2202244-01		Lab ID: 30467306001	Collected: 02/08/22 14:45	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.359 ± 0.611 (1.08) C:NA T:94%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.12 ± 0.425 (0.653) C:91% T:90%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-02		Lab ID: 30467306002	Collected: 02/08/22 12:45	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.326 ± 0.554 (0.978) C:NA T:95%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.86 ± 0.523 (0.590) C:95% T:90%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-03		Lab ID: 30467306003	Collected: 02/07/22 15:15	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.165 ± 0.377 (0.607) C:NA T:92%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.37 ± 0.498 (0.737) C:92% T:78%		pCi/L	03/09/22 11:55	15262-20-1	
Sample: 2202244-04		Lab ID: 30467306004	Collected: 02/07/22 14:00	Received: 02/16/22 10:00	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.269 ± 0.584 (1.08) C:NA T:90%		pCi/L	03/11/22 14:23	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.17 ± 0.448 (0.688) C:92% T:86%		pCi/L	03/09/22 11:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

Sample: 2202244-05		Lab ID: 30467306005	Collected: 02/07/22 12:30	Received: 02/16/22 10:00	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.224 ± 0.440 (0.803) C:NA T:98%		pCi/L	03/11/22 14:40	13982-63-3
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.44 ± 0.473 (0.636) C:90% T:86%		pCi/L	03/09/22 11:55	15262-20-1
Sample: 2202244-06		Lab ID: 30467306006	Collected: 02/07/22 11:15	Received: 02/16/22 10:00	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.507 ± 0.577 (0.910) C:NA T:87%		pCi/L	03/11/22 14:40	13982-63-3
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.03 ± 0.395 (0.602) C:89% T:92%		pCi/L	03/09/22 11:55	15262-20-1
Sample: 2202244-07		Lab ID: 30467306007	Collected: 02/07/22 16:00	Received: 02/16/22 10:00	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0826 ± 0.428 (0.889) C:NA T:85%		pCi/L	03/11/22 14:40	13982-63-3
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.76 ± 0.561 (0.747) C:80% T:88%		pCi/L	03/09/22 11:55	15262-20-1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

QC Batch:	487439	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007		
METHOD BLANK:	2357380	Matrix:	Water
Associated Lab Samples:	30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0709 ± 0.324 (0.763) C:NA T:96%	pCi/L	03/11/22 14:01	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2202244
Pace Project No.: 30467306

QC Batch:	487441	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples: 30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007			
METHOD BLANK: 2357385		Matrix: Water	
Associated Lab Samples: 30467306001, 30467306002, 30467306003, 30467306004, 30467306005, 30467306006, 30467306007			

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.805 ± 0.361 (0.590) C:88% T:87%	pCi/L	03/09/22 11:54	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2202244
Pace Project No.: 30467306

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical-7
1638 Roseytown Rd. Suites 2, 3, 4
Greensburg, PA 15601
Phone: (724) 850-5600
Fax: -

WO#: 30467306



30467306

Work Order: 2202244

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Sample ID: 2202244-01 Water Sampled: 02/08/2022 14:45 Sample Name: MW-2

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/08/2022 14:45

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-02 Water Sampled: 02/08/2022 12:45 Sample Name: MW-3

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/08/2022 12:45

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-03 Water Sampled: 02/07/2022 15:15 Sample Name: MW-4

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 15:15

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B) 1000mL Plastic w/HNO3 (G) 1000mL Plastic w/HNO3 (H)

Sample ID: 2202244-04 Water Sampled: 02/07/2022 14:00 Sample Name: MW-5

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 14:00

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-05 Water Sampled: 02/07/2022 12:30 Sample Name: MW-6

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 12:30

Released By Snah Jmeh Date 2/10/22 @ 1630

Released By UPS

Released By

Released By

Released By

Released By

Received By VPS Date 2/10/22 @ 1630

Received By

Received By Rebecca C Date 2/16/22 1000

Received By

Received By

Received By

Received By

Date

Date

Date

Date

Date



MICRO-METHODS
LABORATORY, INC.

**SUBCONTRACT
ORDER**

(Continued)

#-30467306

Work Order: 2202244 (Continued)

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-06 Water Sampled: 02/07/2022 11:15 Sample Name: MW-10

006

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 11:15

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Sample ID: 2202244-07 Water Sampled: 02/07/2022 16:00 Sample Name: BD-1

007

Radium, Total 226 & 228 by EPA 903.1 & 90 02/17/2022 03/07/2022 16:00

Containers Supplied:

1000mL Plastic w/HNO3 (A) 1000mL Plastic w/HNO3 (B)

Smahjomeh 2/10/22 @ 1630
Released By Date

UPS 2/10/22 @ 1630
Released By Date

Released By Date

Released By Date

Released By Date

UPS 2/10/22 @ 1630
Received By Date

Rebecca C 2/10/22 @ 1630
Received By Date

Received By Date

Received By Date

Received By Date

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Micro-Methods Lab

Project # 30467306

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 123530630360437276

Label <u>TMS</u>
LIMS Login <u>TMS</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and initials of person examining contents: <u>2/23/22 BAE</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. <u>no name or signature</u>
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID Matrix: <u>LWT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				<u>pHCO</u>
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed <u>BAE</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>BAE</u> Date: <u>2/23/22</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

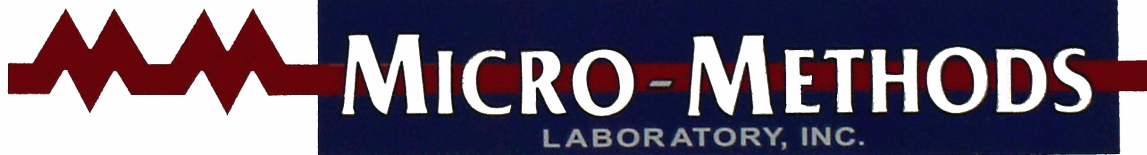
Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.



Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

DOCUMENT CHANGE NOTICE

Revised Report

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

June 23, 2022

Ken Ruckstuhl

Work Order # : 2204531

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369
RE: Cooperative Energy CCR Semiannual

Purchase Order #

Enclosed is the revised report for samples received by the laboratory on 04/27/2022 13:50. This report supercedes any previous version of the above noted work order. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director



DISCLAIMER

The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken RuckstuhlReported:
06/23/2022 16:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
BD-1	2204531-01	Water	04/27/2022 09:00	Alan Niven	04/27/2022 13:50
MW-2	2204531-02	Water	04/27/2022 10:15	Alan Niven	04/27/2022 13:50
MW-3	2204531-03	Water	04/27/2022 11:30	Alan Niven	04/27/2022 13:50
MW-4	2204531-04	Water	04/26/2022 15:15	Alan Niven	04/27/2022 13:50
MW-5	2204531-05	Water	04/26/2022 13:20	Alan Niven	04/27/2022 13:50
MW-6	2204531-06	Water	04/26/2022 12:15	Alan Niven	04/27/2022 13:50
MW-10	2204531-07	Water	04/26/2022 10:45	Alan Niven	04/27/2022 13:50

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Micro-Methods Laboratory, Inc.

Revised Report

Tina Tomek For Teresa Meins, Inorganic Supervisor

Page 2 of 39

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Sample Receipt Conditions

Date/Time Received: 4/27/2022 1:50:00PM

Shipped by: Client Delivery

Received by: Sarah E. Tomek

Submitted by: Alan Niven

Date/Time Logged: 4/27/2022 4:14:00PM

Logged by: Sarah E. Tomek

Cooler ID: #1126

Receipt Temperature: 0.3 °C

<i>Cooler Custody Seals Present</i>	No	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Cooler ID: #685

Receipt Temperature: -0.1 °C

<i>Cooler Custody Seals Present</i>	No	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		

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Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl**Reported:**
06/23/2022 16:00**CASE NARRATIVE SUMMARY**

All reported results are within Micro-Methods Laboratory, Inc. defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

See attached results from Sub-Contract Laboratory

As per client, L. Marcella, request the metals list was revised. 6/23/22 TKM

Qualification: *No Data Qualification***Analyte & Samples(s) Qualified:** *None*

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Micro-Methods Laboratory, Inc.**Revised Report**

Tina Tomek For Teresa Meins, Inorganic Supervisor

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

BD-1
2204531-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	118	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 21:16	SM 4110B 2011	
Sulfate as SO ₄	2220	1000	"	200.0	"	DLW	"	04/28/2022 21:45	"	
Fluoride	ND	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	2730	2	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.035	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:05	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	6.43	0.050	"	"	"	CLV	"	05/06/2022 12:23	"	
Calcium 315.887 [Radial]	459	1.00	"	20.0	"	CLV	"	05/10/2022 15:13	"	
Lithium 610.362 [Axial]	0.150	0.040	"	1.0	"	CLV	"	05/11/2022 17:05	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:29	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0242	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	0.00242	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLV	"	"	"	

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-2
2204531-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	82.6	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 20:18	SM 4110B 2011	
Sulfate as SO ₄	365	250	"	50.0	"	DLW	"	04/28/2022 20:47	"	
Fluoride	0.57	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	649	1	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.023	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:09	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	0.934	0.050	"	"	"	CLV	"	05/06/2022 12:27	"	
Calcium 315.887 [Radial]	74.0	0.500	"	10.0	"	CLV	"	05/10/2022 15:17	"	
Lithium 610.362 [Axial]	ND	0.040	"	1.0	"	CLV	"	05/11/2022 17:09	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:35	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0898	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	0.00182	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLV	"	"	"	

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-3
2204531-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	113	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 18:51	SM 4110B 2011	
Sulfate as SO ₄	1920	1000	"	200.0	"	DLW	"	04/28/2022 19:20	"	
Fluoride	ND	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	2762	2	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.032	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:13	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	5.77	0.050	"	"	"	CLV	"	05/06/2022 12:31	"	
Calcium 315.887 [Radial]	464	1.00	"	20.0	"	CLV	"	05/10/2022 15:20	"	
Lithium 610.362 [Axial]	0.258	0.040	"	1.0	"	CLV	"	05/11/2022 17:13	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:41	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0249	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	0.00289	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLV	"	"	"	

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-4
2204531-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	124	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 17:53	SM 4110B 2011	
Sulfate as SO ₄	1850	1000	"	200.0	"	DLW	"	04/28/2022 18:22	"	
Fluoride	ND	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	2788	2	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.028	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:16	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	8.32	0.050	"	"	"	CLV	"	05/06/2022 12:34	"	
Calcium 315.887 [Radial]	433	1.00	"	20.0	"	CLV	"	05/10/2022 15:24	"	
Lithium 610.362 [Axial]	0.391	0.040	"	1.0	"	CLV	"	05/11/2022 17:16	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:47	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0462	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	0.00119	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLV	"	"	"	

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 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-5
2204531-05 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	177	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 16:56	SM 4110B 2011	
Sulfate as SO ₄	1760	1000	"	200.0	"	DLW	"	04/28/2022 17:24	"	
Fluoride	ND	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	3417	3	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.050	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:20	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	12.4	0.100	"	2.0	"	CLV	"	05/06/2022 14:49	"	
Calcium 315.887 [Radial]	617	1.00	"	20.0	"	CLV	"	05/10/2022 15:27	"	
Lithium 610.362 [Axial]	2.83	0.040	"	1.0	"	CLV	"	05/11/2022 17:20	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:53	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0143	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	1.95	0.00500	"	5.0	"	CLB	"	05/16/2022 11:54	"	

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-6
2204531-06 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	6.61	0.500	mg/L	1.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 13:04	SM 4110B 2011	
Sulfate as SO ₄	10.3	5.00	"	"	"	DLW	"	"	"	
Fluoride	ND	0.50	"	"	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	62	1	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.112	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/11/2022 17:24	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	0.053	0.050	"	"	"	CLV	"	05/06/2022 12:42	"	
Calcium 315.887 [Radial]	2.40	0.050	"	"	"	CLV	"	05/10/2022 15:31	"	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	05/11/2022 17:24	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 19:59	EPA 200.8 Rev 5.4	
Cobalt [He]	0.00165	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	ND	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	0.00579	0.00500	"	"	"	CLV	"	"	"	

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

MW-10
2204531-07 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Notes
Classical Chemistry Parameters										
Chloride	188	5.00	mg/L	10.0	2D28018	DLW	04/28/2022 13:04	04/28/2022 15:00	SM 4110B 2011	
Sulfate as SO ₄	731	250	"	50.0	"	DLW	"	04/28/2022 15:29	"	
Fluoride	0.65	0.50	"	1.0	2E02025	SSK	05/02/2022 08:45	05/02/2022 11:35	SM 4500-F C 2011	
Total Dissolved Solids	1114	1	"	"	2D28011	DLW	04/28/2022 12:30	04/29/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.025	0.010	mg/L	1.0	2D29022	CLV	04/29/2022 09:00	05/12/2022 11:37	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	5.42	0.050	"	"	"	CLV	"	05/06/2022 12:45	"	
Calcium 315.887 [Radial]	101	0.500	"	10.0	"	CLV	"	05/10/2022 15:35	"	
Lithium 610.362 [Axial]	0.429	0.040	"	1.0	"	CLV	"	05/12/2022 11:37	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	0.00754	0.00400	mg/L	1.0	2D29020	CLV	"	05/04/2022 20:05	EPA 200.8 Rev 5.4	
Cobalt [He]	0.123	0.00100	"	"	"	CLV	"	"	"	
Lead [He]	0.00290	0.00100	"	"	"	CLV	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	CLV	"	"	"	

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6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2D28011 - Default Prep GenChem											
Blank (2D28011-BLK1)											
Total Dissolved Solids	4/29/22 0:00	ND	1	mg/L							
LCS (2D28011-BS1)											
Total Dissolved Solids	4/29/22 0:00	124	1	mg/L	150		82.7	65-105			
LCS Dup (2D28011-BSD1)											
Total Dissolved Solids	4/29/22 0:00	127	1	mg/L	150		84.7	65-105	2.39	15	
Duplicate (2D28011-DUP1) Source: 2204525-01											
Total Dissolved Solids	4/29/22 0:00	1634	1	mg/L		1622			0.737	10	
Duplicate (2D28011-DUP2) Source: 2204531-06											
Total Dissolved Solids	4/29/22 0:00	58	1	mg/L		62			6.67	10	
Batch 2D28018 - Default Prep GenChem											
Blank (2D28018-BLK1)											
Chloride	4/28/22 10:40	ND	0.500	mg/L							
Sulfate as SO4	4/28/22 10:40	ND	5.00	"							
LCS (2D28018-BS1)											
Chloride	4/28/22 9:42	9.79	0.500	mg/L	10.0		97.9	86.3-109			
Sulfate as SO4	4/28/22 9:42	9.65	5.00	"	10.0		96.5	88-108			
LCS Dup (2D28018-BSD1)											
Chloride	4/28/22 10:11	9.82	0.500	mg/L	10.0		98.2	86.3-109	0.296	20	
Sulfate as SO4	4/28/22 10:11	9.62	5.00	"	10.0		96.2	88-108	0.291	20	

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Micro-Methods Laboratory, Inc.

Revised Report

Tina Tomek For Teresa Meins, Inorganic Supervisor

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2D28018 - Default Prep GenChem											
Duplicate (2D28018-DUP1)			Source: 2204531-06								
Chloride	4/28/22 13:33	6.58	0.500	mg/L		6.61			0.440	20	
Sulfate as SO4	4/28/22 13:33	10.7	5.00	"		10.3			3.22	20	
Matrix Spike (2D28018-MS1)			Source: 2204531-06								
Chloride	4/28/22 14:02	18.1	0.500	mg/L	12.0	6.61	95.6	76.2-122			
Sulfate as SO4	4/28/22 14:02	22.6	5.00	"	12.0	10.3	102	74.1-129			
Matrix Spike Dup (2D28018-MSD1)			Source: 2204531-06								
Chloride	4/28/22 14:31	18.5	0.500	mg/L	12.0	6.61	99.0	76.2-122	2.25	20	
Sulfate as SO4	4/28/22 14:31	23.0	5.00	"	12.0	10.3	105	74.1-129	1.42	20	
Batch 2E02025 - Default Prep GenChem											
Blank (2E02025-BLK1)											
Fluoride	5/2/22 11:17	ND	0.50	mg/L							
LCS (2E02025-BS1)											
Fluoride	5/2/22 11:17	2.04	0.50	mg/L	2.00		102	83.3-107			
LCS Dup (2E02025-BSD1)											
Fluoride	5/2/22 11:17	2.13	0.50	mg/L	2.00		107	83.3-107	4.32	30	
Duplicate (2E02025-DUP1)			Source: 2204531-07								
Fluoride	5/2/22 11:35	0.67	0.50	mg/L		0.65			3.04	20	
Matrix Spike (2E02025-MS1)			Source: 2204531-07								
Fluoride	5/2/22 11:35	3.19	0.50	mg/L	3.00	0.65	84.7	79.3-113			

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Environmental Management Services
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Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2E02025 - Default Prep GenChem											
Matrix Spike Dup (2E02025-MSD1)			Source: 2204531-07								
Fluoride	5/2/22 11:35	3.17	0.50	mg/L	3.00	0.65	84.1	79.3-113	0.629	30	

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Micro-Methods Laboratory, Inc.

Revised Report

Tina Tomek For Teresa Meins, Inorganic Supervisor

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2D29022 - EPA 200.2 DCN 1017 Rev 10											
Blank (2D29022-BLK1)											
Barium 455.403 [Radial]	5/11/22 16:36	ND	0.010	mg/L							
Barium 493.409 [Radial]	5/6/22 11:42	ND	0.010	"							
Boron 249.773 [Radial]	5/6/22 11:42	ND	0.050	"							
Calcium 315.887 [Radial]	5/6/22 11:42	ND	0.050	"							
Lithium 610.362 [Axial]	5/11/22 16:36	ND	0.040	"							
LCS (2D29022-BS1)											
Barium 455.403 [Radial]	5/11/22 16:40	0.207	0.010	mg/L	0.200		103	85-115			
Barium 493.409 [Radial]	5/6/22 11:46	0.218	0.010	"	0.200		109	85-115			
Boron 249.773 [Radial]	5/6/22 11:46	0.211	0.050	"	0.200		106	85-115			
Calcium 315.887 [Radial]	5/6/22 11:46	0.217	0.050	"	0.200		108	85-115			
Lithium 610.362 [Axial]	5/11/22 16:40	0.227	0.040	"	0.200		114	85-115			
LCS Dup (2D29022-BSD1)											
Barium 455.403 [Radial]	5/11/22 16:44	0.204	0.010	mg/L	0.200		102	85-115	1.45	20	
Barium 493.409 [Radial]	5/6/22 11:50	0.217	0.010	"	0.200		108	85-115	0.478	20	
Boron 249.773 [Radial]	5/6/22 11:50	0.215	0.050	"	0.200		108	85-115	1.86	20	
Calcium 315.887 [Radial]	5/6/22 11:50	0.222	0.050	"	0.200		111	85-115	2.33	20	
Lithium 610.362 [Axial]	5/11/22 16:44	0.227	0.040	"	0.200		113	85-115	0.322	20	
Duplicate (2D29022-DUP1) Source: 2204531-07											
Boron 249.773 [Radial]	5/6/22 12:49	5.65	0.050	mg/L		5.42			4.33	20	
Calcium 315.887 [Radial]	5/10/22 15:38	98.0	0.500	"		101			3.03	20	
Matrix Spike (2D29022-MS1) Source: 2204531-07											
Barium 493.409 [Radial]	5/6/22 12:49	0.235	0.010	mg/L	0.200	0.026	104	70-130			
Barium 455.403 [Radial]	5/12/22 11:41	0.219	0.010	"	0.200	0.025	97.1	70-130			
Boron 249.773 [Radial]	5/6/22 12:49	5.65	0.050	"	0.200	5.42	120	70-130			
Lithium 610.362 [Axial]	5/12/22 11:41	0.656	0.040	"	0.200	0.429	113	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2D29022 - EPA 200.2 DCN 1017 Rev 10											
Matrix Spike Dup (2D29022-MSD1)			Source: 2204531-07								
Barium 455.403 [Radial]	5/12/22 11:45	0.219	0.010	mg/L	0.200	0.025	97.1	70-130	0.0388	20	
Barium 493.409 [Radial]	5/6/22 12:53	0.234	0.010	"	0.200	0.026	104	70-130	0.236	20	
Boron 249.773 [Radial]	5/6/22 12:53	5.67	0.050	"	0.200	5.42	126	70-130	0.221	20	
Lithium 610.362 [Axial]	5/12/22 11:45	0.651	0.040	"	0.200	0.429	111	70-130	0.625	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Micro-Methods Laboratory, Inc.

Revised Report

Tina Tomek For Teresa Meins, Inorganic Supervisor

Page 17 of 39

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

Reported:
 06/23/2022 16:00

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2D29020 - EPA 200.2 DCN 1017 Rev 10

Blank (2D29020-BLK1)

Antimony [He]	5/4/22 17:57	ND	0.00200	mg/L							
Arsenic [NG]	5/4/22 17:57	ND	0.00200	"							
Beryllium [He]	5/4/22 17:57	ND	0.00400	"							
Cadmium [He]	5/4/22 17:57	ND	0.00500	"							
Chromium [He]	5/4/22 17:57	ND	0.0100	"							
Cobalt [He]	5/4/22 17:57	ND	0.00100	"							
Lead [He]	5/4/22 17:57	ND	0.00100	"							
Molybdenum [He]	5/10/22 12:52	ND	0.00500	"							
Nickel [He]	5/4/22 17:57	ND	0.00100	"							
Selenium [NG]	5/4/22 17:57	ND	0.0500	"							
Thallium [He]	5/4/22 17:57	ND	0.00200	"							

LCS (2D29020-BS1)

Antimony [He]	5/4/22 18:02	0.104	0.00200	mg/L	0.100		104	85-115			
Arsenic [NG]	5/4/22 18:02	0.101	0.00200	"	0.100		101	85-115			
Beryllium [He]	5/4/22 18:02	0.096	0.00100	"	0.100		95.6	85-115			
Cadmium [He]	5/4/22 18:02	0.102	0.00100	"	0.100		102	85-115			
Chromium [He]	5/4/22 18:02	0.101	0.00100	"	0.100		101	85-115			
Cobalt [He]	5/4/22 18:02	0.103	0.00100	"	0.100		103	85-115			
Lead [He]	5/4/22 18:02	0.097	0.00100	"	0.100		96.9	85-115			
Molybdenum [He]	5/4/22 18:02	0.098	0.00100	"	0.100		98.2	85-115			
Nickel [He]	5/4/22 18:02	0.097	0.00100	"	0.100		96.8	85-115			
Selenium [NG]	5/4/22 18:02	0.104	0.00500	"	0.100		104	85-115			
Thallium [He]	5/4/22 18:02	0.100	0.00200	"	0.100		99.7	85-115			

LCS Dup (2D29020-BSD1)

Antimony [He]	5/4/22 18:08	0.105	0.00200	mg/L	0.100		105	85-115	0.179	20	
Arsenic [NG]	5/4/22 18:08	0.097	0.00200	"	0.100		96.9	85-115	4.23	20	
Beryllium [He]	5/4/22 18:08	0.096	0.00100	"	0.100		96.1	85-115	0.572	20	
Cadmium [He]	5/4/22 18:08	0.101	0.00100	"	0.100		101	85-115	1.03	20	
Chromium [He]	5/4/22 18:08	0.101	0.00100	"	0.100		101	85-115	0.699	20	
Cobalt [He]	5/4/22 18:08	0.103	0.00100	"	0.100		103	85-115	0.0408	20	
Lead [He]	5/4/22 18:08	0.097	0.00100	"	0.100		96.7	85-115	0.259	20	
Molybdenum [He]	5/4/22 18:08	0.097	0.00100	"	0.100		97.4	85-115	0.819	20	
Nickel [He]	5/4/22 18:08	0.098	0.00100	"	0.100		98.1	85-115	1.34	20	
Selenium [NG]	5/4/22 18:08	0.097	0.00500	"	0.100		97.1	85-115	6.63	20	
Thallium [He]	5/4/22 18:08	0.100	0.00200	"	0.100		99.8	85-115	0.0439	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

Reported:
 06/23/2022 16:00

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2D29020 - EPA 200.2 DCN 1017 Rev 10

Matrix Spike (2D29020-MS1)

Source: 2204531-07

Antimony [He]	5/4/22 20:11	0.108	0.00200	mg/L	0.100	ND	108	70-130			
Arsenic [NG]	5/4/22 20:11	0.095	0.00200	"	0.100	ND	95.0	70-130			
Beryllium [He]	5/4/22 20:11	0.096	0.00100	"	0.100	0.008	88.9	70-130			
Cadmium [He]	5/4/22 20:11	0.099	0.00100	"	0.100	0.0006	98.3	70-130			
Chromium [He]	5/4/22 20:11	0.097	0.00100	"	0.100	0.0002	96.9	70-130			
Cobalt [He]	5/4/22 20:11	0.217	0.00100	"	0.100	0.123	93.4	70-130			
Lead [He]	5/4/22 20:11	0.097	0.00100	"	0.100	0.003	93.8	70-130			
Molybdenum [He]	5/4/22 20:11	0.106	0.00100	"	0.100	0.0008	105	70-130			
Nickel [He]	5/4/22 20:11	0.117	0.00100	"	0.100	0.039	78.5	70-130			
Selenium [NG]	5/4/22 20:11	0.104	0.00500	"	0.100	0.008	95.6	70-130			
Thallium [He]	5/4/22 20:11	0.103	0.00200	"	0.100	ND	103	70-130			

Matrix Spike Dup (2D29020-MSD1)

Source: 2204531-07

Antimony [He]	5/4/22 20:17	0.106	0.00200	mg/L	0.100	ND	106	70-130	1.62	20	
Arsenic [NG]	5/4/22 20:17	0.092	0.00200	"	0.100	ND	92.4	70-130	2.70	20	
Beryllium [He]	5/4/22 20:17	0.094	0.00100	"	0.100	0.008	86.1	70-130	2.99	20	
Cadmium [He]	5/4/22 20:17	0.099	0.00100	"	0.100	0.0006	98.5	70-130	0.246	20	
Chromium [He]	5/4/22 20:17	0.098	0.00100	"	0.100	0.0002	97.9	70-130	0.959	20	
Cobalt [He]	5/4/22 20:17	0.219	0.00100	"	0.100	0.123	95.9	70-130	1.14	20	
Lead [He]	5/4/22 20:17	0.097	0.00100	"	0.100	0.003	94.0	70-130	0.229	20	
Molybdenum [He]	5/4/22 20:17	0.106	0.00100	"	0.100	0.0008	105	70-130	0.0762	20	
Nickel [He]	5/4/22 20:17	0.119	0.00100	"	0.100	0.039	79.9	70-130	1.20	20	
Selenium [NG]	5/4/22 20:17	0.102	0.00500	"	0.100	0.008	93.8	70-130	1.74	20	
Thallium [He]	5/4/22 20:17	0.104	0.00200	"	0.100	ND	104	70-130	0.855	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Micro-Methods Laboratory, Inc.

Revised Report

Tina Tomek For Teresa Meins, Inorganic Supervisor

Page 19 of 39

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported:
06/23/2022 16:00

Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum 237.312 [Radial]	C01,C02
Aluminum 394.401 [Radial]	C01,C02
Aluminum 396.152 [Radial]	C01,C02
Antimony 206.833 [Axial]	C01,C02
Arsenic 193.759 [Axial]	C01,C02
Barium 455.403 [Radial]	C01,C02
Barium 493.409 [Radial]	C01,C02
Beryllium 313.042 [Axial]	C01,C02
Boron 249.773 [Radial]	C01,C02
Cadmium 228.802 [Axial]	C01,C02
Calcium 315.887 [Radial]	C01,C02
Chromium 283.563 [Axial]	C01,C02
Cobalt 228.616 [Axial]	C01,C02
Copper 324.754 [Axial]	C01,C02
Iron 259.940 [Axial]	C01,C02
Iron 259.940 [Radial]	C01,C02
Lead 220.353 [Axial]	C01,C02
Lithium 610.362 [Axial]	C01,C02
Magnesium 285.213 [Radial]	C01,C02
Manganese 257.610 [Axial]	C01,C02
Molybdenum 202.030 [Axial]	C01,C02
Nickel 231.604 [Axial]	C01,C02
Potassium 766.490 [Radial]	C01,C02
Phosphorus 178.284 [Axial]	C01,C02
Phosphorus 178.284 [Radial]	C01,C02
Selenium 196.090 [Axial]	C01,C02
Silver 328.068 [Axial]	C01,C02
Sodium 589.592 [Axial]	C01,C02
Sodium 589.592 [Radial]	C01,C02
Strontium 346.446 [Radial]	C01,C02
Strontium 421.552 [Radial]	C01,C02
Thallium 190.856 [Axial]	C01,C02
Tin 189.989 [Axial]	C01,C02
Titanium 334.941 [Axial]	C01,C02
Vanadium 309.311 [Axial]	C01,C02
Zinc 213.856 [Axial]	C01,C02
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02

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Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

Reported:
 06/23/2022 16:00

Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [He]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

SM 2540 C-2015 in Water

Total Dissolved Solids	C01,C02
------------------------	---------

****Only compounds included in this list are associated with accredited analyses****

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: [none]
 Project Manager: Ken Ruckstuhl

 Reported:
 06/23/2022 16:00

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2022
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2022
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2022
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2022
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2023
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/12/2023
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	02/13/2023
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/09/2022
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	02/13/2023
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	01/29/2023
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	01/29/2023

Report Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verification Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369Project: Cooperative Energy CCR Semiannual
Project Number: [none]
Project Manager: Ken RuckstuhlReported:
06/23/2022 16:00**Analyst Initials Key**

<u>FullName</u>	<u>Initials</u>
Camie Bourne	CLB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Sarah E. Tomek	SET
Stella S Kleist	SSK
Teresa Meins	TKM
Tina Tomek	TPT

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID # MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab
WC #

2204531

Company Name: EMS			Project Manager: Ken Rockstaff		
Address: PO Box 15369			Purchase Order #:		
City: Hattiesburg	State: MS	Zip: 39404	Email Address: Rockstaff@ems-mt.com		
Phone: (601) 544-3674			Sampler Name Printed: Alan Niver		
Fax:			Sampler Name Signed: Alan Niver		

Project Name:	Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	List Analyses Requested						
					Grab (G) or Composite (C)	Chloride	Fluoride	Sulfate	TDS	Metals	Radium
Cooperative Energy CCR Semiannual	BD-1	4-27-02 9:00		4	G	X	X	X	X	X	X
	MW-5	4-27-02 10:15		4							
	MW-3	4-27-02 11:30		4							
	MW-4	4-26-02 15:15		3							
	MW-5	4-26-02 13:30		4							
	MW-6	4-26-02 12:15		4							
	MW-10	4-26-02 10:45		4							

Received on Ice <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Thermometer # 5	Cooler #	Receipt Temp Corrected (°C)
Date & Time	B/V: 8	Sample	Blank <input checked="" type="checkbox"/> Cooler

Printed Name	Signature	Company	Date	Time
Alan Niver	<i>[Signature]</i>	EMS	4-27-02	13:50
Shawn Torrell	<i>[Signature]</i>	MM	4-27-02	13:50
Relinquished by				
Received by				
Relinquished by				
Received by				
Relinquished by				
Received by				

Notes: Appendix 11, 14, statement of antimony, arsenic, barium, beryllium, calcium, cadmium, chromium, cobalt, lead, nickel, lithium, molybdenum, selenium, copper # 685 -0.1°C cooler # 1126 0.3°C			
--	--	--	--

Field Testing			
ID#	ID#	ID#	ID#
Field Test	Field Test	Field Test	Field Test
Matrix: W = Water, DW = Drinking Water, S = Solid, SO = Soil, SE = Sediment, L = Liquid, A = Air, O = Oil, SL = Sludge			
Preservation: 1 = H2SO4, 2 = H3PO4, 3 = NaOH, 4 = ZnCAH1006, 5 = ZnCAH1006 & NaOH, 6 = HNO3, 7 = Na2S2O3, 8 = HCl, 9 = NaHSO4			

Turn Around Time & Reporting	
<input checked="" type="checkbox"/> Normal <input type="checkbox"/> Next Day* <input type="checkbox"/> 2nd Day* <input type="checkbox"/> Other*	*All rush order requests must be prior approved. Phone _____ Mail _____ Fax _____ Email _____
QC Level: Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 <input type="checkbox"/>	

June 03, 2022

Tina Tomek
Micro-Methods Lab
6500 Sunplex Drive
Ocean Springs, MS 39564

RE: Project: 2204531
Pace Project No.: 30485367

Dear Tina Tomek:

Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



David A. Pichette
david.pichette@pacelabs.com
(724)850-5617
Project Manager

Enclosures

cc: Accounts Payable, Micro-Methods Lab



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 2204531

Pace Project No.: 30485367

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2204531
Pace Project No.: 30485367

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30485367001	2204531-01	Water	04/27/22 09:00	05/03/22 09:35
30485367002	2204531-02	Water	04/27/22 10:15	05/03/22 09:35
30485367003	2204531-03	Water	04/27/22 11:30	05/03/22 09:35
30485367004	2204531-04	Water	04/27/22 15:15	05/03/22 09:35
30485367005	2204531-05	Water	04/27/22 13:20	05/03/22 09:35
30485367006	2204531-06	Water	04/26/22 12:15	05/03/22 09:35
30485367007	2204531-07	Water	04/26/22 10:45	05/03/22 09:35

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2204531
Pace Project No.: 30485367

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30485367001	2204531-01	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367002	2204531-02	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367003	2204531-03	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367004	2204531-04	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367005	2204531-05	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367006	2204531-06	EPA 903.1	RPS	1
		EPA 904.0	JSM	1
30485367007	2204531-07	EPA 903.1	RPS	1
		EPA 904.0	JSM	1

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

Sample: 2204531-01		Lab ID: 30485367001	Collected: 04/27/22 09:00	Received: 05/03/22 09:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.182 ± 0.258 (0.438) C:NA T:85%	pCi/L	06/02/22 11:40	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.81 ± 0.586 (0.779) C:76% T:85%	pCi/L	05/19/22 15:55	15262-20-1	
Sample: 2204531-02		Lab ID: 30485367002	Collected: 04/27/22 10:15	Received: 05/03/22 09:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0691 ± 0.192 (0.372) C:NA T:86%	pCi/L	06/02/22 11:40	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.950 ± 0.412 (0.657) C:77% T:86%	pCi/L	05/19/22 15:55	15262-20-1	
Sample: 2204531-03		Lab ID: 30485367003	Collected: 04/27/22 11:30	Received: 05/03/22 09:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.0320 ± 0.208 (0.451) C:NA T:89%	pCi/L	06/02/22 11:40	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.42 ± 0.477 (0.648) C:81% T:89%	pCi/L	05/19/22 15:55	15262-20-1	
Sample: 2204531-04		Lab ID: 30485367004	Collected: 04/27/22 15:15	Received: 05/03/22 09:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.0336 ± 0.198 (0.441) C:NA T:88%	pCi/L	06/02/22 11:40	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.842 ± 0.439 (0.789) C:79% T:88%	pCi/L	05/19/22 15:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

Sample: 2204531-05		Lab ID: 30485367005	Collected: 04/27/22 13:20	Received: 05/03/22 09:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.0340 ± 0.155 (0.251) C:NA T:90%	pCi/L	06/02/22 11:40	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.504 ± 0.419 (0.828) C:81% T:90%	pCi/L	05/19/22 19:04	15262-20-1	
Sample: 2204531-06						
PWS:		Lab ID: 30485367006	Collected: 04/26/22 12:15	Received: 05/03/22 09:35	Matrix: Water	
		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.397 ± 0.273 (0.292) C:NA T:89%	pCi/L	06/02/22 13:01	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.396 ± 0.380 (0.775) C:66% T:89%	pCi/L	05/20/22 14:52	15262-20-1	
Sample: 2204531-07						
PWS:		Lab ID: 30485367007	Collected: 04/26/22 10:45	Received: 05/03/22 09:35	Matrix: Water	
		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.264 ± 0.198 (0.102) C:NA T:91%	pCi/L	06/02/22 13:01	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.899 ± 0.410 (0.675) C:74% T:91%	pCi/L	05/20/22 14:52	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

QC Batch:	503375	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30485367006, 30485367007

METHOD BLANK: 2437422 Matrix: Water

Associated Lab Samples: 30485367006, 30485367007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.390 ± 0.357 (0.722) C:70% T:90%	pCi/L	05/20/22 14:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

QC Batch:	503370	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	30485367001, 30485367002, 30485367003, 30485367004, 30485367005		

METHOD BLANK:	2437407	Matrix:	Water
Associated Lab Samples:	30485367001, 30485367002, 30485367003, 30485367004, 30485367005		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0383 ± 0.291 (0.575) C:NA T:82%	pCi/L	06/02/22 11:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

QC Batch:	503371	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 30485367001, 30485367002, 30485367003, 30485367004, 30485367005

METHOD BLANK:	2437409	Matrix:	Water
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Associated Lab Samples: 30485367001, 30485367002, 30485367003, 30485367004, 30485367005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.261 ± 0.286 (0.596) C:86% T:82%	pCi/L	05/19/22 15:55	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2204531
Pace Project No.: 30485367

QC Batch: 503373	Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1	Analysis Description: 903.1 Radium-226
	Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 30485367006, 30485367007

METHOD BLANK: 2437417 Matrix: Water

Associated Lab Samples: 30485367006, 30485367007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0996 ± 0.235 (0.435) C:NA T:90%	pCi/L	06/02/22 12:17	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2204531
Pace Project No.: 30485367

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical-7
1638 Roseytown Rd. Suites 2, 3, 4
Greensburg, PA 15601
Phone: (724) 850-5600
Fax: -

WO#: 30485367



Work Order: 2204531

Analysis	Due	Expires	Comments
Sample ID: 2204531-01 <i>Water</i> Sampled: 04/27/2022 09:00 Sample Name: BD-1 001			
Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/25/2022 09:00			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2204531-02 <i>Water</i> Sampled: 04/27/2022 10:15 Sample Name: MW-2 002			
Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/25/2022 10:15			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2204531-03 <i>Water</i> Sampled: 04/27/2022 11:30 Sample Name: MW-3 003			
Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/25/2022 11:30			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2204531-04 <i>Water</i> Sampled: 04/26/2022 15:15 Sample Name: MW-4 004			
Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/24/2022 15:15			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D) 1000mL Plastic w/HNO3 (E) 1000mL Plastic w/HNO3 (F)			
Sample ID: 2204531-05 <i>Water</i> Sampled: 04/26/2022 13:20 Sample Name: MW-5 005			
Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/24/2022 13:20			

Samah Jomeh 4/28/22 1630
Released By _____ Date _____
UPS
Released By _____ Date _____
Released By _____ Date _____
Released By _____ Date _____
Released By _____ Date _____

UPS 4/28/22 1630
Received By _____ Date _____
3/Alayn 5-3-22 9:35
Received By _____ Date _____
Received By _____ Date _____
Received By _____ Date _____
Received By _____ Date _____



MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER (Continued)

Work Order: 2204531 (Continued)

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

Sample ID: 2204531-06 *Water* **Sampled: 04/26/2022 12:15** **Sample Name: MW-6**

006

Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/24/2022 12:15

Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

Sample ID: 2204531-07 *Water* **Sampled: 04/26/2022 10:45** **Sample Name: MW-10**

007

Radium, Total 226 & 228 by EPA 903.1 & 90 05/05/2022 05/24/2022 10:45

Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

WO# : 30485367

PM: DAP

Due Date: 05/24/22

CLIENT: MICROMETHOD

Smah Jomich *4/28/22 @ 1630*
Released By _____ Date _____

UPS
Released By _____ Date _____

Released By _____ Date _____

Released By _____ Date _____

Released By _____ Date _____

UPS *4/28/22 @ 1630*
Received By _____ Date _____

3 Adhuzen *5-3-22 9:35*
Received By _____ Date _____

Received By _____ Date _____

Received By _____ Date _____

Received By _____ Date _____

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Micro-Methods

Project # _____

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z3530630368961280

Label 2a
LIMS Login VPInc

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>10D4611</u>	Date and Initials of person examining contents: <u>5-7-22 2a</u>
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.	
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.	
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.	
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	
-Pace Containers Used:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Containers Intact:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	11.	<u>Two BPIN received empty for cool - Two BPIN received full</u>
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.	
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.	
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.	
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.	
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.	<u>added 2.5 ml HNO3 to OOS (Two Bottles)</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Initial when completed <u>2a</u>	Date/time of preservation <u>5-7-22 10:46</u>
				Lot # of added preservative <u>DL22-0473</u>	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.	
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.	
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>2a</u>	Date: <u>5-7-22</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

PH: DAP
Due Date: 05/24/22
CLIENT: MICROMETHOD

MO#: 30485367



Pace Greensburg Lab -Sample Container Count

W0#: 30485367

Client: Micro-Methods Laboratory

PM: DAP Due Date: 05/24/22

Profile Number 14460

CLIENT: MICROMETHOD

Notes

Site 2204531

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1	BG2	BP1	BP1U	BP1S	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WG9U	WGKU	ZPLC
1	WT											2																	
2												2																	
3												2																	
4												2																	
5												2																	
6												2																	
7	WT											2																	
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass			DG9S
GJN	1 Gallon Jug with HNO3	40mL amber VOA vial H2SO4	
AG5U	100mL amber glass unpreserved	40mL clear VOA vial	
AG5T	100mL amber glass Na Thiosulfate	40mL clear VOA vial Na Thiosul	
GJN	1 Gallon Jug	40mL clear VOA vial HCl	
AG1S	1L amber glass H2SO4	4oz amber wide jar	
AG1H	1L amber glass HCl	4oz wide jar unpreserved	
AG1T	1L amber glass Na Thiosulfate	500mL clear glass unpreserved	
BG1U	1L clear glass unpreserved	500mL amber glass unpreserved	
AG3S	250mL amber glass H2SO4	8oz wide jar unpreserved	
AG3U	250mL amber glass unpreserved		

Plastic / Misc.			EZI
GCUB	1 Gallon Cubitainer	5g Encore	
12GN	1/2 Gallon Cubitainer	Kit for Volatile Solid	
SP5T	120mL Coliform Na Thiosulfate	Wipe/Swab	
BP1N	1L plastic HNO3	Ziploc Bag	
BP1U	1L plastic unpreserved		
BP3S	250mL plastic H2SO4	Water	
BP3N	250mL plastic HNO3	Solid	
BP3U	250mL plastic unpreserved	Non-aqueous liquid	
BP3C	250mL plastic NaOH	Wipe	
BP2S	500mL plastic H2SO4		
BP2U	500mL plastic unpreserved		



Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

November 08, 2022

Ken Ruckstuhl

Work Order # : 2209382

Environmental Management Services

PO Box 15369

Hattiesburg, MS 39404-5369

RE: Cooperative Energy CCR Semiannual

Purchase Order #:

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 09/23/2022 13:46. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director
Micro-Methods Laboratory, Inc.



DISCLAIMER

The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: SOU2-22-001
Project Manager: Ken Ruckstuhl

Reported:
11/08/2022 12:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
MW-2	2209382-01	Water	09/23/2022 11:00	Alan Niven	09/23/2022 13:46
MW-3	2209382-02	Water	09/23/2022 09:20	Alan Niven	09/23/2022 13:46
MW-4	2209382-03	Water	09/22/2022 15:15	Alan Niven	09/23/2022 13:46
MW-5	2209382-04	Water	09/22/2022 14:05	Alan Niven	09/23/2022 13:46
MW-6	2209382-05	Water	09/22/2022 12:45	Alan Niven	09/23/2022 13:46
MW-10	2209382-06	Water	09/22/2022 11:30	Alan Niven	09/23/2022 13:46
BD-1	2209382-07	Water	09/22/2022 12:00	Alan Niven	09/23/2022 13:46

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 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

Sample Receipt Conditions

Date/Time Received: 9/23/2022 1:46:00PM

Shipped by: Client Delivery

Received by: Sarah E. Tomek

Submitted by: Alan Niven

Date/Time Logged: 9/23/2022 2:33:00PM

Logged by: Sarah E. Tomek

Cooler ID: #1104

Receipt Temperature: 0.8 °C

<i>Cooler Custody Seals Present</i>	No	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		

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 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
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 Cooler ID: #1134

 Receipt Temperature: 1.4 °C

<i>Cooler Custody Seals Present</i>	No	<i>Received on Ice but Not Frozen</i>	Yes
<i>Containers Intact</i>	Yes	<i>No Ice, Short Trip</i>	No
<i>COC/Labels Agree</i>	Yes	<i>Obvious Contamination</i>	No
<i>Labels Complete</i>	Yes	<i>Rush to meet HT</i>	No
<i>COC Complete</i>	Yes	<i>Received within HT</i>	Yes
<i>Volatile Vial Headspace >6mm</i>	No	<i>Proper Containers for Analysis</i>	Yes
<i>Field Sheet/Instructions Included</i>	No	<i>Correct Preservation</i>	Yes
<i>Samples Rejected/Documented in Log</i>	No	<i>Adequate Sample for Analysis</i>	Yes
<i>Temp Taken From Temp Blank</i>	Yes	<i>Sample Custody Seals Present</i>	No
<i>Temp Taken From Sample Container</i>	No	<i>Samples Missing from COC/Cooler</i>	No
<i>Temp Taken From Cooler</i>	No		
<i>COC meets acceptance criteria</i>	Yes		



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Project: Cooperative Energy CCR Semiannual
Project Number: SOU2-22-001
Project Manager: Ken Ruckstuhl

Reported:
11/08/2022 12:31

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc. defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

See attached results from Sub-Contract Laboratory

Qualifiers: *No Data Qualification*

Analyte & Samples(s) Qualified: *None*

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 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

MW-2
2209382-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	0.52	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	565	1	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	

Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.025	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:09	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	0.863	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	56.6	0.250	"	5.0	"	CLV	"	09/28/2022 15:59	"	
Lithium 610.362 [Axial]	ND	0.040	"	1.0	"	CLV	"	09/28/2022 15:09	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:08	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0729	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	0.00234	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	

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 Project: Cooperative Energy CCR Semiannual
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 Reported:
 11/08/2022 12:31

MW-3
2209382-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	3253	3	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	

Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.042	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:20	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	7.38	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	416	1.00	"	20.0	"	CLV	"	09/28/2022 16:10	"	
Lithium 610.362 [Axial]	0.848	0.040	"	1.0	"	CLV	"	09/28/2022 15:20	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:27	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0249	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	0.00540	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	

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 Project: Cooperative Energy CCR Semiannual
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 Reported:
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MW-4
2209382-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	3167	3	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	

Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.039	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:23	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	9.32	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	417	1.00	"	20.0	"	CLV	"	09/28/2022 16:13	"	
Lithium 610.362 [Axial]	1.01	0.040	"	1.0	"	CLV	"	09/28/2022 15:23	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:33	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0378	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	0.00152	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	

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 Reported:
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MW-5
2209382-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Fluoride	ND	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	4130	3	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.061	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:27	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	12.7	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	588	1.00	"	20.0	"	CLV	"	09/28/2022 16:17	"	
Lithium 610.362 [Axial]	1.52	0.040	"	1.0	"	CLV	"	09/28/2022 15:27	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:40	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0109	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	ND	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	2.00	0.00500	"	5.0	"	GWG	"	09/30/2022 13:05	"	



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Reported:
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MW-6

2209382-05 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
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Classical Chemistry Parameters

Fluoride	ND	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	63	1	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	

Metals by EPA 200 Series Methods ICP-AES

Barium 455.403 [Radial]	0.116	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:30	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	0.055	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	2.19	0.050	"	"	"	CLV	"	"	"	
Lithium 610.362 [Axial]	ND	0.040	"	"	"	CLV	"	"	"	

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]

Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:46	EPA 200.8 Rev 5.4	
Cobalt [He]	0.00175	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	ND	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	

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 Reported:
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MW-10
2209382-06 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Fluoride	0.55	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	1245	1	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.024	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:34	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	4.16	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	81.3	0.250	"	5.0	"	CLV	"	09/28/2022 16:20	"	
Lithium 610.362 [Axial]	0.300	0.040	"	1.0	"	CLV	"	09/28/2022 15:34	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	0.00953	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:52	EPA 200.8 Rev 5.4	
Cobalt [He]	0.105	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	0.00313	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	

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 Reported:
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BD-1
2209382-07 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Fluoride	ND	0.50	mg/L	1.0	2128028	ASC	09/28/2022 09:11	09/28/2022 09:31	SM 4500-F C 2011	
Total Dissolved Solids	3140	3	"	"	2123013	DLW	09/23/2022 16:00	09/26/2022 00:00	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	0.043	0.010	mg/L	1.0	2127033	CLV	09/27/2022 12:30	09/28/2022 15:38	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	9.55	0.050	"	"	"	CLV	"	"	"	
Calcium 315.887 [Radial]	398	1.00	"	20.0	"	CLV	"	09/28/2022 16:24	"	
Lithium 610.362 [Axial]	0.884	0.040	"	1.0	"	CLV	"	09/28/2022 15:38	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Beryllium [He]	ND	0.00400	mg/L	1.0	2127032	GWG	"	09/30/2022 12:58	EPA 200.8 Rev 5.4	
Cobalt [He]	0.0363	0.00100	"	"	"	GWG	"	"	"	
Lead [He]	0.00142	0.00100	"	"	"	GWG	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	GWG	"	"	"	



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Reported:
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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2123013 - Default Prep GenChem											
Blank (2123013-BLK1)											
Total Dissolved Solids	9/26/22 0:00	ND	1	mg/L							
LCS (2123013-BS1)											
Total Dissolved Solids	9/26/22 0:00	114	1	mg/L	150		76.0	65-105			
LCS Dup (2123013-BSD1)											
Total Dissolved Solids	9/26/22 0:00	117	1	mg/L	150		78.0	65-105	2.60	15	
Duplicate (2123013-DUP1) Source: 2209335-01											
Total Dissolved Solids	9/26/22 0:00	450	1	mg/L		443			1.57	10	
Duplicate (2123013-DUP2) Source: 2209382-05											
Total Dissolved Solids	9/26/22 0:00	66	1	mg/L		63			4.65	10	
Batch 2128028 - Default Prep GenChem											
Blank (2128028-BLK1)											
Fluoride	9/28/22 9:31	ND	0.50	mg/L							
LCS (2128028-BS1)											
Fluoride	9/28/22 9:31	2.02	0.50	mg/L	2.00		101	83.3-107			
LCS Dup (2128028-BSD1)											
Fluoride	9/28/22 9:31	2.04	0.50	mg/L	2.00		102	83.3-107	0.985	30	
Duplicate (2128028-DUP1) Source: 2209382-01											
Fluoride	9/28/22 9:31	0.52	0.50	mg/L		0.52			0.768	20	



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Reported:
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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2128028 - Default Prep GenChem											
Matrix Spike (2128028-MS1)			Source: 2209382-01								
Fluoride	9/28/22 9:31	2.18	0.50	mg/L	2.00	0.52	82.9	79.3-113			
Matrix Spike Dup (2128028-MSD1)			Source: 2209382-01								
Fluoride	9/28/22 9:31	2.18	0.50	mg/L	2.00	0.52	82.9	79.3-113	0.00	30	



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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 2127033 - EPA 200.2 DCN 1017 Rev 10											
Blank (2127033-BLK1)											
Barium 455.403 [Radial]	9/28/22 14:47	ND	0.010	mg/L							
Barium 493.409 [Radial]	9/28/22 14:47	ND	0.010	"							
Boron 249.773 [Radial]	9/28/22 14:47	ND	0.050	"							
Calcium 315.887 [Radial]	9/28/22 14:47	ND	0.050	"							
Lithium 610.362 [Axial]	9/28/22 14:47	ND	0.040	"							
LCS (2127033-BS1)											
Barium 493.409 [Radial]	9/28/22 14:51	0.213	0.010	mg/L	0.200		106	85-115			
Barium 455.403 [Radial]	9/28/22 14:51	0.212	0.010	"	0.200		106	85-115			
Boron 249.773 [Radial]	9/28/22 14:51	0.214	0.050	"	0.200		107	85-115			
Calcium 315.887 [Radial]	9/28/22 14:51	0.199	0.050	"	0.200		99.3	85-115			
Lithium 610.362 [Axial]	9/28/22 14:51	0.201	0.040	"	0.200		100	85-115			
LCS Dup (2127033-BS1)											
Barium 493.409 [Radial]	9/28/22 14:54	0.211	0.010	mg/L	0.200		106	85-115	0.707	20	
Barium 455.403 [Radial]	9/28/22 14:54	0.210	0.010	"	0.200		105	85-115	0.942	20	
Boron 249.773 [Radial]	9/28/22 14:54	0.211	0.050	"	0.200		105	85-115	1.81	20	
Calcium 315.887 [Radial]	9/28/22 14:54	0.196	0.050	"	0.200		98.1	85-115	1.20	20	
Lithium 610.362 [Axial]	9/28/22 14:54	0.201	0.040	"	0.200		100	85-115	0.208	20	
Duplicate (2127033-DUP1) Source: 2209382-01											
Calcium 315.887 [Radial]	9/28/22 16:02	59.1	0.250	mg/L		56.6			4.40	20	
Matrix Spike (2127033-MS1) Source: 2209382-01											
Barium 455.403 [Radial]	9/28/22 15:12	0.238	0.010	mg/L	0.200	0.025	107	70-130			
Barium 493.409 [Radial]	9/28/22 15:12	0.237	0.010	"	0.200	0.021	108	70-130			
Boron 249.773 [Radial]	9/28/22 15:12	1.08	0.050	"	0.200	0.863	107	70-130			
Lithium 610.362 [Axial]	9/28/22 15:12	0.213	0.040	"	0.200	0.033	90.0	70-130			



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Project Number: SOU2-22-001
Project Manager: Ken Ruckstuhl

Reported:
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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2127033 - EPA 200.2 DCN 1017 Rev 10

Matrix Spike Dup (2127033-MSD1)

Source: 2209382-01

Barium 455.403 [Radial]	9/28/22 15:16	0.240	0.010	mg/L	0.200	0.025	107	70-130	0.730	20	
Barium 493.409 [Radial]	9/28/22 15:16	0.239	0.010	"	0.200	0.021	109	70-130	0.902	20	
Boron 249.773 [Radial]	9/28/22 15:16	1.09	0.050	"	0.200	0.863	112	70-130	1.02	20	
Lithium 610.362 [Axial]	9/28/22 15:16	0.202	0.040	"	0.200	0.033	84.4	70-130	5.45	20	



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: SOU2-22-001
Project Manager: Ken Ruckstuhl

Reported:
11/08/2022 12:31

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
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Batch 2127032 - EPA 200.2 DCN 1017 Rev 10

Blank (2127032-BLK1)

Antimony [He]	9/30/22 11:50	ND	0.00200	mg/L							
Arsenic [NG]	9/30/22 11:50	ND	0.00200	"							
Beryllium [He]	9/30/22 11:50	ND	0.00400	"							
Cadmium [He]	9/30/22 11:50	ND	0.00500	"							
Chromium [He]	9/30/22 11:50	ND	0.0100	"							
Cobalt [He]	9/30/22 11:50	ND	0.00100	"							
Lead [He]	9/30/22 11:50	ND	0.00100	"							
Molybdenum [He]	9/30/22 11:50	ND	0.00500	"							
Nickel [He]	9/30/22 11:50	ND	0.00100	"							
Selenium [NG]	9/30/22 11:50	ND	0.0500	"							

LCS (2127032-BS1)

Antimony [He]	9/30/22 11:56	0.105	0.00200	mg/L	0.100		105	85-115			
Arsenic [NG]	9/30/22 11:56	0.102	0.00200	"	0.100		102	85-115			
Beryllium [He]	9/30/22 11:56	0.105	0.00100	"	0.100		105	85-115			
Cadmium [He]	9/30/22 11:56	0.106	0.00100	"	0.100		106	85-115			
Chromium [He]	9/30/22 11:56	0.104	0.00100	"	0.100		104	85-115			
Cobalt [He]	9/30/22 11:56	0.105	0.00100	"	0.100		105	85-115			
Lead [He]	9/30/22 11:56	0.105	0.00100	"	0.100		105	85-115			
Molybdenum [He]	9/30/22 11:56	0.103	0.00100	"	0.100		103	85-115			
Nickel [He]	9/30/22 11:56	0.107	0.00100	"	0.100		107	85-115			
Selenium [NG]	9/30/22 11:56	0.104	0.00500	"	0.100		104	85-115			

LCS Dup (2127032-BSD1)

Antimony [He]	9/30/22 12:02	0.105	0.00200	mg/L	0.100		105	85-115	0.489	20	
Arsenic [NG]	9/30/22 12:02	0.100	0.00200	"	0.100		100	85-115	2.16	20	
Beryllium [He]	9/30/22 12:02	0.107	0.00100	"	0.100		107	85-115	1.86	20	
Cadmium [He]	9/30/22 12:02	0.104	0.00100	"	0.100		104	85-115	1.58	20	
Chromium [He]	9/30/22 12:02	0.103	0.00100	"	0.100		103	85-115	0.808	20	
Cobalt [He]	9/30/22 12:02	0.104	0.00100	"	0.100		104	85-115	1.48	20	
Lead [He]	9/30/22 12:02	0.103	0.00100	"	0.100		103	85-115	1.73	20	
Molybdenum [He]	9/30/22 12:02	0.103	0.00100	"	0.100		103	85-115	0.573	20	
Nickel [He]	9/30/22 12:02	0.106	0.00100	"	0.100		106	85-115	1.05	20	
Selenium [NG]	9/30/22 12:02	0.101	0.00500	"	0.100		101	85-115	3.26	20	

Environmental Management Services
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 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
---------	----------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------------

Batch 2127032 - EPA 200.2 DCN 1017 Rev 10

Matrix Spike (2127032-MS1)

Source: 2209382-01

Beryllium [He]	9/30/22 12:14	0.110	0.00100	mg/L	0.100	0.004	107	70-130			
Cobalt [He]	9/30/22 12:14	0.177	0.00100	"	0.100	0.073	104	70-130			
Lead [He]	9/30/22 12:14	0.105	0.00100	"	0.100	0.002	103	70-130			
Molybdenum [He]	9/30/22 12:14	0.107	0.00100	"	0.100	ND	107	70-130			

Matrix Spike (2127032-MS2)

Source: 2209383-01

Antimony [He]	9/30/22 12:14	0.107	0.00200	mg/L	0.100	ND	107	70-130			
Arsenic [NG]	9/30/22 12:14	0.100	0.00200	"	0.100	ND	99.9	70-130			
Beryllium [He]	9/30/22 12:14	0.110	0.00100	"	0.100	0.004	107	70-130			
Cadmium [He]	9/30/22 12:14	0.105	0.00100	"	0.100	0.0004	104	70-130			
Chromium [He]	9/30/22 12:14	0.101	0.00100	"	0.100	0.0006	101	70-130			
Lead [He]	9/30/22 12:14	0.105	0.00100	"	0.100	0.002	103	70-130			
Nickel [He]	9/30/22 12:14	0.127	0.00100	"	0.100	0.032	95.8	70-130			
Selenium [NG]	9/30/22 12:14	0.116	0.00500	"	0.100	0.015	101	70-130			

Matrix Spike Dup (2127032-MSD1)

Source: 2209382-01

Beryllium [He]	9/30/22 12:21	0.107	0.00100	mg/L	0.100	0.004	104	70-130	2.75	20	
Cobalt [He]	9/30/22 12:21	0.174	0.00100	"	0.100	0.073	101	70-130	1.48	20	
Lead [He]	9/30/22 12:21	0.102	0.00100	"	0.100	0.002	99.2	70-130	3.21	20	
Molybdenum [He]	9/30/22 12:21	0.104	0.00100	"	0.100	ND	104	70-130	2.90	20	

Matrix Spike Dup (2127032-MSD2)

Source: 2209383-01

Antimony [He]	9/30/22 12:21	0.104	0.00200	mg/L	0.100	ND	104	70-130	3.39	20	
Arsenic [NG]	9/30/22 12:21	0.096	0.00200	"	0.100	ND	95.9	70-130	4.13	20	
Beryllium [He]	9/30/22 12:21	0.107	0.00100	"	0.100	0.004	104	70-130	2.75	20	
Cadmium [He]	9/30/22 12:21	0.101	0.00100	"	0.100	0.0004	101	70-130	3.21	20	
Chromium [He]	9/30/22 12:21	0.099	0.00100	"	0.100	0.0006	98.2	70-130	2.62	20	
Lead [He]	9/30/22 12:21	0.102	0.00100	"	0.100	0.002	99.2	70-130	3.21	20	
Nickel [He]	9/30/22 12:21	0.123	0.00100	"	0.100	0.032	91.1	70-130	3.79	20	
Selenium [NG]	9/30/22 12:21	0.111	0.00500	"	0.100	0.015	96.6	70-130	4.22	20	

Environmental Management Services
 PO Box 15369
 Hattiesburg MS, 39404-5369

 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

Certified Analyses Included in this Report

Analyte	Certification Code
<i>EPA 200.7 Rev 4.4 in Water</i>	
Aluminum 394.401 [Radial]	C01,C02
Aluminum 396.152 [Radial]	C01,C02
Antimony 206.833 [Axial]	C01,C02
Arsenic 193.759 [Axial]	C01,C02
Barium 455.403 [Radial]	C01,C02
Barium 493.409 [Radial]	C01,C02
Beryllium 313.042 [Axial]	C01,C02
Boron 249.773 [Radial]	C01,C02
Cadmium 228.802 [Axial]	C01,C02
Calcium 315.887 [Radial]	C01,C02
Chromium 283.563 [Axial]	C01,C02
Cobalt 228.616 [Axial]	C01,C02
Copper 324.754 [Axial]	C01,C02
Iron 259.940 [Axial]	C01,C02
Iron 259.940 [Radial]	C01,C02
Lead 220.353 [Axial]	C01,C02
Lithium 610.362 [Axial]	C01,C02
Magnesium 285.213 [Radial]	C01,C02
Manganese 257.610 [Axial]	C01,C02
Molybdenum 202.030 [Axial]	C01,C02
Nickel 231.604 [Axial]	C01,C02
Potassium 766.490 [Radial]	C01,C02
Phosphorus 178.284 [Axial]	C01,C02
Phosphorus 178.284 [Radial]	C01,C02
Selenium 196.090 [Axial]	C01,C02
Silver 328.068 [Axial]	C01,C02
Sodium 589.592 [Axial]	C01,C02
Sodium 589.592 [Radial]	C01,C02
Strontium 346.446 [Radial]	C01,C02
Strontium 421.552 [Radial]	C01,C02
Thallium 190.856 [Axial]	C01,C02
Vanadium 309.311 [Axial]	C01,C02
Zinc 213.856 [Axial]	C01,C02
<i>EPA 200.8 Rev 5.4 in Water</i>	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [He]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02

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 Project: Cooperative Energy CCR Semiannual
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 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

****Only compounds included in this list are associated with accredited analyses****

Environmental Management Services
 PO Box 15369
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 Project: Cooperative Energy CCR Semiannual
 Project Number: SOU2-22-001
 Project Manager: Ken Ruckstuhl

 Reported:
 11/08/2022 12:31

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2022
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2022
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2022
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2022
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2023
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/12/2023
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	02/13/2023
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/09/2022
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	02/13/2023
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	01/29/2023
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	01/29/2023

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verification Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.



6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy CCR Semiannual
Project Number: SOU2-22-001
Project Manager: Ken Ruckstuhl

Reported:
11/08/2022 12:31

Analyst Initials Key

<u>FullName</u>	<u>Initials</u>
Alexandria S Calloway	ASC
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Garrett Givhan	GWG
Howard Mitch Spicer	HMS
Sarah E. Tomek	SET
Teresa Meins	TKM
Tina Tomek	TPT



2209382

Company Name: EMS		Project Manager: Ken Ruckstuhl	
Address: 7350 US Hwy 98		Purchase Order #: +	
City: Hattiesburg	State: MS	Zip: 39402	Email Address: kruckstuhl@env-mgt.com
Phone: 601 544 3674	Sampler Name Printed: Alan Niven		
Fax: 601 544 0504	Sampler Name Signed: Alan Niven		
Project Name: Cooperative Energy CCR Semiannual		List Analyses Requested	
Project #: SOU2-22-001		Preservative: Appendix III	
Sample Identification		Matrix Code	
MMW-2	9-23-22 11:00	W	2
MMW-3	9-23-22 9:30	W	4
MMW-4	9-23-22 15:15	W	2
MMW-5	9-23-22 14:05	W	2
MMW-6	9-23-22 18:45	W	2
MMW-10	9-23-22 11:30	W	2
BD-1	9-23-22 12:00	W	2
Received on Ice: Y N Thermometer # 5		Cooler # 5	
Date & Time 9-23-22		By: Alan Niven	
Printed Name Alan Niven		Signature Alan Niven	
Company EMS		Date 9-23-22	
Time 13:46		Blank X Cooler 5	
Notes: See Work Order: COBOL # 1134 1.4%		QC Level: Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 <input type="checkbox"/>	
Semiannual Appendix IV - barium, beryllium, cobalt, lead, lithium, molybdenum, radium		Turn Around Time & Reporting	
226/228		Our normal turn around time is 10 working days	
		xNormal <input type="checkbox"/> All rush order requests must be prior approved.	
		Next Day* <input type="checkbox"/> Phone <input type="checkbox"/> Mail <input type="checkbox"/> Fax <input type="checkbox"/> Email <input type="checkbox"/>	
		2nd Day* <input type="checkbox"/> Phone <input type="checkbox"/> Mail <input type="checkbox"/> Fax <input type="checkbox"/> Email <input type="checkbox"/>	
		Other* <input type="checkbox"/> Phone <input type="checkbox"/> Mail <input type="checkbox"/> Fax <input type="checkbox"/> Email <input type="checkbox"/>	

October 07, 2022

Tina Tomek
Micro Methods Laboratory, Inc.
P. O. Box 1410
Ocean Springs, MS 39566

RE: Project: 2209382
Pace Project No.: 20257194

Dear Tina Tomek:

Enclosed are the analytical results for sample(s) received by the laboratory on September 30, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Gulf Coast

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Karen Brown
karen.brown@pacelabs.com
(504)469-0333
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2209382
Pace Project No.: 20257194

Pace Analytical Gulf Coast

7979 Innovation Park Drive, Baton Rouge, LA 70820

Arkansas Certification #: 88-0655

DoD ELAP Certification #: 6429-01

Florida Certification #: E87854

Illinois Certification #: 004585

Kansas Certification #: E-10354

Louisiana/LELAP Certification #: 01955

North Carolina Certification #: 618

North Dakota Certification #: R-195

Oklahoma Certification #: 2019-101

South Carolina Certification #: 73006001

Texas Certification #: T104704178-19-11

USDA Soil Permit # P330-19-00209

Virginia Certification #: 460215

Washington Certification #: C929

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2209382
Pace Project No.: 20257194

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20257194001	2209382-01	Water	09/23/22 11:00	09/30/22 10:30
20257194002	2209382-02	Water	09/23/22 09:20	09/30/22 10:30
20257194003	2209382-03	Water	09/22/22 15:15	09/30/22 10:30
20257194004	2209382-04	Water	09/22/22 14:05	09/30/22 10:30
20257194005	2209382-05	Water	09/22/22 12:45	09/30/22 10:30
20257194006	2209382-06	Water	09/22/22 11:30	09/30/22 10:30
20257194007	2209382-07	Water	09/22/22 12:00	09/30/22 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2209382
Pace Project No.: 20257194

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
20257194001	2209382-01	EPA 9056	KEG	2	PASI-GCLA
20257194002	2209382-02	EPA 9056	KEG	2	PASI-GCLA
20257194003	2209382-03	EPA 9056	KEG	2	PASI-GCLA
20257194004	2209382-04	EPA 9056	KEG	2	PASI-GCLA
20257194005	2209382-05	EPA 9056	KEG	2	PASI-GCLA
20257194006	2209382-06	EPA 9056	KEG	2	PASI-GCLA
20257194007	2209382-07	EPA 9056	KEG	2	PASI-GCLA

PASI-GCLA = Pace Analytical Gulf Coast

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2209382
Pace Project No.: 20257194

Method: EPA 9056
Description: EPA 9056A
Client: Micro Methods
Date: October 07, 2022

General Information:

7 samples were analyzed for EPA 9056 by Pace Analytical Gulf Coast. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2209382
Pace Project No.: 20257194

Sample: 2209382-01		Lab ID: 20257194001		Collected: 09/23/22 11:00		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	103	mg/L	10.0	2.50	50		10/04/22 11:41	16887-00-6	
Sulfate	274	mg/L	10.0	5.00	50		10/04/22 11:41	14808-79-8	
Sample: 2209382-02		Lab ID: 20257194002		Collected: 09/23/22 09:20		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	137	mg/L	4.00	1.00	20		10/04/22 12:33	16887-00-6	
Sulfate	1640	mg/L	100	50.0	500		10/04/22 12:16	14808-79-8	
Sample: 2209382-03		Lab ID: 20257194003		Collected: 09/22/22 15:15		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	125	mg/L	4.00	1.00	20		10/04/22 13:08	16887-00-6	
Sulfate	1670	mg/L	100	50.0	500		10/04/22 12:50	14808-79-8	
Sample: 2209382-04		Lab ID: 20257194004		Collected: 09/22/22 14:05		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	175	mg/L	4.00	1.00	20		10/04/22 13:42	16887-00-6	
Sulfate	1770	mg/L	100	50.0	500		10/04/22 13:25	14808-79-8	
Sample: 2209382-05		Lab ID: 20257194005		Collected: 09/22/22 12:45		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	7.75	mg/L	0.200	0.050	1		10/03/22 18:42	16887-00-6	
Sulfate	12.1	mg/L	0.400	0.200	2		10/04/22 14:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2209382
Pace Project No.: 20257194

Sample: 2209382-06		Lab ID: 20257194006		Collected: 09/22/22 11:30		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	169	mg/L	4.00	1.00	20		10/04/22 15:27	16887-00-6	
Sulfate	449	mg/L	20.0	10.0	100		10/04/22 15:09	14808-79-8	

Sample: 2209382-07		Lab ID: 20257194007		Collected: 09/22/22 12:00		Received: 09/30/22 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
EPA 9056A		Analytical Method: EPA 9056 Pace Analytical Gulf Coast							
Chloride	125	mg/L	4.00	1.00	20		10/04/22 16:01	16887-00-6	
Sulfate	1640	mg/L	100	50.0	500		10/04/22 15:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2209382
Pace Project No.: 20257194

QC Batch:	751019	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	EPA 9056A IC Anions Water
		Laboratory:	Pace Analytical Gulf Coast

Associated Lab Samples: 20257194005

METHOD BLANK: 2402931 Matrix: Water

Associated Lab Samples: 20257194005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	0.200	0.050	10/03/22 10:36	

LABORATORY CONTROL SAMPLE & LCSD: 2402932

Parameter	Units	2402933								Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD			
Chloride	mg/L	2.5	2.29	2.30	92	92	80-120	0	15		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Date: 10/07/2022 09:42 AM

QUALITY CONTROL DATA

Project: 2209382

Pace Project No.: 20257194

QC Batch: 751113

Analysis Method: EPA 9056

QC Batch Method: EPA 9056

Analysis Description: EPA 9056A IC Anions Water

Laboratory: Pace Analytical Gulf Coast

Associated Lab Samples: 20257194001, 20257194002, 20257194003, 20257194004, 20257194005, 20257194006, 20257194007

METHOD BLANK: 2403330

Matrix: Water

Associated Lab Samples: 20257194001, 20257194002, 20257194003, 20257194004, 20257194005, 20257194006, 20257194007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	0.200	0.050	10/04/22 10:58	
Sulfate	mg/L	ND	0.200	0.100	10/04/22 10:58	

LABORATORY CONTROL SAMPLE & LCSD: 2403331

2403332

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Chloride	mg/L	2.5	2.26	2.26	91	90	80-120	0	15	
Sulfate	mg/L	2.5	2.40	2.41	96	97	80-120	0	15	

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Date: 10/07/2022 09:42 AM

Page 9 of 14
Page 32 of 50

QUALIFIERS

Project: 2209382
Pace Project No.: 20257194

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2209382
Pace Project No.: 20257194

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20257194001	2209382-01	EPA 9056	751113		
20257194002	2209382-02	EPA 9056	751113		
20257194003	2209382-03	EPA 9056	751113		
20257194004	2209382-04	EPA 9056	751113		
20257194005	2209382-05	EPA 9056	751019		
20257194005	2209382-05	EPA 9056	751113		
20257194006	2209382-06	EPA 9056	751113		
20257194007	2209382-07	EPA 9056	751113		

REPORT OF LABORATORY ANALYSIS

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W0#: 20257194



20257194

CONTRACT
ORDER

4613/22

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
Phone: -
Fax: -

Work Order: 2209382

* need 7 day TAT

Analysis	Due	Expires	Comments
Sample ID: 2209382-01 Water Sampled: 09/23/2022 11:00 Sample Name: MW-2			
Anions by IC SM 4110B 2011	10/03/2022	10/21/2022 11:00	Sulfate, Chloride
<i>Containers Supplied:</i> 125mL Plastic (E)			
Sample ID: 2209382-02 Water Sampled: 09/23/2022 09:20 Sample Name: MW-3			
Anions by IC SM 4110B 2011	10/03/2022	10/21/2022 09:20	Sulfate, Chloride
<i>Containers Supplied:</i> 125mL Plastic (I)			
Sample ID: 2209382-03 Water Sampled: 09/22/2022 15:15 Sample Name: MW-4			
Anions by IC SM 4110B 2011	10/03/2022	10/20/2022 15:15	Sulfate, Chloride
<i>Containers Supplied:</i> 125mL Plastic (E)			
Sample ID: 2209382-04 Water Sampled: 09/22/2022 14:05 Sample Name: MW-5			
Anions by IC SM 4110B 2011	10/03/2022	10/20/2022 14:05	Sulfate, Chloride
<i>Containers Supplied:</i> 125mL Plastic (E)			
Sample ID: 2209382-05 Water Sampled: 09/22/2022 12:45 Sample Name: MW-6			
Anions by IC SM 4110B 2011	10/03/2022	10/20/2022 12:45	Sulfate, Chloride

Released By Smah Jomeh Date 9/29/22 1630
Released By UPS Date 9/30/22 10:30
Released By _____ Date _____
Released By _____ Date _____
Released By _____ Date _____

Received By UPS Date 9/29/22 1630
Received By Anty Pace Date 9/30/22 10:30
Received By _____ Date _____
Received By _____ Date _____
Received By _____ Date _____

Temp 1.8°C



Work Order: 2209382 (Continued)

Analysis	Due	Expires	Comments
----------	-----	---------	----------

Containers Supplied:

125mL Plastic (E)

Sample ID: 2209382-06 *Water* **Sampled: 09/22/2022 11:30** **Sample Name: MW-10**

Anions by IC SM 4110B 2011

8 10/03/2022 10/20/2022 11:30 Sulfate, Chloride

Containers Supplied:

125mL Plastic (E)

Sample ID: 2209382-07 *Water* **Sampled: 09/22/2022 12:00** **Sample Name: BD-1**

Anions by IC SM 4110B 2011

8 10/03/2022 10/20/2022 12:00 Sulfate, Chloride

Containers Supplied:

125mL Plastic (E)

Smah Jomeh 9/29/22 1630
Released By Date

LPS 9/30/22 10:30
Released By Date

Released By Date

Released By Date

Released By Date

LPS 9/29/22 1630
Received By Date

Andy Pace 9/30/22 10:30
Received By Date

Received By Date

Received By Date

Received By Date

WO#: 20257194

PM: KHB

Due Date: 10/11/22

CLIENT: 20-MICRO



1000 Riverbend Blvd., Suite F
St. Rose, LA 70087

Project

Courier: ☐ Pace Courier ☐ Hired Courier ☐ Fed X ☒ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: ☒ YES ☐ NO Custody Seals intact: ☒ YES ☐ NO

Samples on ice: ☒ YES ☐ NO

Type of Ice: Wet Blue None

Date and initials of person examining contents: KHB

Temp should be $\leq 6^{\circ}\text{C}$ *Temp must be measured from Temperature blank when present

Cooler #1 Thermometer Used: 10 Cooler Temp $^{\circ}\text{C}$: (Observed) 1.8 (CF) 6 (Actual) 1.8
Cooler #2 Thermometer Used: _____ Cooler Temp $^{\circ}\text{C}$: (Observed) _____ (CF) _____ (Actual) _____
Cooler #3 Thermometer Used: _____ Cooler Temp $^{\circ}\text{C}$: (Observed) _____ (CF) _____ (Actual) _____
Cooler #4 Thermometer Used: _____ Cooler Temp $^{\circ}\text{C}$: (Observed) _____ (CF) _____ (Actual) _____

Tracking #: _____

Temperature Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Complete:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Filtered vol. Rec. for Diss. tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers received within manufacture's precautionary and/or expiration dates.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	If No, was preservative added? <input type="checkbox"/> Yes <input type="checkbox"/> No If added record lot #.: _____
All containers preservation checked found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	HNO ₃ _____ H ₂ SO ₄ _____ Date: _____ Time: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Client Notification/ Resolution:

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

October 14, 2022

Tina Tomek
Micro-Methods Lab
6500 Sunplex Drive
Ocean Springs, MS 39564

RE: Project: 2209382
Pace Project No.: 30526156

Dear Tina Tomek:

Enclosed are the analytical results for sample(s) received by the laboratory on September 29, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



David A. Pichette
david.pichette@pacelabs.com
(724)850-5617
Project Manager

Enclosures

cc: Accounts Payable, Micro-Methods Lab



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2209382

Pace Project No.: 30526156

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2209382
Pace Project No.: 30526156

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30526156001	2209382-01	Water	09/23/22 11:00	09/29/22 09:55
30526156002	2209382-02	Water	09/23/22 09:20	09/29/22 09:55
30526156003	2209382-03	Water	09/22/22 15:15	09/29/22 09:55
30526156004	2209382-04	Water	09/22/22 14:05	09/29/22 09:55
30526156005	2209382-05	Water	09/22/22 12:45	09/29/22 09:55
30526156006	2209382-06	Water	09/22/22 11:30	09/29/22 09:55
30526156007	2209382-07	Water	09/22/22 12:00	09/29/22 09:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2209382
Pace Project No.: 30526156

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30526156001	2209382-01	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156002	2209382-02	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156003	2209382-03	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156004	2209382-04	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156005	2209382-05	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156006	2209382-06	EPA 903.1	GDH	1
		EPA 904.0	VAL	1
30526156007	2209382-07	EPA 903.1	GDH	1
		EPA 904.0	VAL	1

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2209382
Pace Project No.: 30526156

Sample: 2209382-01		Lab ID: 30526156001	Collected: 09/23/22 11:00	Received: 09/29/22 09:55	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	10/10/22 15:35	13982-63-3
	EPA 903.1	0.0709 ± 0.368 (0.763)				
	C:NA T:95%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	10/13/22 12:20	15262-20-1
	EPA 904.0	1.21 ± 0.498 (0.773)				
	C:63% T:89%					
Sample: 2209382-02		Lab ID: 30526156002	Collected: 09/23/22 09:20	Received: 09/29/22 09:55	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	10/10/22 15:35	13982-63-3
	EPA 903.1	0.335 ± 0.476 (0.806)				
	C:NA T:92%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	10/13/22 12:20	15262-20-1
	EPA 904.0	2.79 ± 0.728 (0.664)				
	C:66% T:91%					
Sample: 2209382-03		Lab ID: 30526156003	Collected: 09/22/22 15:15	Received: 09/29/22 09:55	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	10/10/22 15:35	13982-63-3
	EPA 903.1	0.445 ± 0.517 (0.834)				
	C:NA T:97%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	10/13/22 12:24	15262-20-1
	EPA 904.0	1.49 ± 0.505 (0.675)				
	C:74% T:87%					
Sample: 2209382-04		Lab ID: 30526156004	Collected: 09/22/22 14:05	Received: 09/29/22 09:55	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No. Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	10/10/22 15:35	13982-63-3
	EPA 903.1	0.0746 ± 0.527 (1.05)				
	C:NA T:90%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	10/13/22 12:21	15262-20-1
	EPA 904.0	1.25 ± 0.527 (0.858)				
	C:67% T:88%					

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2209382
Pace Project No.: 30526156

Sample: 2209382-05		Lab ID: 30526156005	Collected: 09/22/22 12:45	Received: 09/29/22 09:55	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.287 ± 0.527 (0.941) C:NA T:96%		pCi/L	10/10/22 15:35	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	1.39 ± 0.496 (0.715) C:73% T:89%		pCi/L	10/13/22 12:22	15262-20-1	

Sample: 2209382-06		Lab ID: 30526156006	Collected: 09/22/22 11:30	Received: 09/29/22 09:55	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	0.0692 ± 0.316 (0.643) C:NA T:92%		pCi/L	10/10/22 15:35	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	2.28 ± 0.641 (0.704) C:74% T:85%		pCi/L	10/13/22 12:22	15262-20-1	

Sample: 2209382-07		Lab ID: 30526156007	Collected: 09/22/22 12:00	Received: 09/29/22 09:55	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg							
Radium-226	EPA 903.1	-0.0649 ± 0.296 (0.603) C:NA T:96%		pCi/L	10/10/22 15:35	13982-63-3	
Pace Analytical Services - Greensburg							
Radium-228	EPA 904.0	0.782 ± 0.436 (0.804) C:75% T:89%		pCi/L	10/13/22 12:22	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2209382
Pace Project No.: 30526156

QC Batch:	536948	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	30526156001, 30526156002, 30526156003, 30526156004, 30526156005, 30526156006, 30526156007		
METHOD BLANK:	2605303	Matrix:	Water
Associated Lab Samples:	30526156001, 30526156002, 30526156003, 30526156004, 30526156005, 30526156006, 30526156007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.648 ± 0.413 (0.782) C:71% T:88%	pCi/L	10/13/22 12:20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2209382
Pace Project No.: 30526156

QC Batch:	536947	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	30526156001, 30526156002, 30526156003, 30526156004, 30526156005, 30526156006, 30526156007		
METHOD BLANK:	2605300	Matrix:	Water
Associated Lab Samples:	30526156001, 30526156002, 30526156003, 30526156004, 30526156005, 30526156006, 30526156007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.116 ± 0.321 (0.623) C:NA T:90%	pCi/L	10/10/22 15:35	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2209382
Pace Project No.: 30526156

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical-7
1638 Roseytown Rd. Suites 2, 3, 4
Greensburg, PA 15601
Phone: (724) 850-5600
Fax: -

WO# : 30526156



Work Order: 2209382

Analysis	Due	Expires	Comments
Sample ID: 2209382-01 <i>Water</i> Sampled: 09/23/2022 11:00 Sample Name: MW-2 001			
Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/21/2022 11:00			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2209382-02 <i>Water</i> Sampled: 09/23/2022 09:20 Sample Name: MW-3 002			
Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/21/2022 09:20			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D) 1000mL Plastic w/HNO3 (E) 1000mL Plastic w/HNO3 (F)			
Sample ID: 2209382-03 <i>Water</i> Sampled: 09/22/2022 15:15 Sample Name: MW-4 003			
Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/20/2022 15:15			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2209382-04 <i>Water</i> Sampled: 09/22/2022 14:05 Sample Name: MW-5 004			
Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/20/2022 14:05			
<i>Containers Supplied:</i> 1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)			
Sample ID: 2209382-05 <i>Water</i> Sampled: 09/22/2022 12:45 Sample Name: MW-6 005			
Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/20/2022 12:45			

Snah Jomeh 9/26/22 @ 1630
Released By _____ Date _____
UPS
Released By _____ Date _____
Released By _____ Date _____
Released By _____ Date _____
Released By _____ Date _____

UPS 9/26/22 @ 1630
Received By _____ Date _____
3. Anderson 9-29-22 9:55
Received By _____ Date _____
Received By _____ Date _____
Received By _____ Date _____
Received By _____ Date _____



MICRO-METHODS

LABORATORY, INC.

SUBCONTRACT ORDER (Continued)

Work Order: 2209382 (Continued)

Analysis	Due	Expires	Comments
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Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

Sample ID: 2209382-06 *Water* **Sampled: 09/22/2022 11:30** **Sample Name: MW-10**

006

Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/20/2022 11:30

Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

Sample ID: 2209382-07 *Water* **Sampled: 09/22/2022 12:00** **Sample Name: BD-1**

007

Radium, Total 226 & 228 by EPA 903.1 & 90 10/03/2022 10/20/2022 12:00

Containers Supplied:

1000mL Plastic w/HNO3 (C) 1000mL Plastic w/HNO3 (D)

WO#: 30526156

PM: DAP

Due Date: 10/20/22

CLIENT: MICROMETHOD

Released By

Date

Released By

Date

Released By

Date

Released By

Date

Released By

Date

Received By

Date

Received By

Date

Received By

Date

Received By

Date

Received By

Date

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Micro-Methods

Project # _____

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 353 063 03 6882 0628

Label <u>2a</u>
LIMS Login <u>UP Inc</u>

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature _____ Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# <u>10D0421</u>	Date and Initials of person examining contents: <u>9-30-22 2a</u>
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	
Sampler Name & Signature on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.	
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	
-Includes date/time/ID Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.	
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.	
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	
-Pace Containers Used:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.	
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.	
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.	
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.	
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.	
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.	<u>Added 2.5 mL HNO3 to samples 004</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Initial when completed <u>2a</u>	Date/time of preservation <u>9-30-22 11:25</u>
				Lot # of added preservative <u>DL22-1111</u>	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.	
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.	
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>2a</u>	Date: <u>9-30-22</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

W0# : 30526156
 PM: DAP Due Date: 10/20/22
 CLIENT: MICROMETHOD

Pace Greensburg Lab -Sample Container Count

W0# : 30526156

PM: DAP Due Date: 10/20/22
CLIENT: MICROMETHOD

Profile Number

Notes

Client

Site

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGCU	ZPLC
1	WT																									
2																										
3																										
4																										
5																										
6																										
7	WT																									
8																										
9																										
10																										
11																										
12																										

Container Codes

Glass	
AG1S	1L amber glass H2SO4
AG1H	1L amber glass HCl
AG1T	1L amber glass Na Thiosulfate
BG1U	1L clear glass unpreserved
AG3S	250mL amber glass H2SO4
AG3U	250mL amber glass unpreserved
DG9S	40mL amber VOA vial H2SO4
VG9U	40mL clear VOA vial
VG9T	40mL clear VOA vial Na Thiosulfate
VG9H	40mL clear VOA vial HCl
JGFU	4oz amber wide jar
WGCU	4oz wide jar unpreserved
BG2U	500mL clear glass unpreserved
AG2U	500mL amber glass unpreserved
WGKU	8oz wide jar unpreserved

Plastic / Misc.	
GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250mL plastic NaOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved
EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag
WT	Water
SL	Solid
OL	Non-aqueous liquid
WIP	Wipe

Site COEN Well Number MW-02
 Collector/Operator A. Niven

Evacuation date/time 2-8-22 13:46 Sampling date/time 2-8-22 14:45
 Method of evacuation Peristaltic pump Method of sampling Low flow
 Top of casing to water 8.11 Gallons per well volume 2.0 gal
 Top of casing to bottom 22.40 Total gallons evacuated 2.0 gal
 Water level after evac 8.12

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
13:54	16.7	0.60	1443	4.22	178.4	61.53	Tan
13:59	16.7	0.38	1332	4.27	181.7	34.42	
14:04	16.6	0.33	1176	4.59	190.4	50.18	
14:09	16.6	0.35	1016	4.89	206.8	31.58	Dark particles
14:14	16.7	0.36	948	5.00	229.9	77.80	
14:24	16.9	0.32	933	5.01	260.3	82.34	
14:29	16.8	0.31	927	5.01	269.4	21.09	light tan
14:34	16.6	0.29	921	4.99	279.1	9.86	
14:39	16.7	0.28	917	4.97	285.5	9.28	

General Information

Weather Condition: Sunny clear cool

Sample Characteristics:

Containers/Amounts (2) 1L for Radiological (1) 500mL for Metals (1) 250mL for Floride

Recommend/Observations first purge water tan alot of solids

Sampler/Collector Alan Niven

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-3
 Collector/Operator A. Niven

Evacuation date/time 2-8-22 11:50 Monitoring Well Information
 Method of evacuation Peristaltic pump Sampling date/time 2-8-22 12:45
 Top of casing to water 4.69 Method of sampling Low Flow
 Top of casing to bottom 17.70 Gallons per well volume
 Water level after evac 4.86 Total gallons evacuated 2.25991

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
12:03	18.1	0.43	3172	5.38	185.8	99.87	Tan
12:10	18.0	0.38	3177	5.36	183.3	60.12	light tan orange particles
12:16	18.4	0.30	3177	5.32	174.4	31.69	
12:21	18.4	0.25	3171	5.32	163.5	25.74	
12:26	18.0	0.23	3185	5.31	156.1	22.48	
12:31	18.2	0.21	3180	5.33	147.0	18.69	
12:36	18.2	0.20	3169	5.29	141.3	16.14	
12:41	18.4	0.19	3165	5.29	135.4	12.52	

General Information

Weather Condition: Sunny cool

Sample Characteristics:

Containers/Amounts (4) L for Radio logical (2) 500mL for Metals (2) 250mL for floride
Blind duplicate < BD-7 2-7-22 16:00

Recommend/Observations water brown orange first purge water

Sampler/Collector Alan Niven

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-4
 Collector/Operator A. Niven

Evacuation date/time 2-7-22 14:30 Monitoring Well Information
 Method of evacuation Peristaltic pump Sampling date/time 2-7-22 15:15
 Top of casing to water 7.78 Method of sampling Low Flow
 Top of casing to bottom 22.71 Gallons per well volume
 Water level after evac 7.87 Total gallons evacuated 1.5 gal

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
14:42	15.8	2.51	3076	5.18	204.1	6.20	Clear
14:47	15.9	2.10	3068	5.17	215.7	6.37	
14:52	15.7	1.87	3062	5.16	224.6	5.22	
14:57	15.7	1.83	3065	5.16	226.0	4.99	
15:02	15.9	1.73	3057	5.15	227.1	5.06	
15:07	16.1	1.55	3053	5.13	231.6	5.84	
15:12	15.9	1.47	3063	5.12	233.6	6.19	

General Information

Weather Condition: cloudy

Sample Characteristics:

Containers/Amounts (4) 1L for Radiological (2) 500mL for Metal (2) 250mL for fluoride

Recommend/Observations

Sampler/Collector Alan Niven

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-05
 Collector/Operator A. Niven

Evacuation date/time 2-7-22 13:08 Sampling date/time 2-7-22 14:00
 Method of evacuation Peristaltic pump Method of sampling Low Flow
 Top of casing to water 5.60 Gallons per well volume 1.75 gal
 Top of casing to bottom 20.03 Total gallons evacuated 1.75 gal
 Water level after evac 5.64

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
13:21	17.3	1.22	3941	6.60	198.4	10.89	clear orange particles
13:25	17.5	0.46	3980	6.61	189.0	10.78	
13:29	17.4	0.29	4040	6.60	182.2	9.87	
13:33	17.3	0.26	4067	6.59	178.3	7.29	
13:37	17.3	0.22	4103	6.58	172.8	7.95	
13:41	17.5	0.19	4135	6.57	167.3	9.73	
13:45	17.5	0.18	4169	6.57	162.4	5.63	
13:49	17.3	0.16	4192	6.56	157.6	3.11	
13:54	17.2	0.14	4217	6.55	152.4	2.88	

Weather Condition: Partly cloudy General Information

Sample Characteristics:

Containers/Amounts (2) 1L for Radiological (1) 500mL for Metal (1) 250mL for Arsenic

Recommend/Observations

Sampler/Collector Alan Niven

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-6
 Collector/Operator A. Niven

Evacuation date/time 2-7-22 11:40 Sampling date/time 2-7-22 12:30
 Method of evacuation Peristaltic pump Method of sampling Low flow
 Top of casing to water 3.38 Gallons per well volume 1.25 gal
 Top of casing to bottom 17.74 Total gallons evacuated 1.25 gal
 Water level after evac 3.65

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
11:54	13.0	6.45	79.7	5.33	210.6	7.48	Clear
11:58	13.4	6.18	74.7	5.31	211.4	7.41	
12:02	12.7	6.14	74.2	5.30	218.1	6.17	
12:06	13.2	5.94	73.5	5.28	214.9	6.50	
12:10	12.7	5.83	73.8	5.27	216.1	5.97	
12:14	12.9	5.61	73.2	5.24	217.9	4.53	
12:18	12.9	5.52	73.9	5.24	219.8	4.48	
12:22	12.6	5.41	73.2	5.22	220.8	4.22	
12:26	13.1	5.22	73.0	5.21	222.1	4.72	

Weather Condition: Overcast + cool windy General Information

Sample Characteristics:

Containers/Amounts (2) 1L for Radiological (1) 500 mL for Metals (1) 250 mL for Fluoride

Recommend/Observations

Sampler/Collector Alan Mor
 Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.16455	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-10

Collector/Operator A. Niven

Evacuation date/time 2-7-22 10:25 Sampling date/time 2-7-22 11:15
 Method of evacuation Peristaltic pump Method of sampling Low flow
 Top of casing to water 2.70 Gallons per well volume 2.25 gal
 Top of casing to bottom 22.44 Total gallons evacuated 2.25 gal
 Water level after evac 6.78

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
10:40	16.1	0.75	1495	3.93	232.1	2.46	clear
10:44	16.0	0.46	1496	3.94	239.9	2.26	
10:48	16.3	0.38	1487	3.94	251.4	2.33	
10:52	16.4	0.30	1473	3.94	265.4	2.50	
10:56	16.4	0.25	1457	3.95	271.9	1.85	
11:00	16.5	0.21	1443	3.95	280.5	1.60	
11:04	16.4	0.21	1438	3.95	284.8	1.55	
11:08	16.4	0.21	1433	3.95	294.0	1.52	
11:12	16.3	0.18	1424	3.95	310.4	1.62	

General Information

Weather Condition: Cloudy + Cool

Sample Characteristics: _____

Containers/Amounts (2) 1L for Radiological (1) 500mL for Metals (1) 250mL for fluoride

Recommend/Observations _____

Sampler/Collector A. Niven

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes (gal/ft)				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-2

Collector/Operator A. Niven

Monitoring Well Information

Evacuation date/time 4-27-22 9:35 Sampling date/time 4-27-22 10:15

Method of evacuation Peristaltic pump Method of sampling Low Flow

Top of casing to water 8.92 Gallons per well volume

Top of casing to bottom Total gallons evacuated 2.5 gal

Water level after evac 9.08

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
9:44	18.6	0.61	839	4.90	286.5	8.16	clear
9:49	18.7	0.40	865	4.82	323.1	6.27	
9:54	18.5	0.31	859	4.74	331.8	4.57	
9:59	18.5	0.26	845	4.69	324.6	3.17	
10:04	18.5	0.24	843	4.61	313.7	2.88	
10:09	18.5	0.22	832	4.59	303.7	2.55	

General Information

Weather Condition: Sunny clear

Sample Characteristics:

Containers/Amounts (1) 500mL for Metals (2) 1L for Radiological (1) 1L for Wetlab

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes[gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-3

Collector/Operator A Niven

Evacuation date/time 4-27-22 10:28 Sampling date/time 4-27-22 11:30
 Method of evacuation Peristaltic pump Method of sampling Low Flow
 Top of casing to water 4.74 Gallons per well volume _____
 Top of casing to bottom _____ Total gallons evacuated 5.0 gal
 Water level after evac 5.09

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
10:51	20.5	0.28	2071	5.20	77.2	30.22	light tan
10:56	20.5	0.22	2255	5.31	56.1	17.30	Clear
11:01	20.5	0.19	2242	5.34	46.1	11.22	
11:06	20.6	0.17	2227	5.35	39.7	14.35	
11:11	20.7	0.16	3044	5.34	36.3	17.03	Brown particles
11:16	20.7	0.15	3032	5.33	34.2	10.88	
11:21	20.7	0.13	3021	5.32	37.5	16.54	
11:26	20.6	0.13	3017	5.35	37.4	18.40	

General Information

Weather Condition: Sunny clear 25°C

Sample Characteristics: _____

Containers/Amounts (2) 500mL for Metals (4) 1L Radiological (2) 1L for wet lab
Blind duplicate BD-1 9:00 4-27-22

Recommend/Observations heavy brown silt first purge water, odor

Sampler/Collector _____

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-4

Collector/Operator A. Niven

Evacuation date/time 4-26-22 1431 Sampling date/time 4-26-22 15:15
 Method of evacuation Peristaltic pump Method of sampling Low Flow
 Top of casing to water 8.52 Gallons per well volume
 Top of casing to bottom 8.70 Total gallons evacuated 3.0 gal
 Water level after evac

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
14:44	19.5	0.60	2948	5.02	204.7	0.82	clear
14:49	19.2	0.28	2937	4.98	223.0	0.81	
14:54	19.2	0.22	2932	4.95	227.7	1.06	
14:59	19.5	0.18	2927	4.92	229.9	1.36	
15:04	19.3	0.16	2922	4.94	228.7	1.70	

General Information

Weather Condition: Partly Cloudy

Sample Characteristics:

Containers/Amounts (2) 500ml for Metals (2) 1L for Radiological (2) 1L for Wet Lab

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.1645	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611



Groundwater Sampling Field Log

Site COEN Well Number MW-5

Collector/Operator A. Niren

Monitoring Well Information

Evacuation date/time 4-26-22 12:30 Sampling date/time 4-26-22 13:20

Method of evacuation Peristaltic pump Method of sampling Low Flow

Top of casing to water 6.10 Gallons per well volume

Top of casing to bottom 6.26 Total gallons evacuated 3.25 gal

Water level after evac

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
<u>12:51</u>	<u>20.0</u>	<u>0.38</u>	<u>3587</u>	<u>6.56</u>	<u>104.8</u>	<u>9.05</u>	<u>clear</u>
<u>12:56</u>	<u>20.1</u>	<u>0.27</u>	<u>3665</u>	<u>6.56</u>	<u>92.2</u>	<u>6.26</u>	
<u>13:01</u>	<u>20.2</u>	<u>0.21</u>	<u>3738</u>	<u>6.55</u>	<u>86.2</u>	<u>3.28</u>	
<u>13:06</u>	<u>19.9</u>	<u>0.18</u>	<u>3775</u>	<u>6.55</u>	<u>80.7</u>	<u>3.10</u>	
<u>13:12</u>	<u>19.9</u>	<u>0.16</u>	<u>3807</u>	<u>6.55</u>	<u>76.6</u>	<u>4.70</u>	
<u>13:17</u>	<u>19.8</u>	<u>0.15</u>	<u>3813</u>	<u>6.56</u>	<u>74.1</u>	<u>7.41</u>	

General Information

Weather Condition: Partly Cloudy

Sample Characteristics:

Containers/Amounts (1) 500ml for Metals (2) 1L for Radiological (1) 1L for Wetlab

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
<u>1/2"=0.0205</u>	<u>1"=0.041</u>	<u>2"=0.164</u>	<u>3"=0.367</u>	<u>6"=1.469</u>
<u>3/4"=0.03075</u>	<u>1 1/2"=0.100</u>	<u>2 1/2"=0.255</u>	<u>4"=0.656</u>	<u>8"=2.611</u>

Site COEN Well Number MW-6

Collector/Operator A. Niven

Monitoring Well Information

Evacuation date/time 4-26-22 11:20 Sampling date/time 4-26-22 12:15
 Method of evacuation Peristaltic pump Method of sampling low flow
 Top of casing to water 3.68 Gallons per well volume 2.5 gal
 Top of casing to bottom 4.01 Total gallons evacuated 2.5 gal
 Water level after evac 4.01

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
11:38	19.3	1.74	71.5	5.06	213.7	0.64	clear
11:43	19.3	1.44	73.9	5.02	218.9	0.42	
11:48	19.2	1.42	72.9	4.98	224.6	0.48	
11:53	19.3	1.44	72.4	4.96	229.6	0.37	
11:58	19.4	1.46	72.1	4.94	236.4	0.46	
12:03	19.4	1.47	72.0	4.98	239.6	0.43	
12:08	19.6	1.48	71.6	4.91	243.7	0.45	

General Information

Weather Condition: Cloudy

Sample Characteristics: _____

Containers/Amounts (1) 500mL for Metals (2) 1L for Radiological (1) 1L for Wet lab

Recommend/Observations _____

Sampler/Collector _____

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-10

Collector/Operator A. Niven

Evacuation date/time 4-26-22 10:05 Monitoring Well Information Sampling date/time 4-26-22 10:45
 Method of evacuation Peristaltic pump Method of sampling Low flow
 Top of casing to water 10.93 Gallons per well volume
 Top of casing to bottom Total gallons evacuated 1.25 gal
 Water level after evac 10.95

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
10:23	18.1	0.47	1651	3.71	329.5	0.82	clear
10:28	18.1	0.35	1646	3.72	342.4	0.65	
10:33	18.0	0.30	1643	3.73	344.8	0.77	
10:38	18.1	0.28	1636	3.73	346.7	0.97	
10:43	18.0	0.26	1628	3.74	352.9	1.14	

General Information

Weather Condition: overcast

Sample Characteristics:

Containers/Amounts (1) 500 mL for Metals (2) 1L for Radiological (1) 1L for Wetlab

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]					
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469	
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611	

PVC

Site COEN Well Number MW-02
 Collector/Operator A. Niven

Evacuation date/time 9-23-22 10:14 Monitoring Well Information Sampling date/time 9-23-22 11:00
 Method of evacuation Peristaltic pump Method of sampling Low flow
 Top of casing to water 10.23 Gallons per well volume
 Top of casing to bottom 22.43 Total gallons evacuated 2.5 gal
 Water level after evac 10.33

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
10:32	22.5	0.75	542	4.97	-34.6	13.39	clear odor
10:37	22.4	0.45	600	4.50	-14.5	9.40	
10:42	22.4	0.39	640	4.36	-6.9	7.79	
10:47	22.4	0.35	699	4.27	-0.8	10.99	
10:52	22.3	0.33	724	4.23	2.7	14.72	
10:57	22.4	0.31	746	4.22	5.7	21.89	
11:02	22.4	0.29	760	4.20	7.4	29.99	
11:07	22.4	0.29	767	4.20	7.9	40.31	
11:12	22.1	0.28	767	4.20	5.4	48.31	

General Information

Weather Condition: few clouds light breeze

Sample Characteristics:

Containers/Amounts (1) 500 ml for Metals (1) 1L Plastic for wetlab (2) 1L Plastic for Radiological

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes (gal/ft)

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-3

Collector/Operator A. Niven

Evacuation date/time	<u>9-23-22 8:37</u>	Monitoring Well Information	<u>9-23-22 9:20</u>
Method of evacuation	<u>Peristaltic pump</u>	Sampling date/time	<u>9-23-22 9:20</u>
Top of casing to water	<u>5.15'</u>	Method of sampling	<u>Low Flow</u>
Top of casing to bottom	<u>17.70'</u>	Gallons per well volume	<u>1.5 gal</u>
Water level after evac	<u>5.32</u>	Total gallons evacuated	<u>1.5 gal</u>

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
8:52	25.0	0.52	2783	5.30	-75.1	56.02	Tan
8:57	25.1	0.44	2765	5.31	-92.8	32.70	1
9:02	25.2	0.38	2747	5.35	-102.6	19.51	light tan
9:07	25.0	0.35	2742	5.34	-104.1	15.82	1
9:12	25.3	0.31	2733	5.33	-102.9	12.15	Clear
9:17	25.4	0.30	2725	5.33	-105.9	10.93	1

General Information

Weather Condition: Partly cloudy 25°C

Sample Characteristics: _____

Containers/Amounts (2) 500mL Plastic for Metal (2) 1L Plastic for Wetlab
(4) 1L Plastic for Radiological

Recommend/Observations _____

Sampler/Collector _____

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEM Well Number MW-04

Collector/Operator A. Niren W, Washington

Evacuation date/time 9-22-22 14:38 Sampling date/time 9-22-22 15:15
 Method of evacuation Peristaltic pump Method of sampling Low Flow
 Top of casing to water ~~6.24~~ 9.24 Gallons per well volume _____
 Top of casing to bottom 22.70 Total gallons evacuated 2.25 gal
 Water level after evac 6.34

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
14:49	25.7	0.40	2371	5.13	14.3	0.66	clear
14:54	25.9	0.34	2319	5.09	16.3	0.80	
14:58	25.5	0.31	2285	5.08	11.9	1.73	
15:03	25.6	0.27	2250	5.07	6.9	5.00	
15:08	25.8	0.26	2238	5.06	3.8	8.12	

General Information

Weather Condition: Sunny few clouds light breeze

Sample Characteristics: _____

Containers/Amounts *Blind duplicate* 5 BD-1 9-22-22 12:00
(2) 500ml for Metals (2) 1L Plastic for Wet lab
(4) 1L for Radiological

Recommend/Observations _____

Sampler/Collector _____

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

ENVIRONMENTAL

MANAGEMENT SERVICES, INC.

Groundwater Sampling Field Log

Site COEN Well Number NW-5

Collector/Operator A. Niven W. Washington

Monitoring Well Information

Evacuation date/time 09/22/22 1:30 pm Sampling date/time 09/22/22 2:05 pm
 Method of evacuation Peristaltic pump Method of sampling LOOK FLOW
 Top of casing to water 6.74 ft Gallons per well volume _____
 Top of casing to bottom 20.00 Total gallons evacuated 2 1/2 Gallons
 Water level after evac 6.82 ft

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
1:35 pm	27.0	0.33	2963	6.50	19.1	1.24	Clear
1:40 pm	27.4	0.30	2977	6.50	11.6	2.20	Clear
1:45	27.5	0.29	3015	6.50	0.2	4.82	Clear
1:50	27.5	0.27	3568	6.50	-10.4	6.09	Clear
1:55	27.6	0.27	3581	6.50	-17.9	9.41	Clear
2:00	27.5	0.26	3603	6.49	-27.6	13.91	Clear

General Information

Weather Condition: Sunny, Cloudy, Warm

Sample Characteristics: _____

Containers/Amounts (1) sample for metals (1) 1L for Wet Lab (2) 1L for radiological

Recommend/Observations _____

Sampler/Collector _____

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes[gal/ft]

1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COEN Well Number MW-6

Collector/Operator A. Niven W. Washington

Monitoring Well Information

Evacuation date/time 12:00 pm 09/22/22 Sampling date/time 09-22-22 12:45 pm
 Method of evacuation peristaltic Method of sampling low flow
 Top of casing to water 4 ft Gallons per well volume ~~3.45~~
 Top of casing to bottom 17.75 ft Total gallons evacuated 2 gal
 Water level after evac 4.37

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
12:30pm	24.6°C	1.79	74.6	4.72	93.1	0.97	Clear
12:35pm	24.5°C	1.78	74.3	4.71	89.7	0.62	Clear
12:40pm	24.7	1.77	74.2	4.71	87.4	0.58	Clear

General Information

Weather Condition: Sunny, Light Breeze, Balm

Sample Characteristics: Clear

Containers/Amounts (1) 500 mL for metals, (1) 1L for wet lab, (2) 1L for Radiological

Recommend/Observations

Sampler/Collector A. Niven W. Washington

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes [gal/ft]				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

Site COTEN Well Number MW-10

Collector/Operator A. Niven W. Washington

Evacuation date/time 9-22-22 10:15 Sampling date/time 9-22-22 11:30
 Method of evacuation Peristaltic Method of sampling Low flow
 Top of casing to water 12.25 Gallons per well volume
 Top of casing to bottom 22.45 Total gallons evacuated 2.25 gal
 Water level after evac 10.27

Sample Data

	Temp [°C]	DO [mg/l]	Conductivity [µs/cm]	pH	ORP	NTU's	Appearance
10:52	23.0	1.43	765	3.81	217.9	0.29	clear
10:57	22.6	0.49	1110	3.75	185.0	0.88	
11:03	22.5	0.36	1130	3.75	164.3	3.75	
11:08	22.4	0.32	1111	3.76	159.4	5.75	
11:13	22.4	0.30	1258	3.76	154.1	9.35	bubbles in flow cell
11:18	22.4	0.29	1320	3.77	147.6	11.00	
11:23	22.4	0.28	1215	3.77	143.8	9.41	
11:28	22.4	0.26	1282	3.77	141.9	11.58	

General Information

Weather Condition: Sunny clear Warm

Sample Characteristics:

Containers/Amounts (1) 12 Plastic Wetlab (2) 12 Plastic Radiological
(1) 500mL Plastic Metals

Recommend/Observations

Sampler/Collector

Stabilization recommendations: Three successive readings within +/- 0.1 for pH, +/- 3% for conductivity, +/- 10 mV for ORP, and +/- 10% for turbidity and DO. *these are rough estimates*

Well Casing Volumes (gal/ft)				
1/2"=0.0205	1"=0.041	2"=0.164	3"=0.367	6"=1.469
3/4"=0.03075	1 1/2"=0.100	2 1/2"=0.255	4"=0.656	8"=2.611

PVC

APPENDIX B

Statistical Analysis

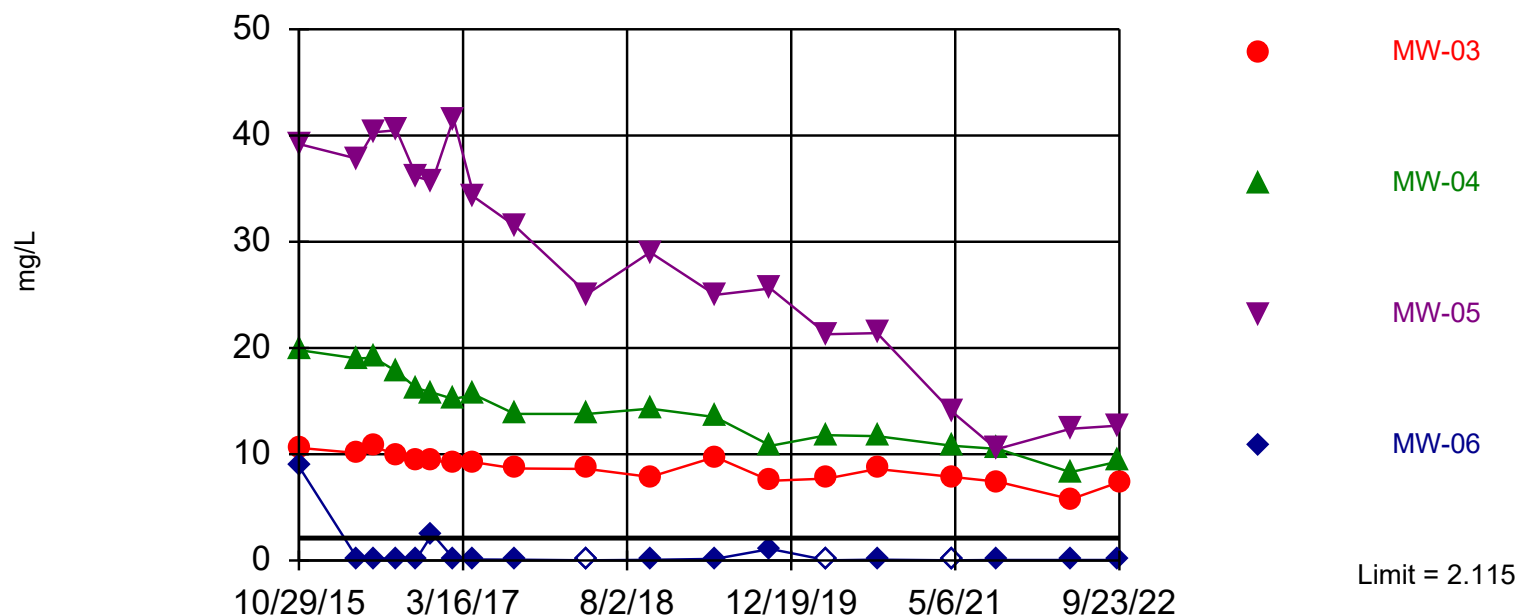
Prediction Limit

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen Printed 11/14/2022, 11:07 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-03	2.115	n/a	9/23/2022	7.38	Yes	19	0	No	0.00188	Param Inter 1 of 2
Boron (mg/L)	MW-04	2.115	n/a	9/22/2022	9.32	Yes	19	0	No	0.00188	Param Inter 1 of 2
Boron (mg/L)	MW-05	2.115	n/a	9/22/2022	12.7	Yes	19	0	No	0.00188	Param Inter 1 of 2
Boron (mg/L)	MW-06	2.115	n/a	9/22/2022	0.055	No	19	0	No	0.00188	Param Inter 1 of 2
Calcium (mg/L)	MW-03	179.6	n/a	9/23/2022	416	Yes	21	0	No	0.00188	Param Inter 1 of 2
Calcium (mg/L)	MW-04	179.6	n/a	9/22/2022	417	Yes	21	0	No	0.00188	Param Inter 1 of 2
Calcium (mg/L)	MW-05	179.6	n/a	9/22/2022	588	Yes	21	0	No	0.00188	Param Inter 1 of 2
Calcium (mg/L)	MW-06	179.6	n/a	9/22/2022	2.19	No	21	0	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	MW-03	246.5	n/a	9/23/2022	137	No	19	0	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	MW-04	246.5	n/a	9/22/2022	125	No	19	0	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	MW-05	246.5	n/a	9/22/2022	175	No	19	0	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	MW-06	246.5	n/a	9/22/2022	7.75	No	19	0	No	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	MW-03	1.024	n/a	9/23/2022	0.25ND	No	24	4.167	No	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	MW-04	1.024	n/a	9/22/2022	0.25ND	No	24	4.167	No	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	MW-05	1.024	n/a	9/22/2022	0.25ND	No	24	4.167	No	0.00188	Param Inter 1 of 2
Fluoride (mg/L)	MW-06	1.024	n/a	9/22/2022	0.25ND	No	24	4.167	No	0.00188	Param Inter 1 of 2
pH (SU)	MW-03	5.114	3.557	9/23/2022	5.33	Yes	47	0	No	0.000...	Param Inter 1 of 2
pH (SU)	MW-04	5.114	3.557	9/22/2022	5.06	No	47	0	No	0.000...	Param Inter 1 of 2
pH (SU)	MW-05	5.114	3.557	9/22/2022	6.49	Yes	47	0	No	0.000...	Param Inter 1 of 2
pH (SU)	MW-06	5.114	3.557	9/22/2022	4.71	No	47	0	No	0.000...	Param Inter 1 of 2
Sulfate (mg/L)	MW-03	792.6	n/a	9/23/2022	1640	Yes	43	0	No	0.00188	Param Inter 1 of 2
Sulfate (mg/L)	MW-04	792.6	n/a	9/22/2022	1670	Yes	43	0	No	0.00188	Param Inter 1 of 2
Sulfate (mg/L)	MW-05	792.6	n/a	9/22/2022	1770	Yes	43	0	No	0.00188	Param Inter 1 of 2
Sulfate (mg/L)	MW-06	792.6	n/a	9/22/2022	12.1	No	43	0	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (m...	MW-03	1397	n/a	9/23/2022	3253	Yes	38	0	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (m...	MW-04	1397	n/a	9/22/2022	3167	Yes	38	0	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (m...	MW-05	1397	n/a	9/22/2022	4130	Yes	38	0	No	0.00188	Param Inter 1 of 2
Total Dissolved Solids [TDS] (m...	MW-06	1397	n/a	9/22/2022	63	No	38	0	No	0.00188	Param Inter 1 of 2

Exceeds Limit: MW-03, MW-04, MW-05

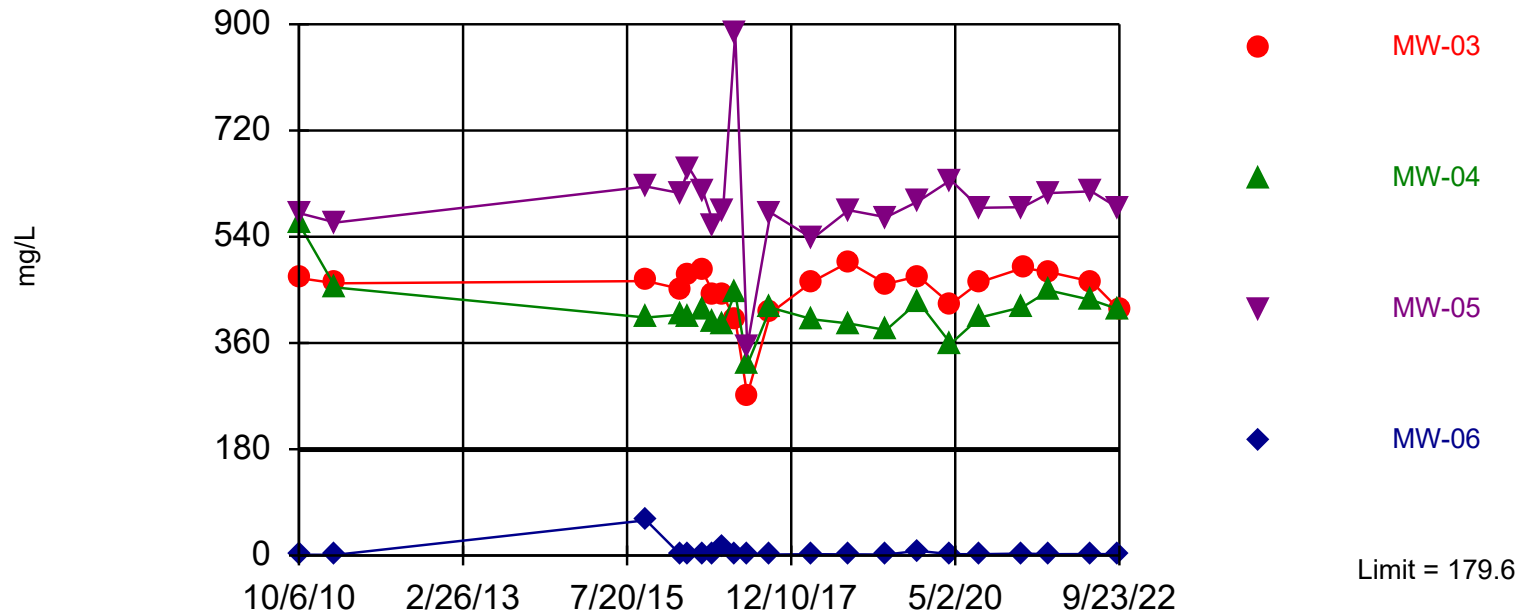
Prediction Limit Interwell Parametric



Background Data Summary: Mean=1.494, Std. Dev.=0.3107, n=19. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.917, critical = 0.863. Kappa = 1.999 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Exceeds Limit: MW-03, MW-04, MW-05

Prediction Limit Interwell Parametric

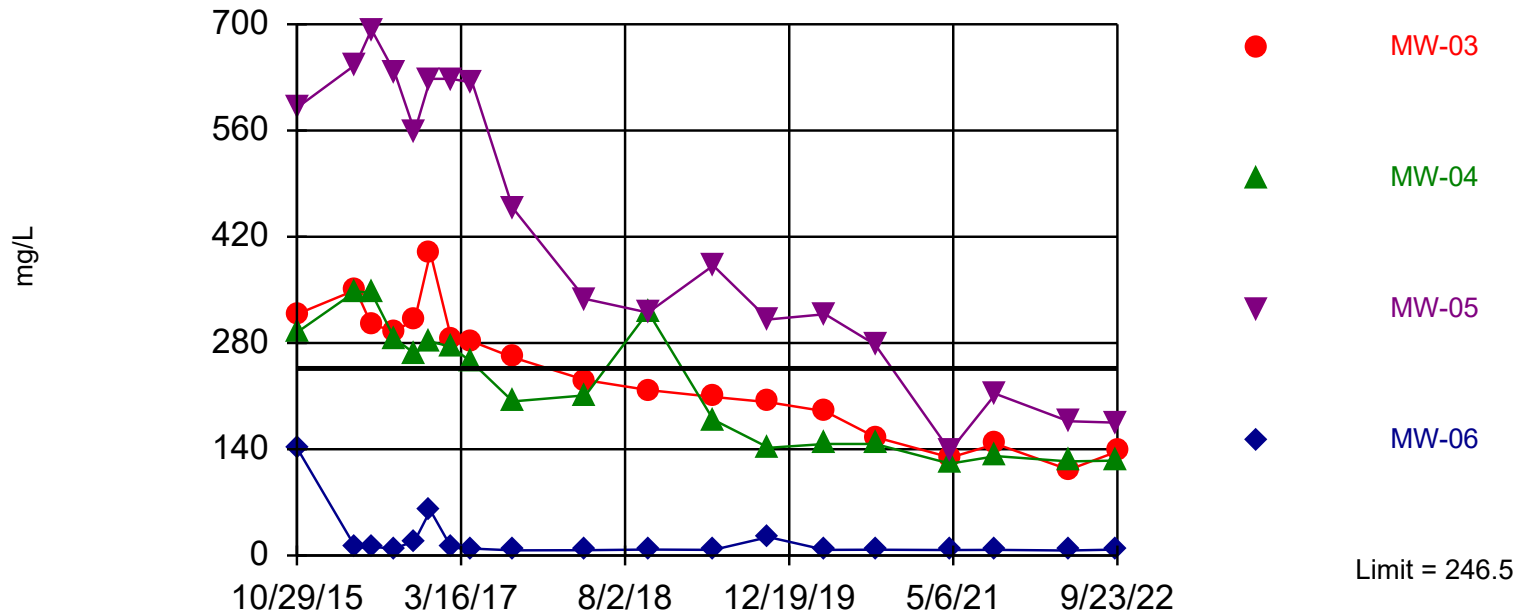


Background Data Summary: Mean=117.2, Std. Dev.=31.73, n=21. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.926, critical = 0.873. Kappa = 1.965 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Calcium Analysis Run 11/14/2022 11:05 AM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Within Limit

Prediction Limit Interwell Parametric



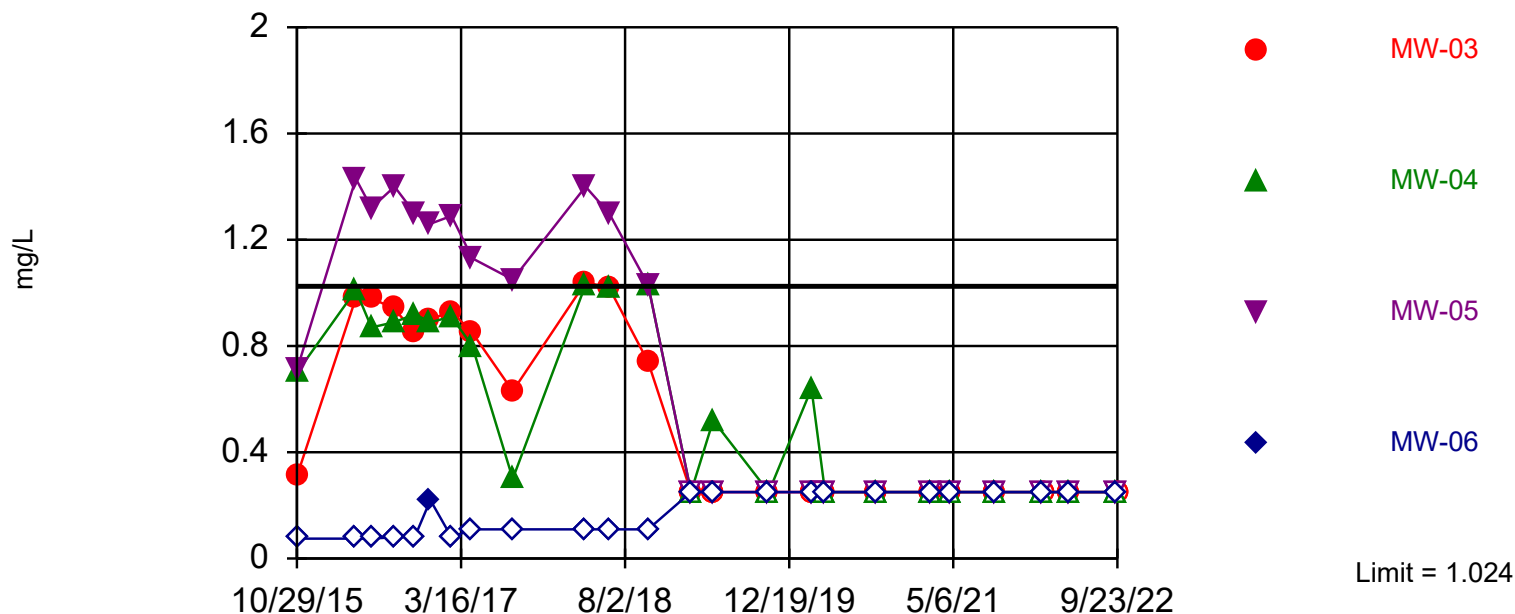
Background Data Summary: Mean=168, Std. Dev.=39.28, n=19. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9312, critical = 0.863. Kappa = 1.999 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Chloride Analysis Run 11/14/2022 11:05 AM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Within Limit

Prediction Limit

Interwell Parametric

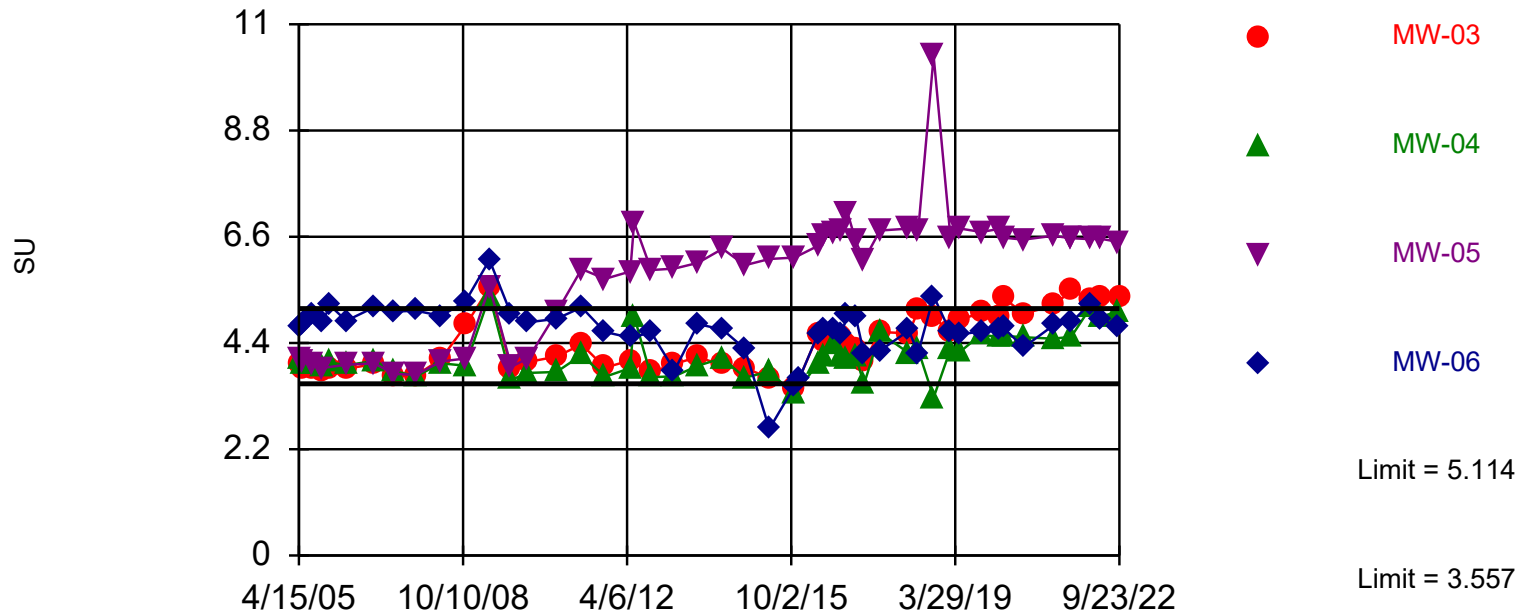


Background Data Summary: Mean=0.5983, Std. Dev.=0.2212, n=24, 4.167% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9677, critical = 0.884. Kappa = 1.927 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Fluoride Analysis Run 11/14/2022 11:05 AM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Exceeds Limits: MW-03, MW-05

Prediction Limit Interwell Parametric

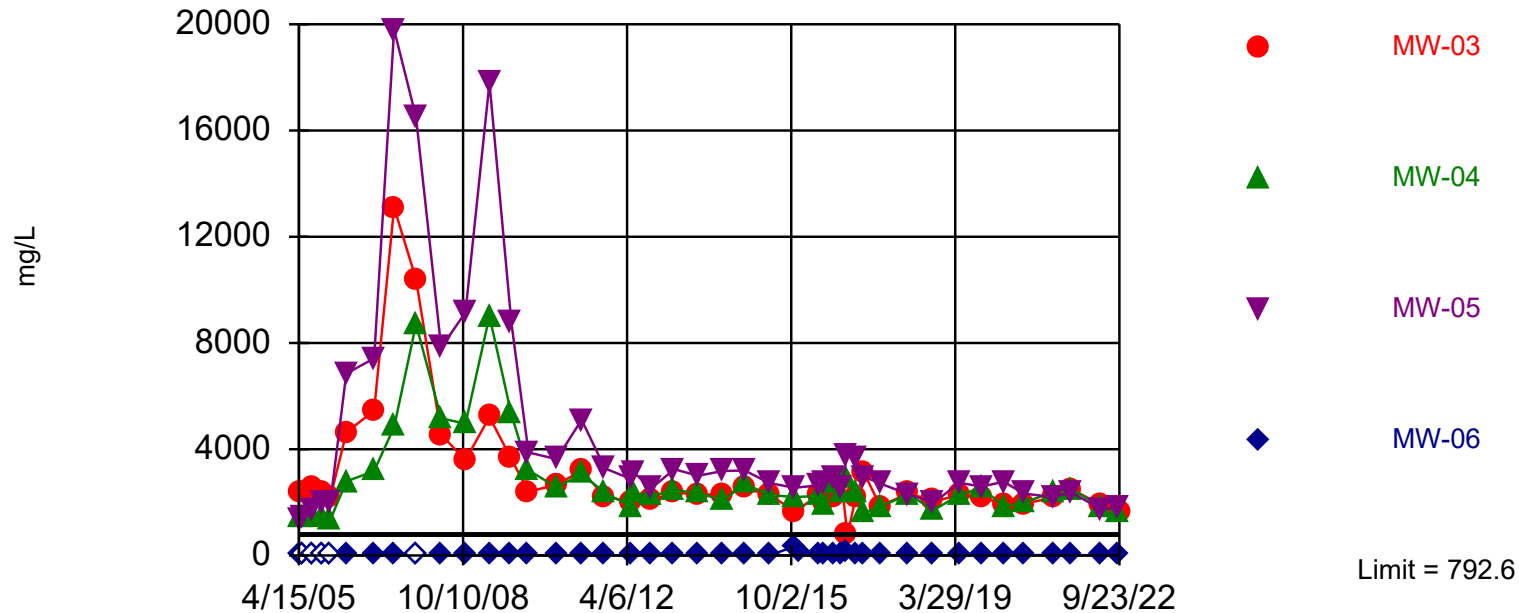


Background Data Summary: Mean=4.335, Std. Dev.=0.43, n=47. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9697, critical = 0.928. Kappa = 1.81 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009398. Comparing 4 points to limit.

Constituent: pH Analysis Run 11/14/2022 11:05 AM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Exceeds Limit: MW-03, MW-04, MW-05

Prediction Limit Interwell Parametric



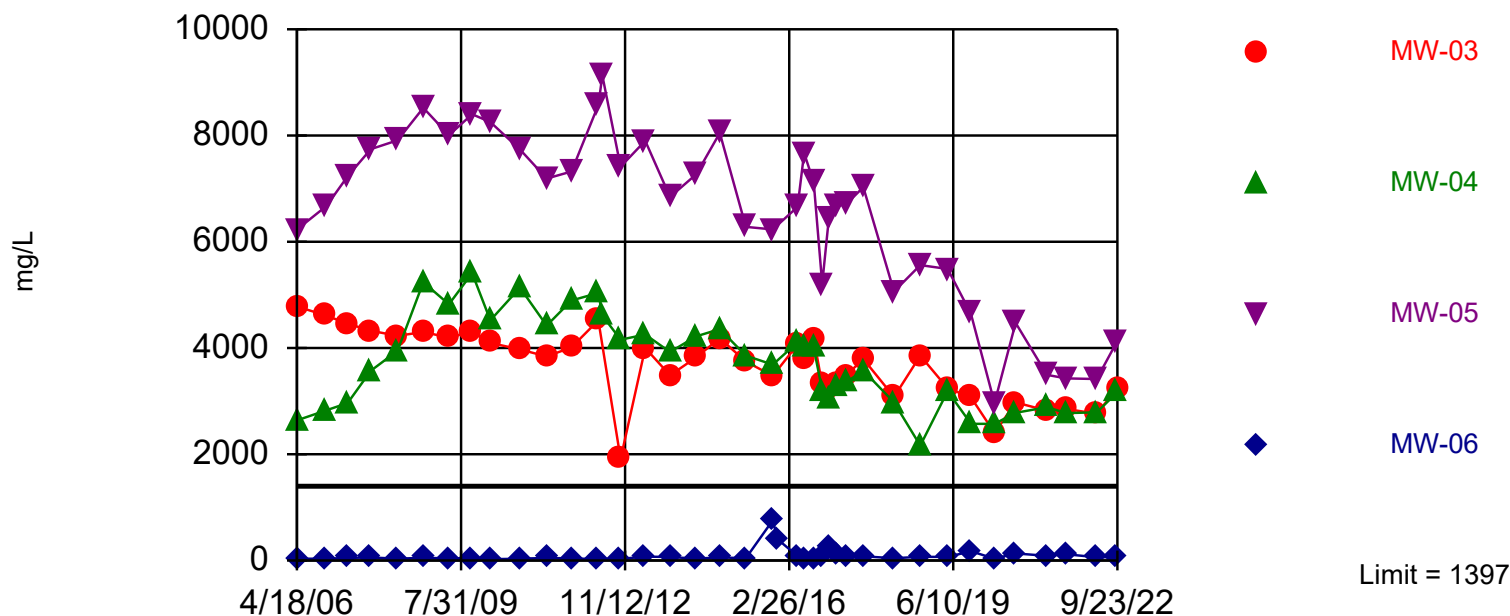
Background Data Summary: Mean=537.6, Std. Dev.=140.1, n=43. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9562, critical = 0.923. Kappa = 1.82 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Sulfate Analysis Run 11/14/2022 11:05 AM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Exceeds Limit: MW-03, MW-04, MW-05

Prediction Limit

Interwell Parametric

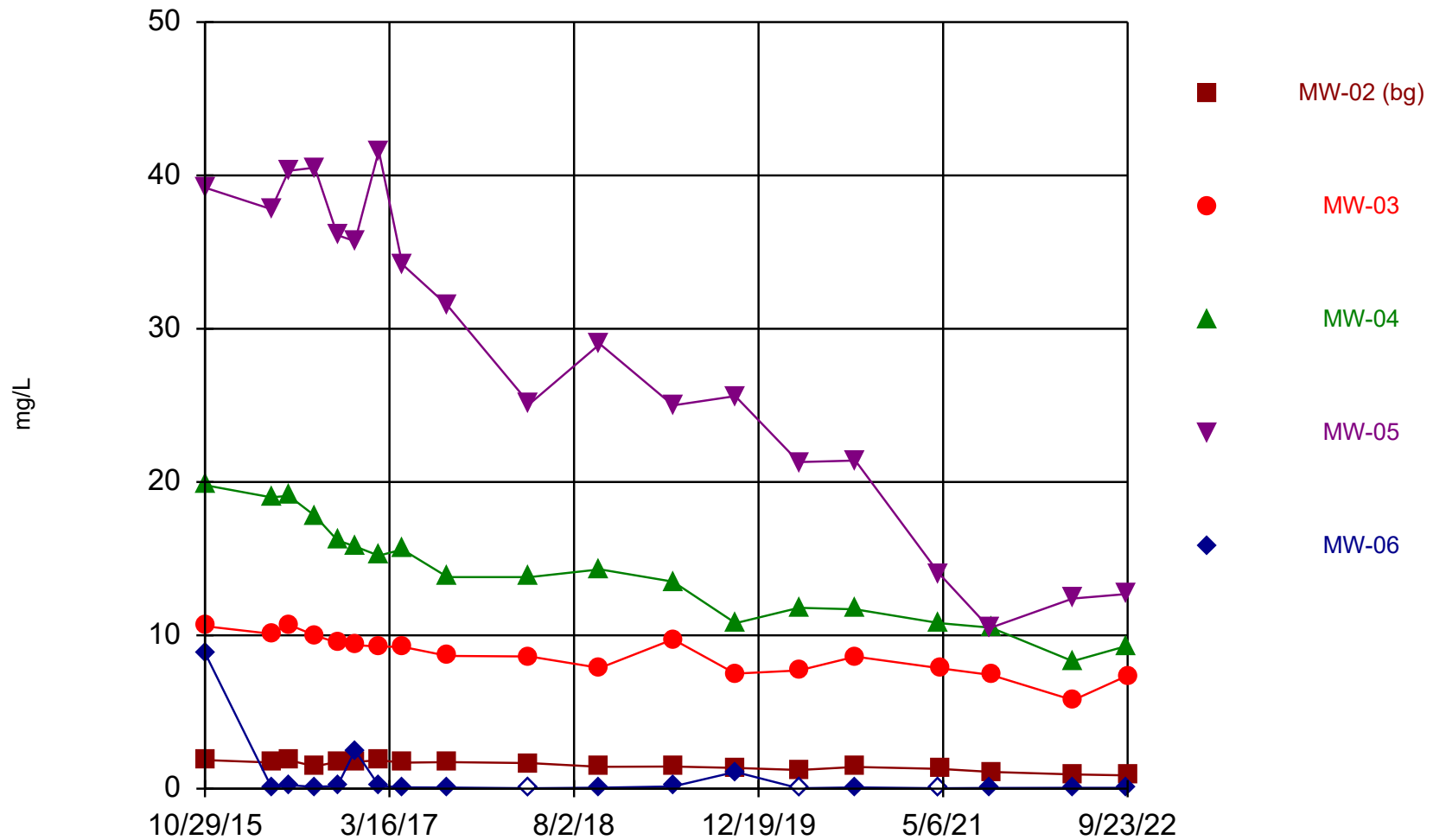


Background Data Summary: Mean=1031, Std. Dev.=199.6, n=38. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9752, critical = 0.916. Kappa = 1.836 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.00188. Comparing 4 points to limit.

Constituent: Total Dissolved Solids [TDS] Analysis Run 11/14/2022 11:05 AM View: Landfill AppIII

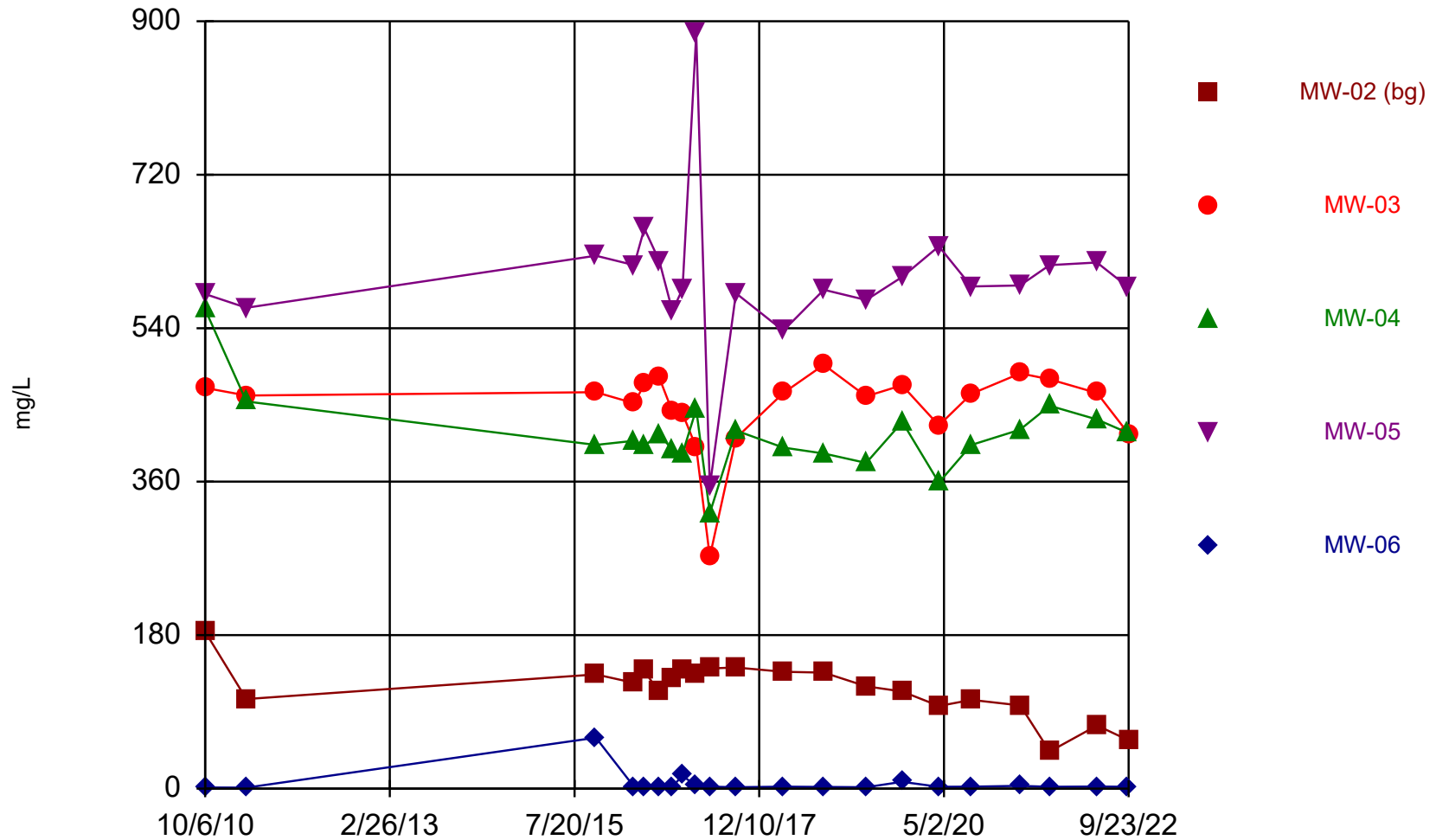
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



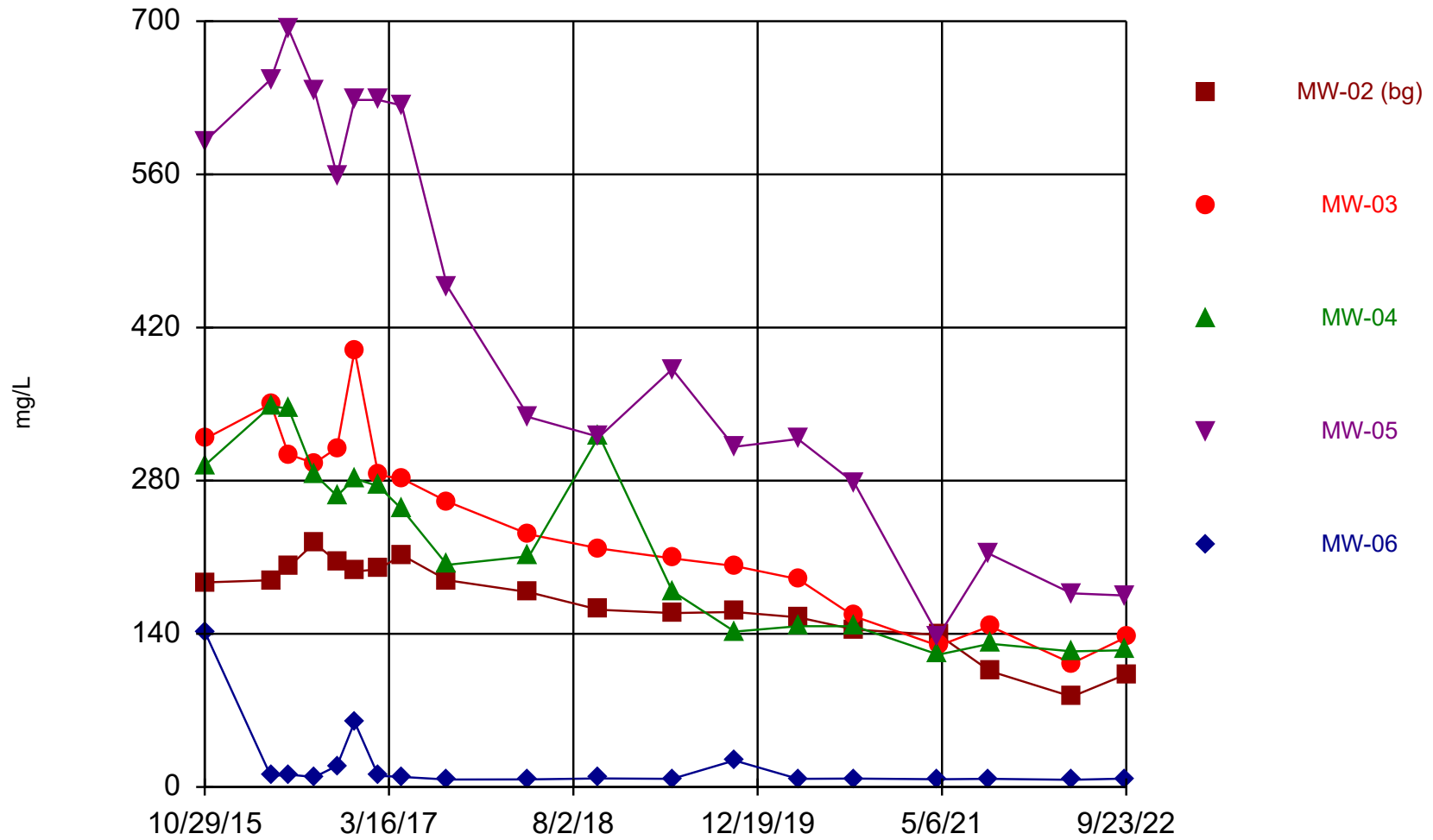
Constituent: Boron Analysis Run 11/11/2022 1:05 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series

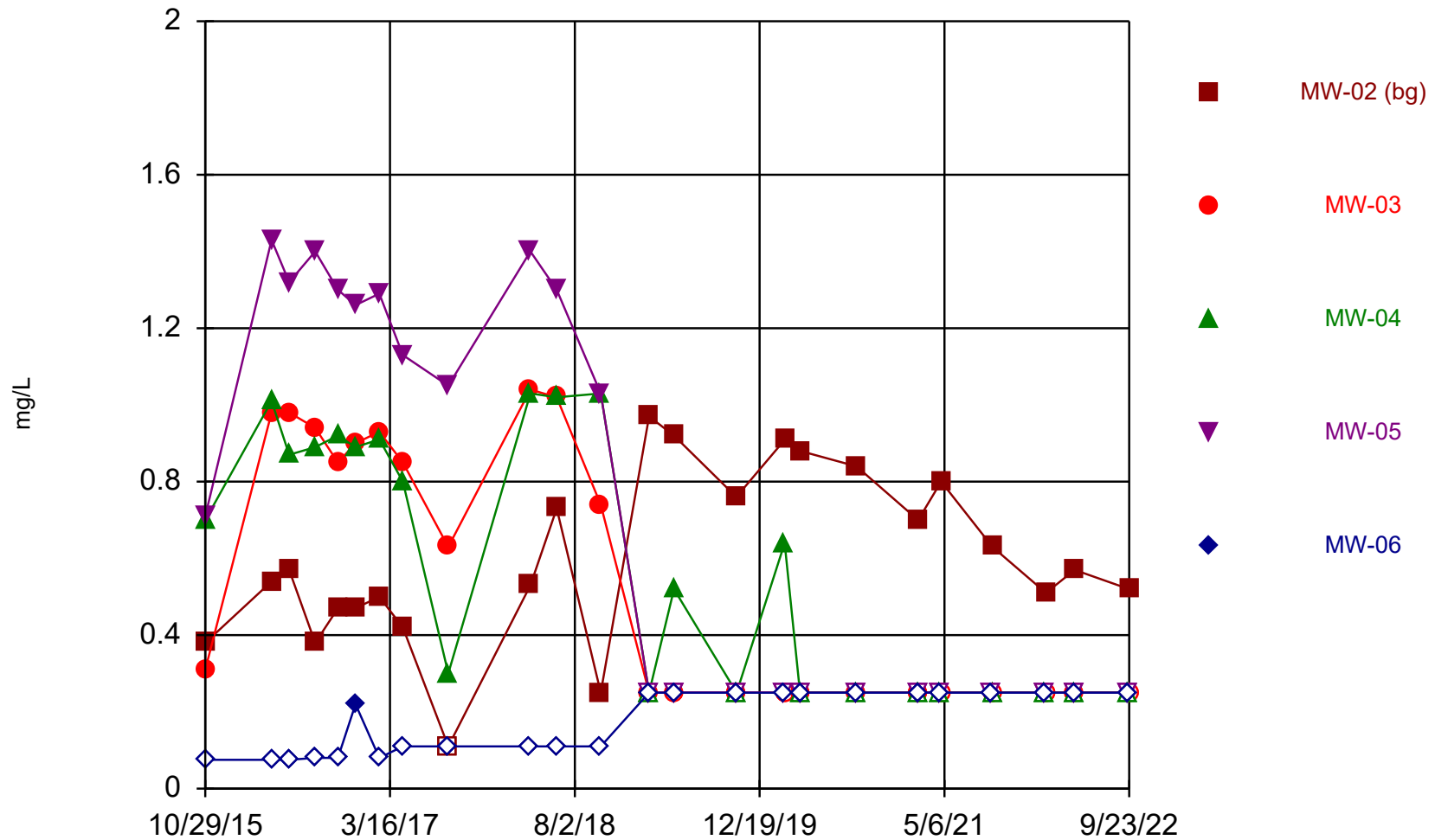


Constituent: Calcium Analysis Run 11/11/2022 1:05 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

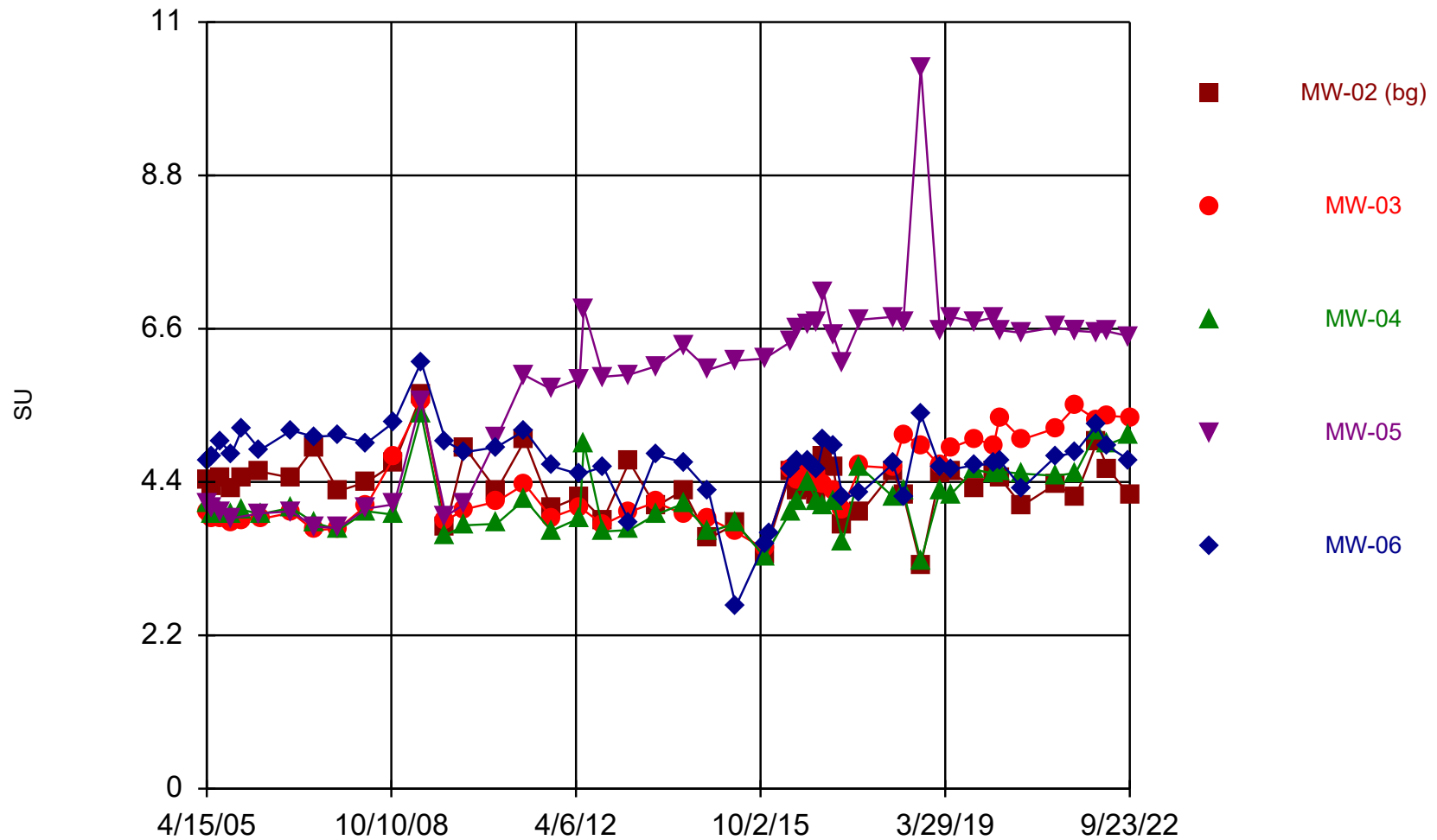
Time Series



Time Series

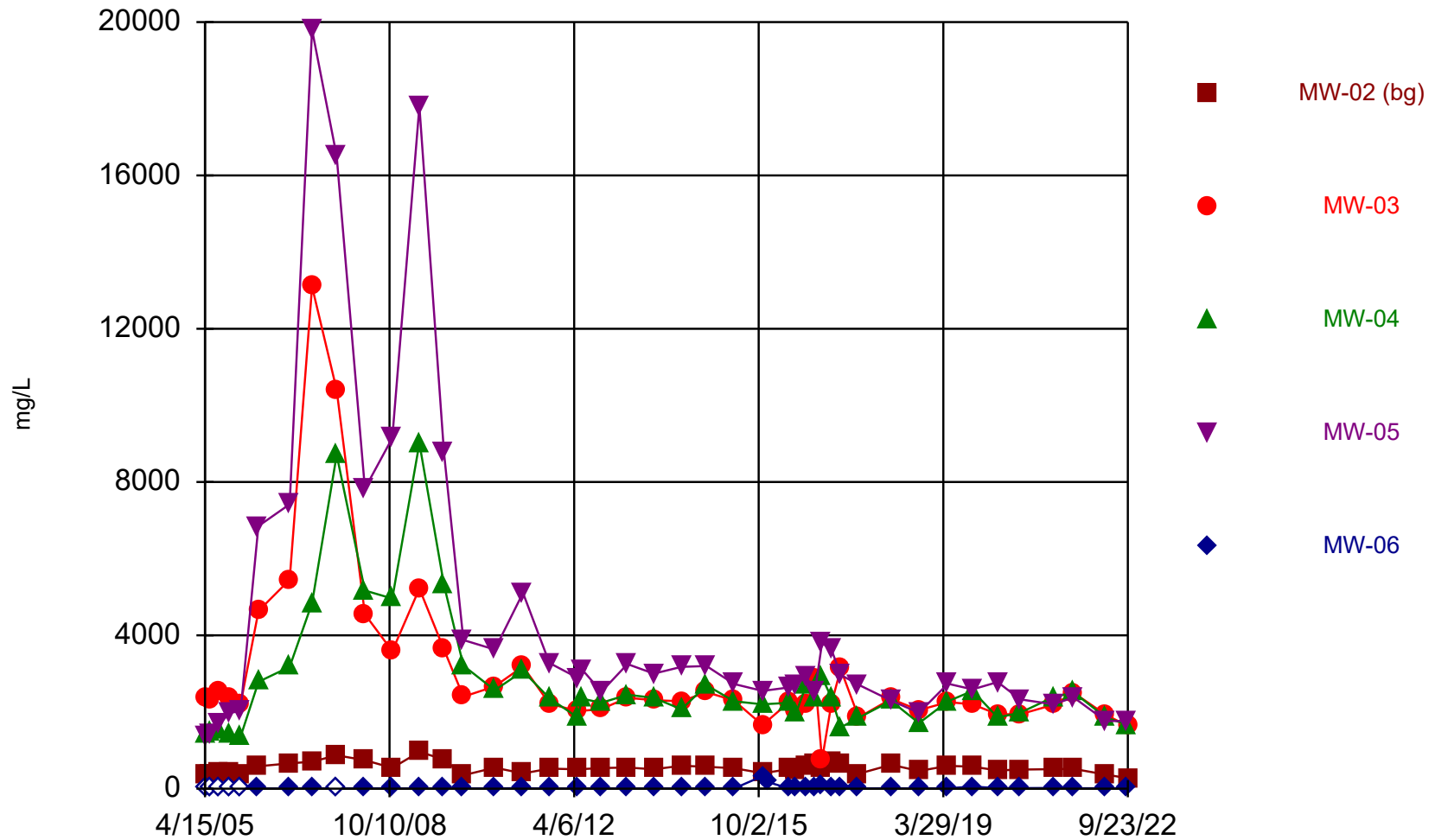


Time Series



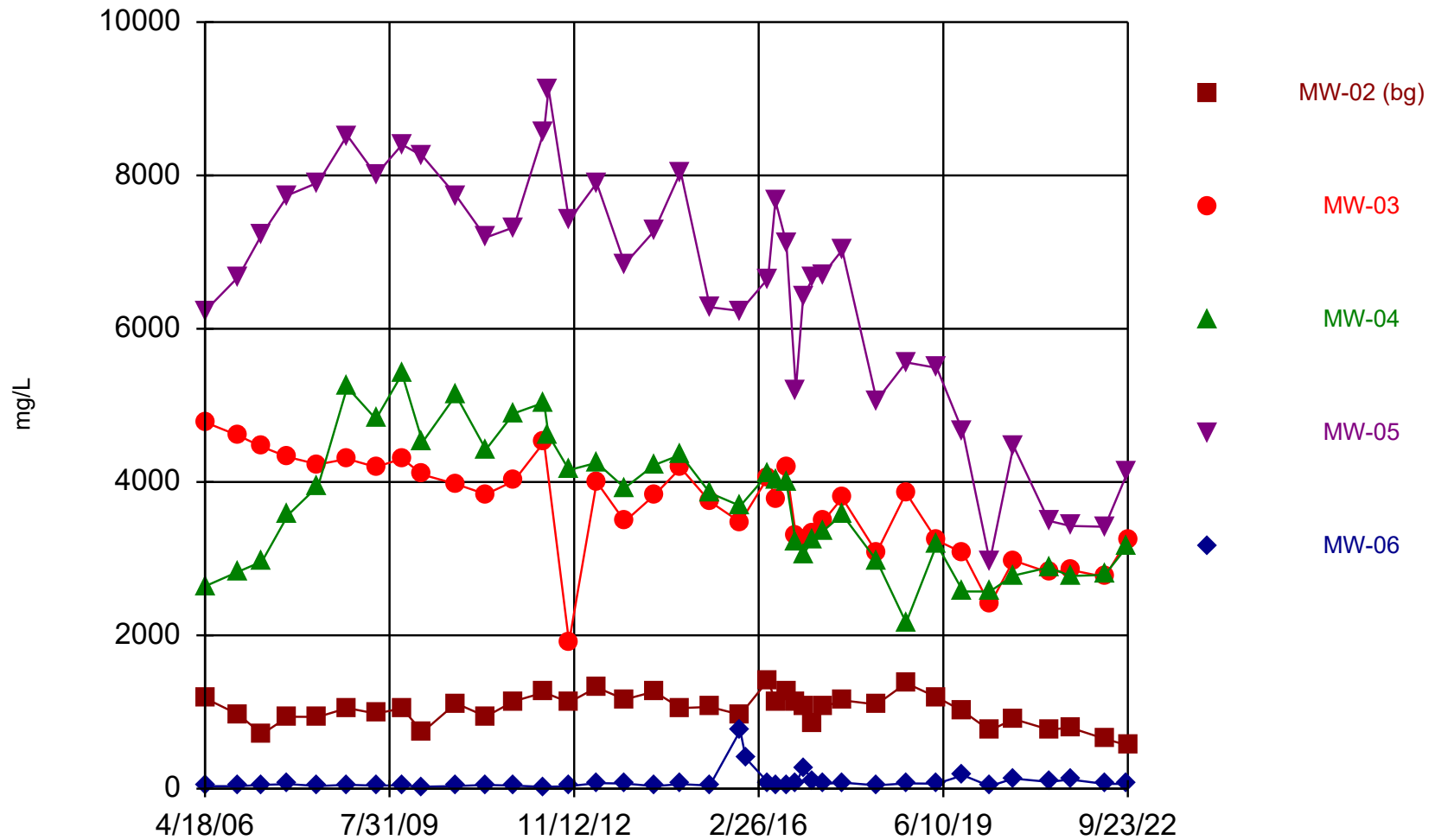
Constituent: pH Analysis Run 11/11/2022 1:05 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



Constituent: Sulfate Analysis Run 11/11/2022 1:05 PM View: Landfill ApplII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:05 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

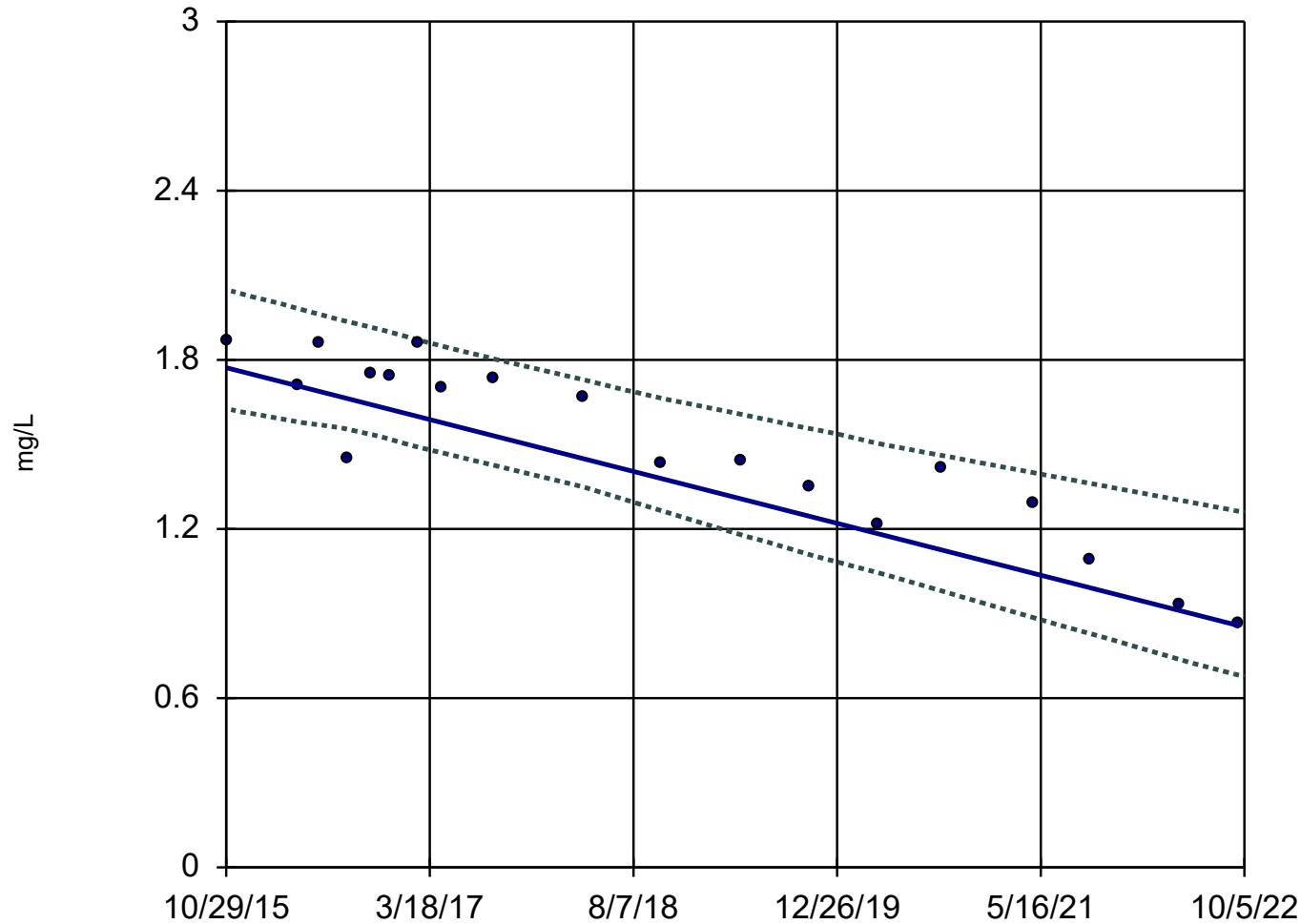
Trend Test

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen Printed 11/11/2022, 1:15 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MW-02 (bg)	-0.1325	-134	-58	Yes	19	0	n/a	n/a	0.05	NP
Boron (mg/L)	MW-03	-0.6034	-139	-58	Yes	19	0	n/a	n/a	0.05	NP
Boron (mg/L)	MW-04	-1.507	-155	-58	Yes	19	0	n/a	n/a	0.05	NP
Boron (mg/L)	MW-05	-4.437	-149	-62	Yes	20	0	n/a	n/a	0.05	NP
Boron (mg/L)	MW-06	-0.02632	-82	-58	Yes	19	15.79	n/a	n/a	0.05	NP
Calcium (mg/L)	MW-02 (bg)	-8.066	-97	-66	Yes	21	0	n/a	n/a	0.05	NP
Calcium (mg/L)	MW-03	-0.06222	-1	-66	No	21	0	n/a	n/a	0.05	NP
Calcium (mg/L)	MW-04	-1.389	-12	-66	No	21	0	n/a	n/a	0.05	NP
Calcium (mg/L)	MW-05	0.9101	17	66	No	21	0	n/a	n/a	0.05	NP
Calcium (mg/L)	MW-06	0.03303	20	66	No	21	0	n/a	n/a	0.05	NP
Chloride (mg/L)	MW-02 (bg)	-15.45	-124	-58	Yes	19	0	n/a	n/a	0.05	NP
Chloride (mg/L)	MW-03	-33.09	-149	-58	Yes	19	0	n/a	n/a	0.05	NP
Chloride (mg/L)	MW-04	-31.74	-132	-58	Yes	19	0	n/a	n/a	0.05	NP
Chloride (mg/L)	MW-05	-80.57	-138	-58	Yes	19	0	n/a	n/a	0.05	NP
Chloride (mg/L)	MW-06	-0.6513	-76	-58	Yes	19	0	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-02 (bg)	0.03329	67	81	No	24	4.167	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-03	-0.1211	-146	-81	Yes	24	50	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-04	-0.1134	-133	-81	Yes	24	41.67	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-05	-0.1962	-162	-81	Yes	24	50	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-06	0.02792	182	81	Yes	24	95.83	n/a	n/a	0.05	NP
pH (SU)	MW-02 (bg)	-0.00...	-0.7432	-1.96	No	47	0	n/a	n/a	0.05	NP
pH (SU)	MW-03	0.08487	5.633	1.96	Yes	47	0	n/a	n/a	0.05	NP
pH (SU)	MW-04	0.04092	3.592	1.96	Yes	48	0	n/a	n/a	0.05	NP
pH (SU)	MW-05	0.1601	6.046	1.96	Yes	48	0	n/a	n/a	0.05	NP
pH (SU)	MW-06	-0.01609	-1.796	-1.96	No	48	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	MW-02 (bg)	-2.086	-0.5756	-1.96	No	43	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	MW-03	-57.72	-4.219	-1.96	Yes	43	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	MW-04	-49.19	-1.649	-1.96	No	44	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	MW-05	-133.9	-3.004	-1.96	Yes	44	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	MW-06	0.8232	5.325	1.96	Yes	44	13.64	n/a	n/a	0.05	NP
Total Dissolved S...	MW-02 (bg)	-6.251	-51	-158	No	38	0	n/a	n/a	0.05	NP
Total Dissolved S...	MW-03	-109.2	-473	-158	Yes	38	0	n/a	n/a	0.05	NP
Total Dissolved S...	MW-04	-154.6	-342	-164	Yes	39	0	n/a	n/a	0.05	NP
Total Dissolved S...	MW-05	-277	-419	-164	Yes	39	0	n/a	n/a	0.05	NP
Total Dissolved S...	MW-06	2.999	268	164	Yes	39	0	n/a	n/a	0.05	NP

Sen's Slope and 95% Confidence Band

MW-02 (bg)



n = 19

Slope = -0.1325
units per year.

Mann-Kendall
statistic = -134
critical = -58

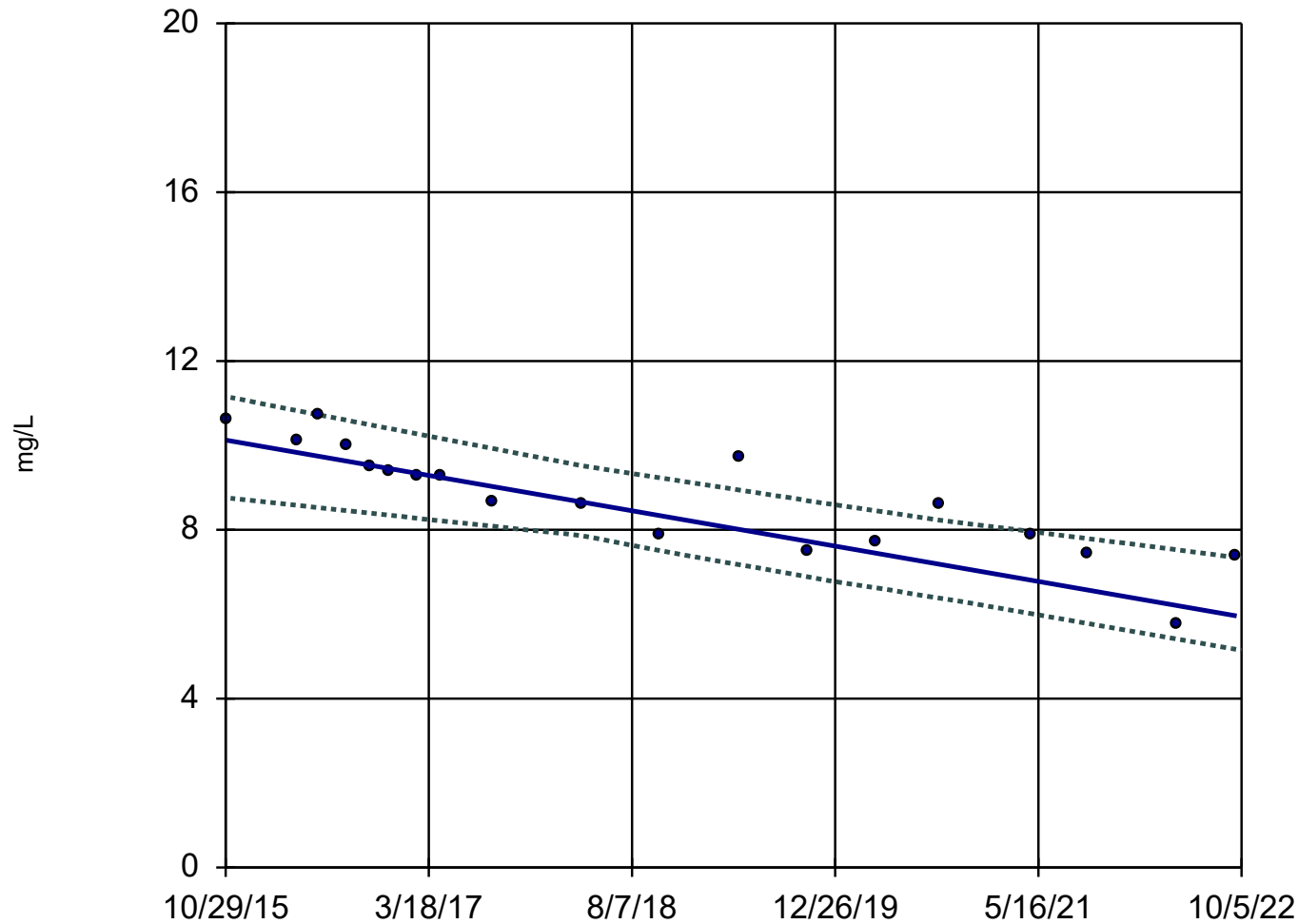
Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Boron Analysis Run 11/11/2022 1:13 PM View: Landfill AppIII

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



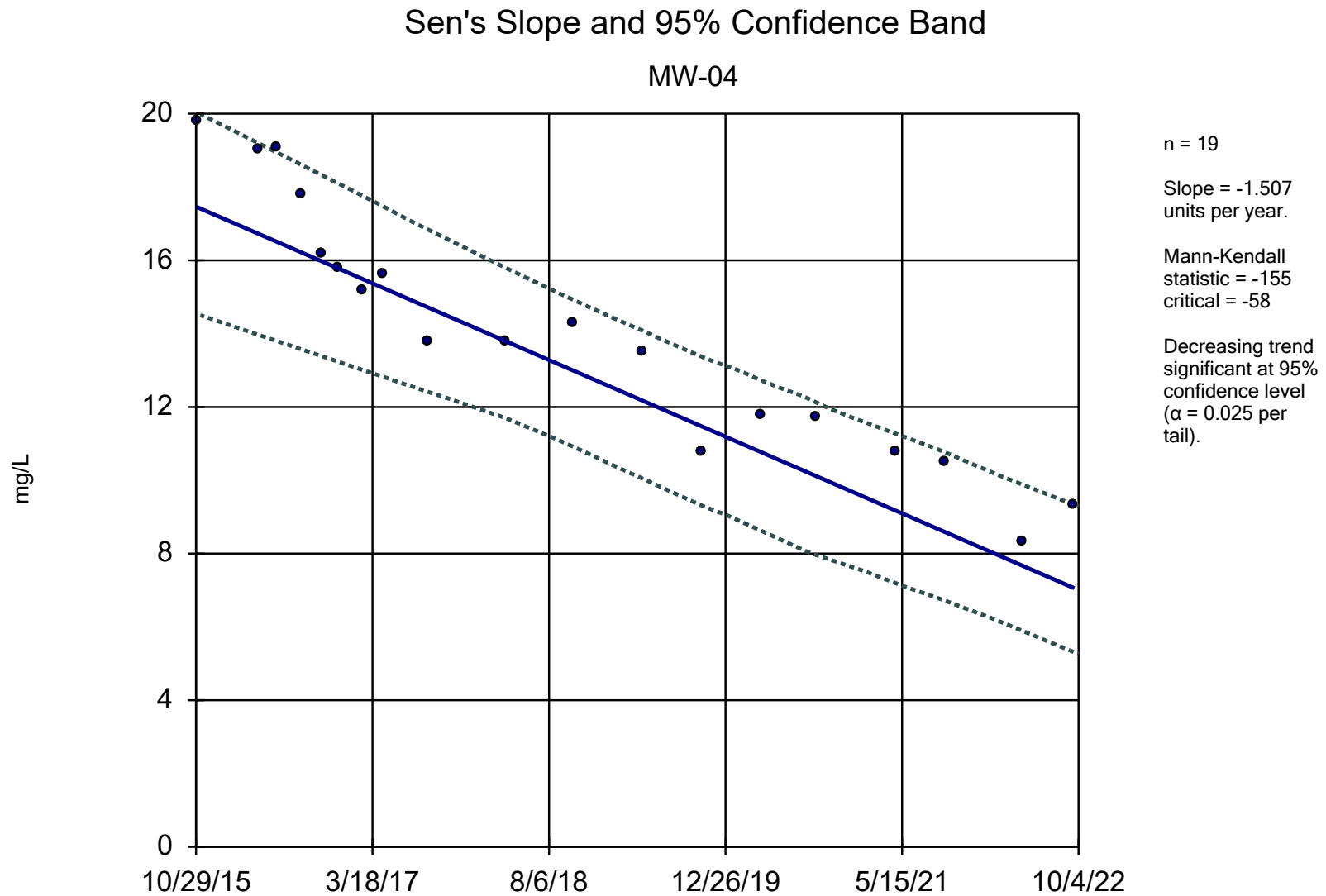
n = 19

Slope = -0.6034
units per year.

Mann-Kendall
statistic = -139
critical = -58

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

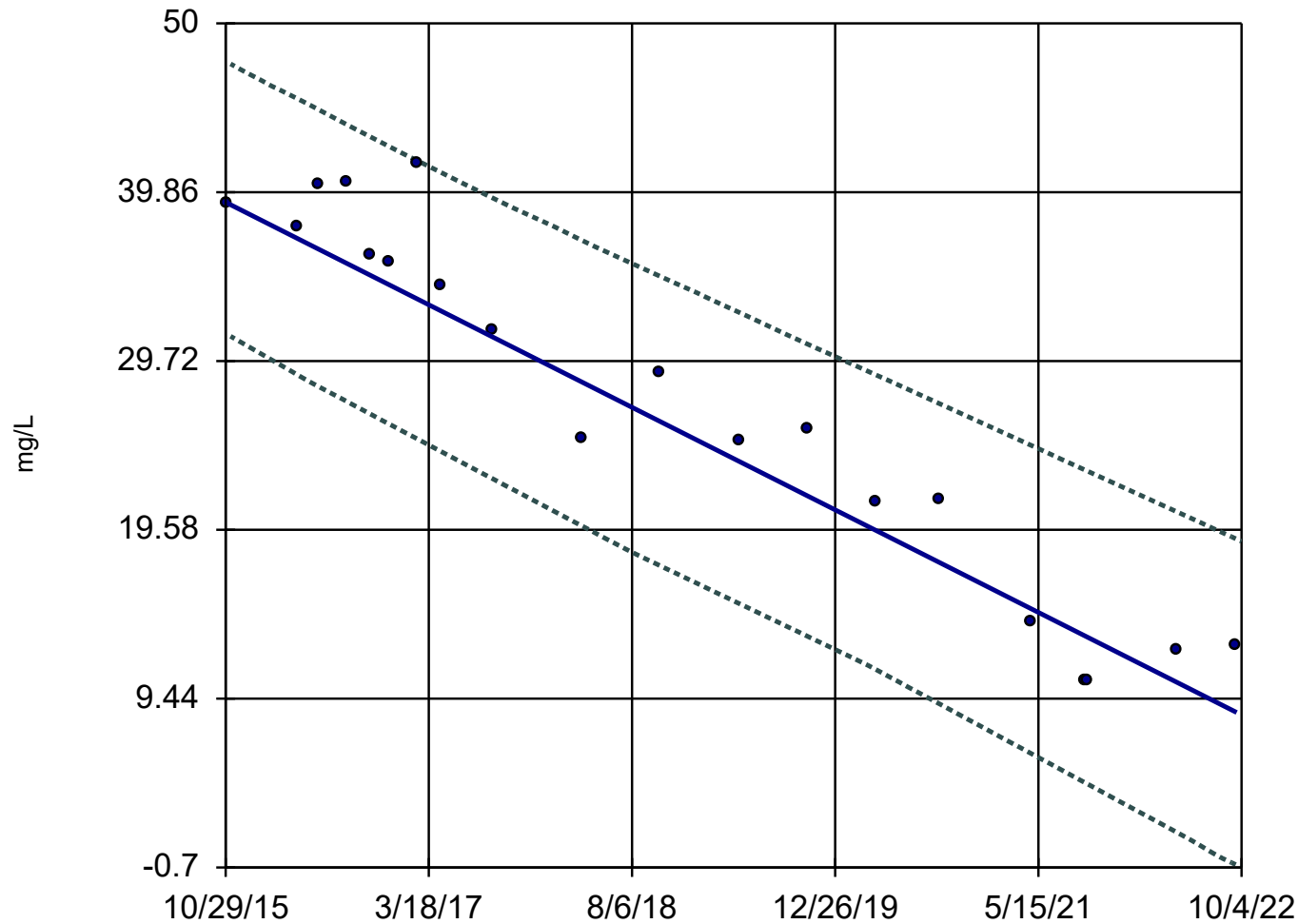
Constituent: Boron Analysis Run 11/11/2022 1:13 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Boron Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05



n = 20

Slope = -4.437
units per year.

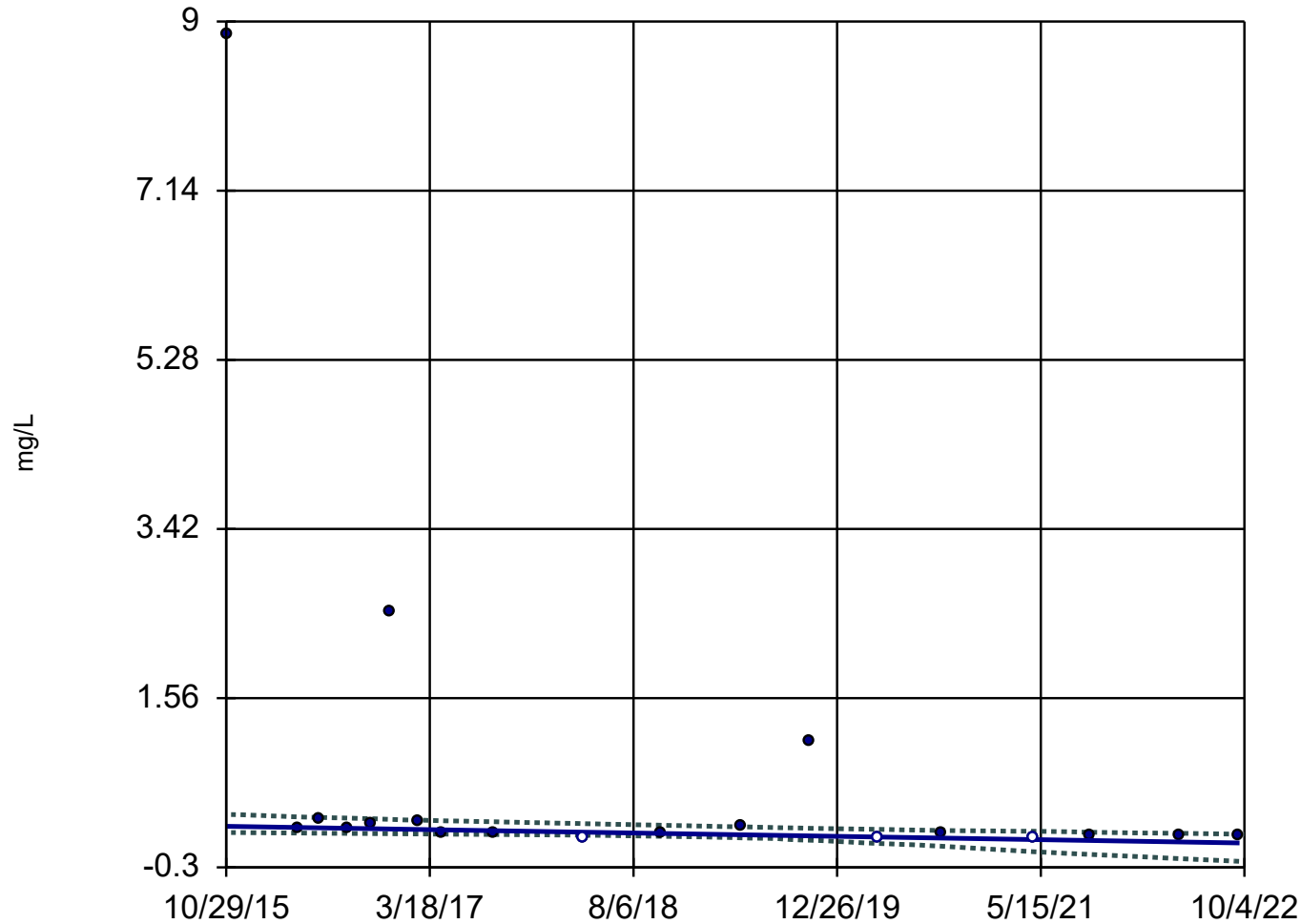
Mann-Kendall
statistic = -149
critical = -62

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Boron Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-06



n = 19

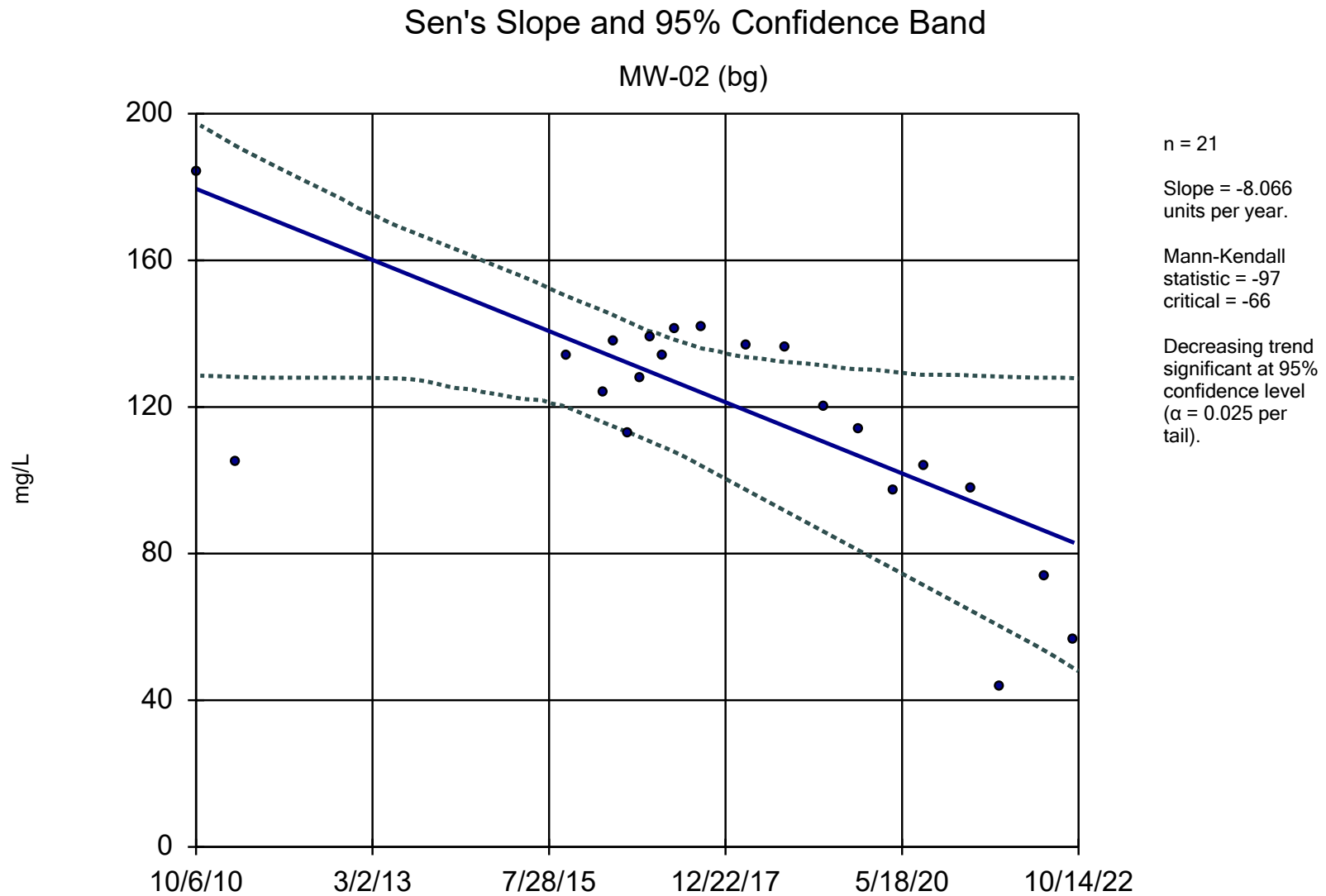
Slope = -0.02632
units per year.

Mann-Kendall
statistic = -82
critical = -58

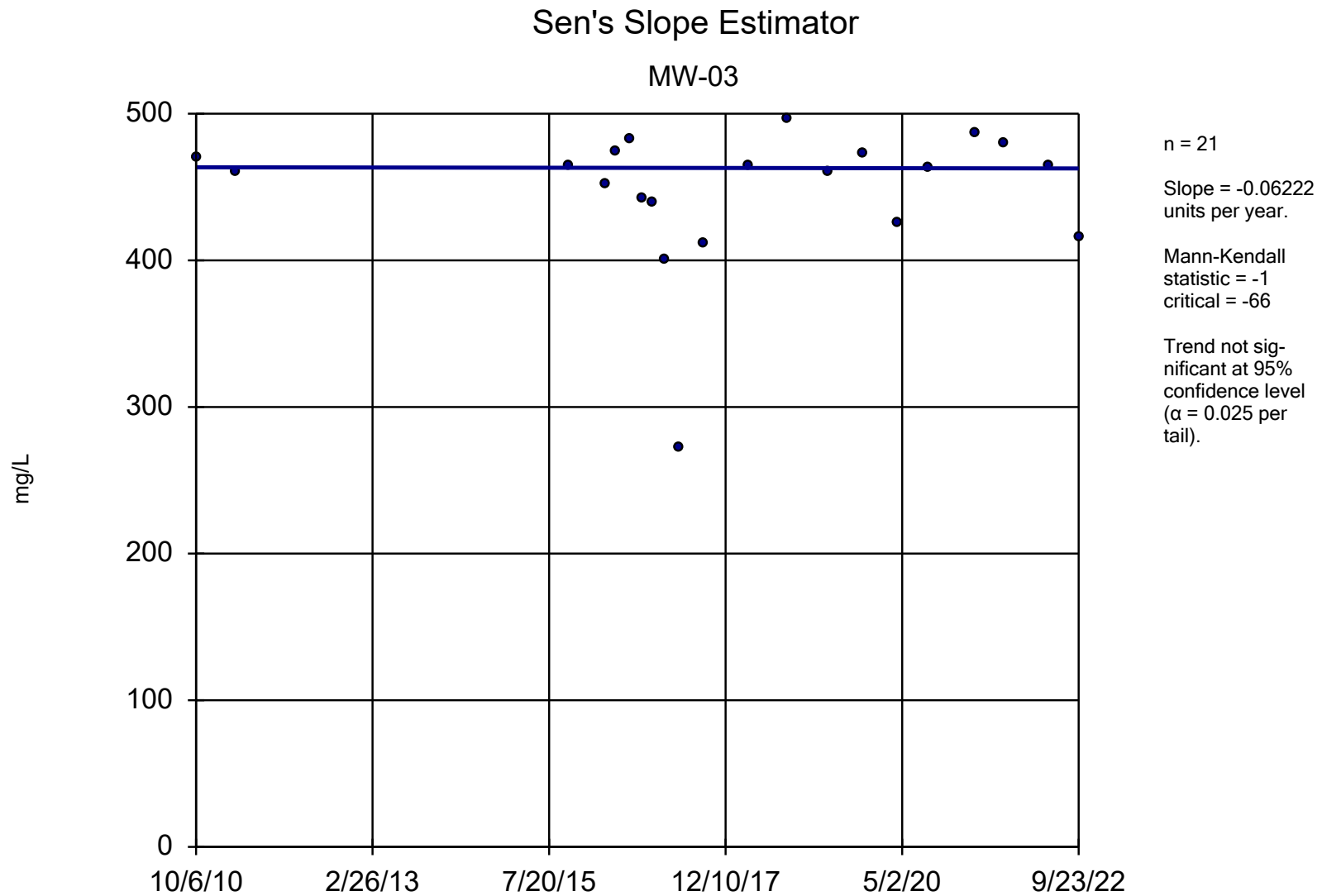
Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Boron Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII

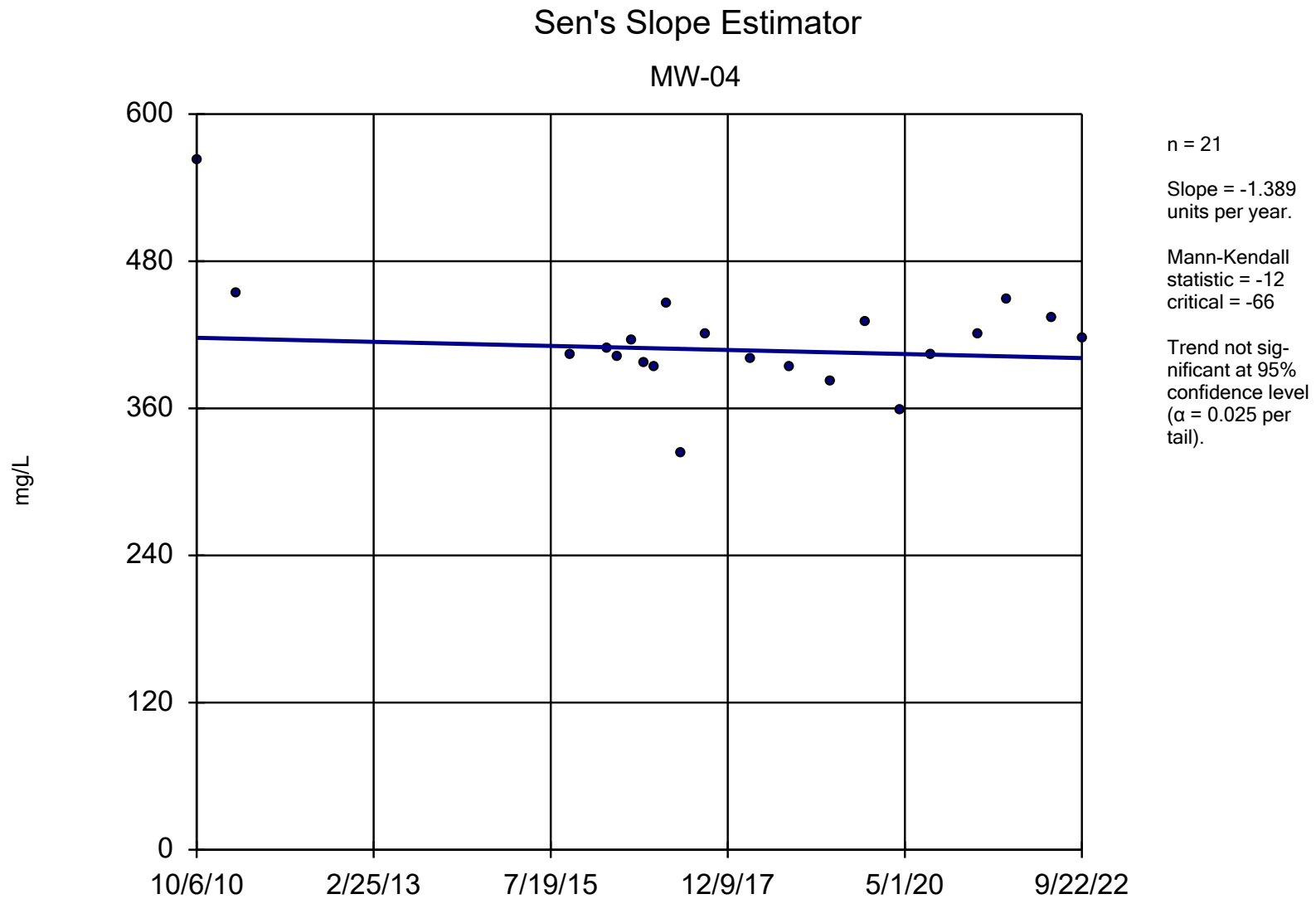
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

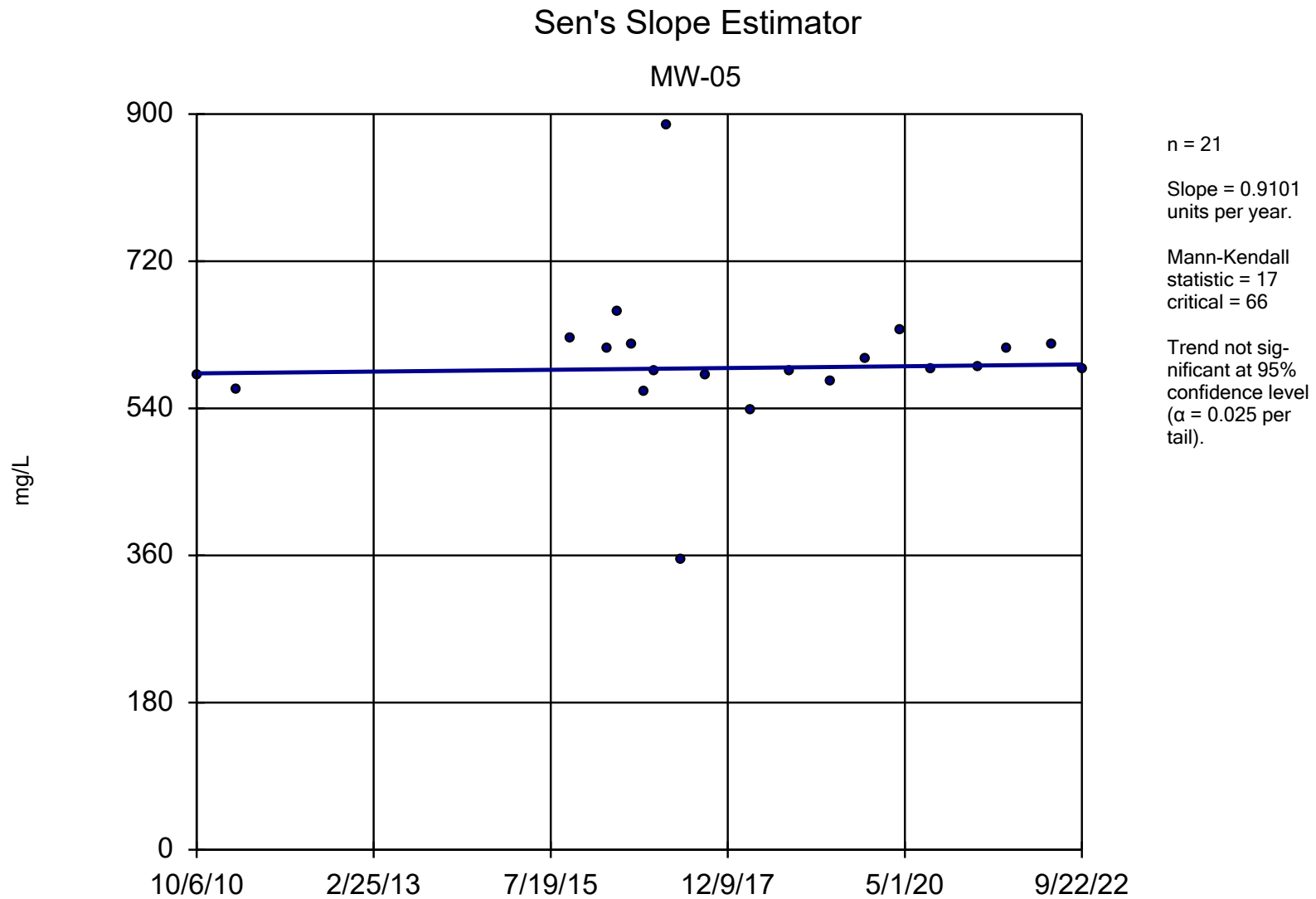


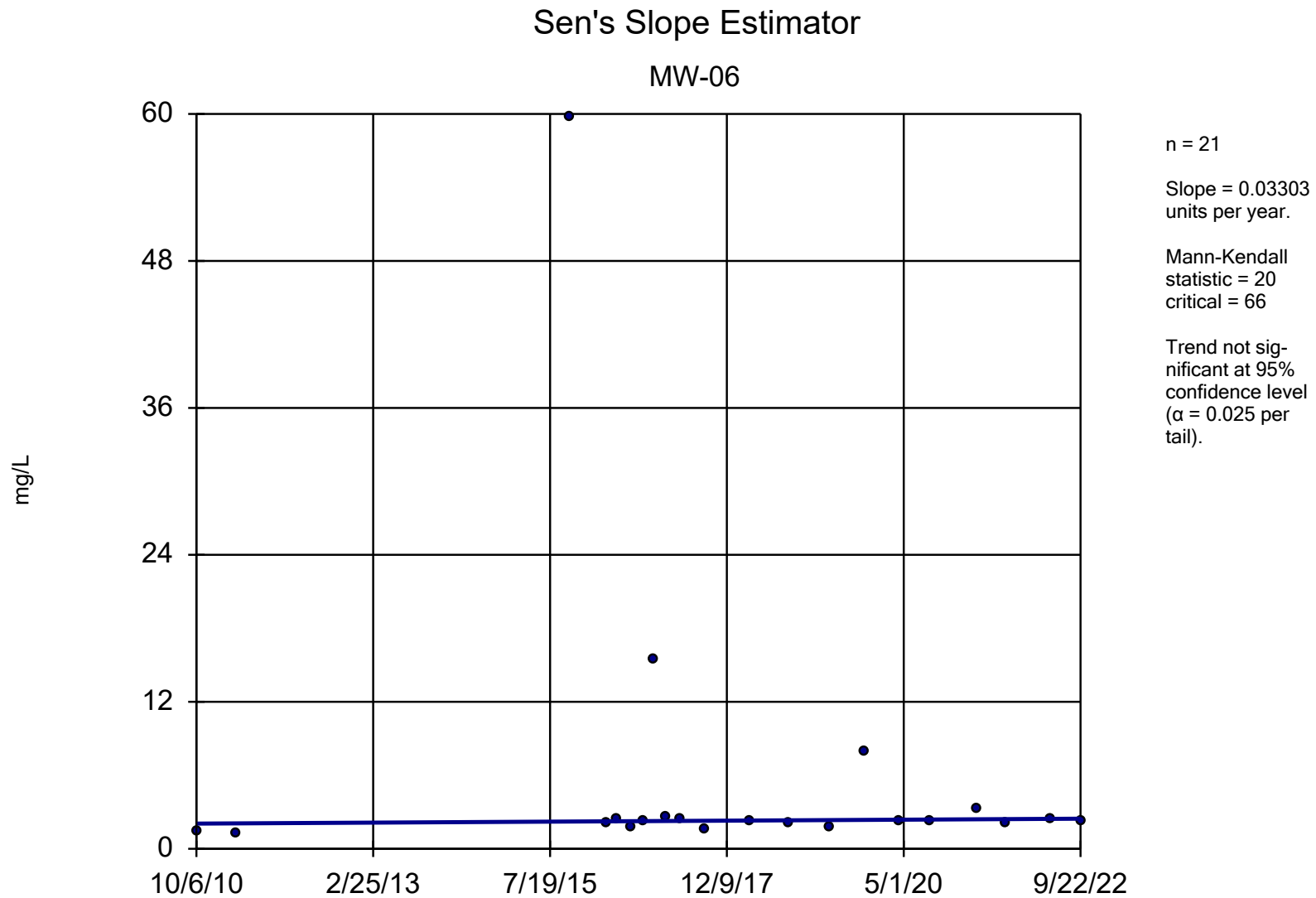
Constituent: Calcium Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



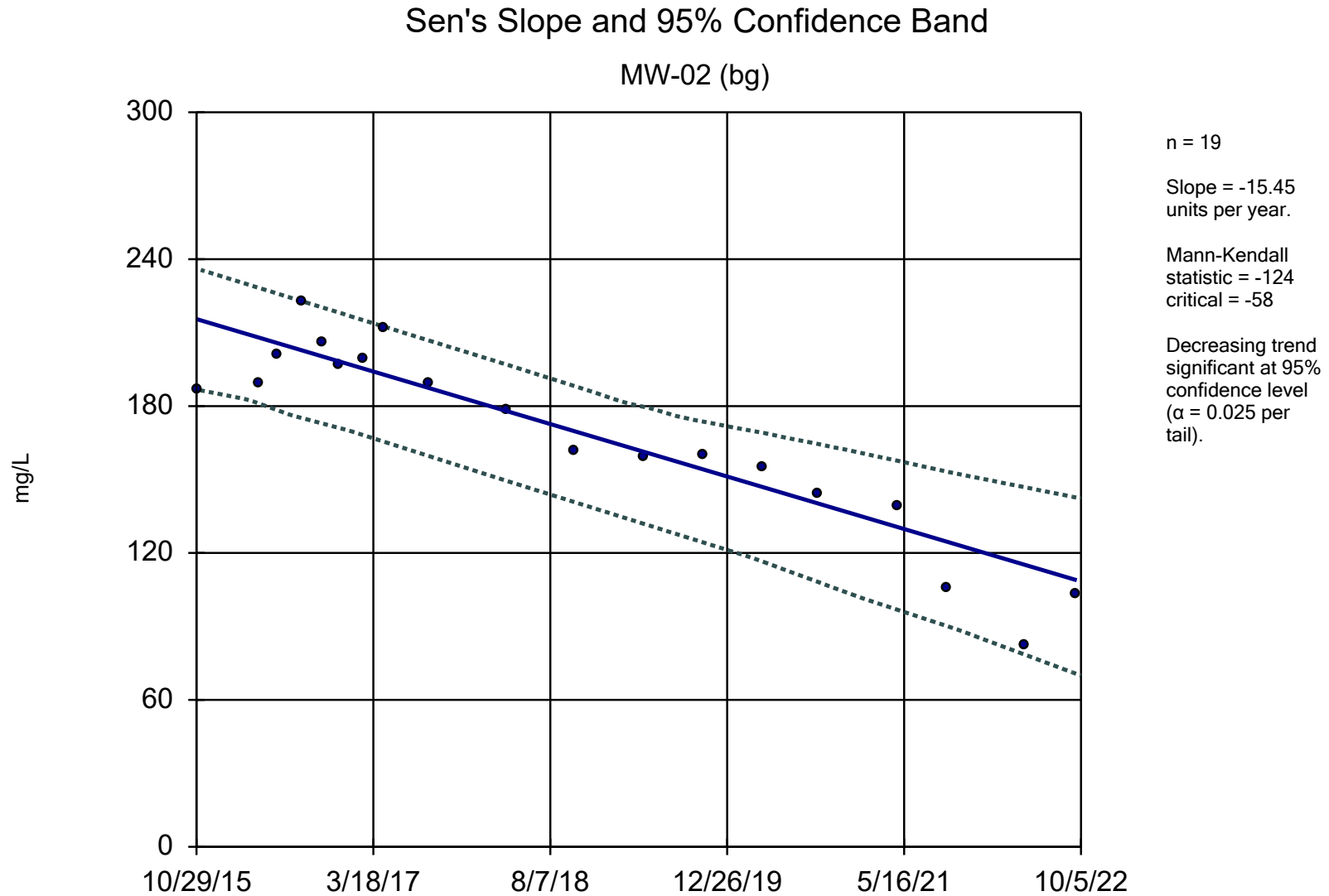
Constituent: Calcium Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen







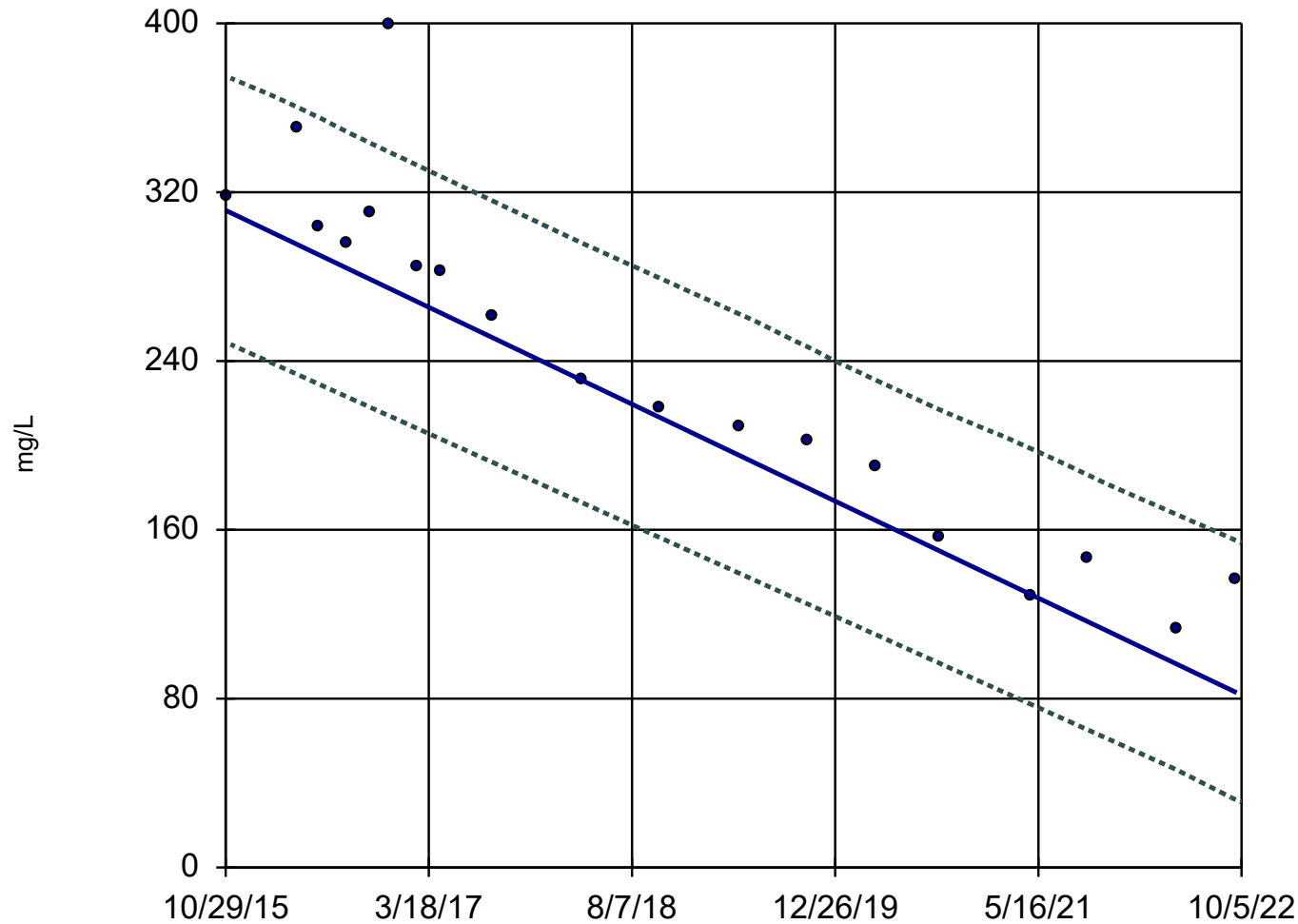
Constituent: Calcium Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Chloride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



n = 19

Slope = -33.09
units per year.

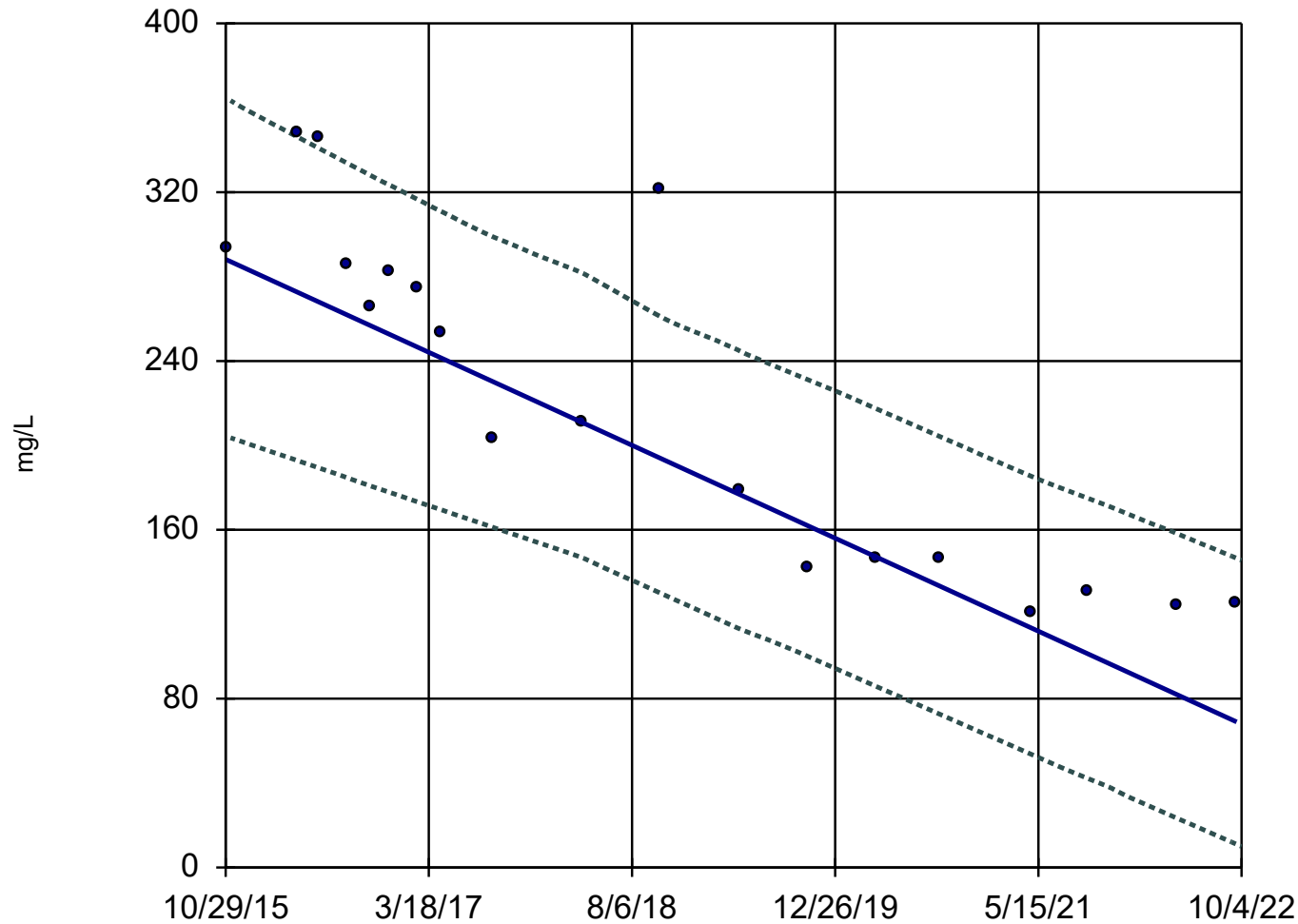
Mann-Kendall
statistic = -149
critical = -58

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Chloride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04



n = 19

Slope = -31.74
units per year.

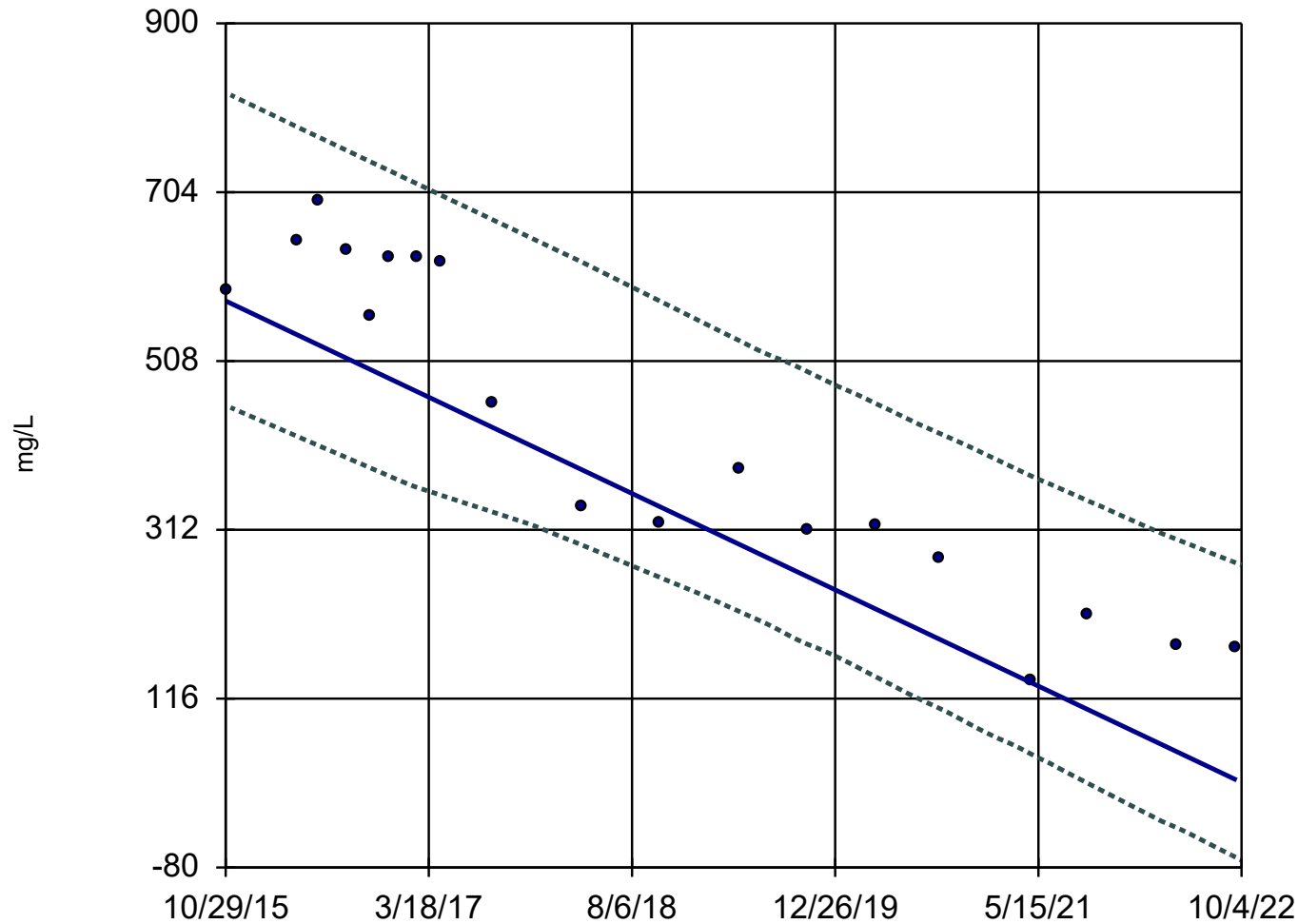
Mann-Kendall
statistic = -132
critical = -58

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Chloride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

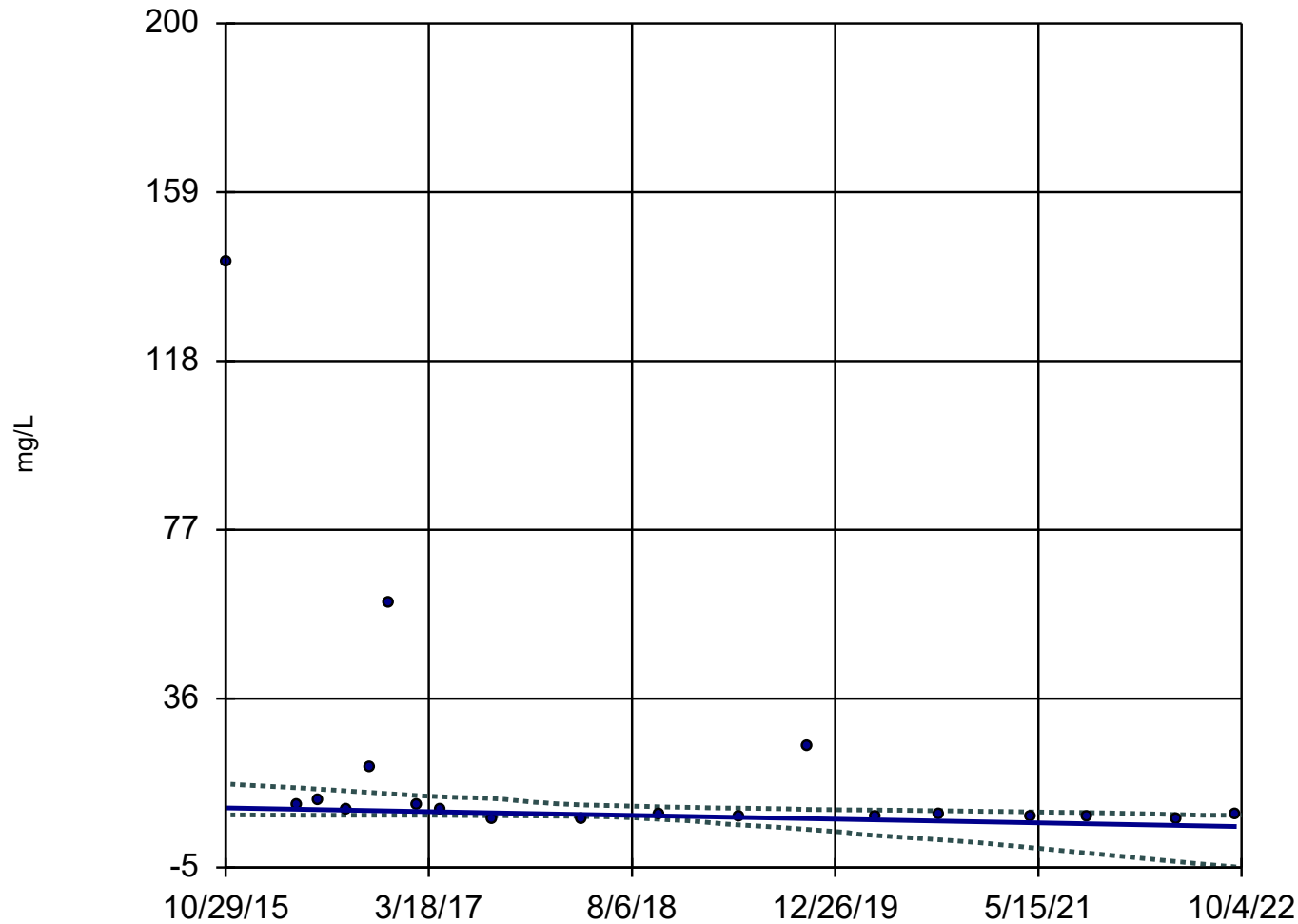
Sen's Slope and 95% Confidence Band

MW-05



Sen's Slope and 95% Confidence Band

MW-06



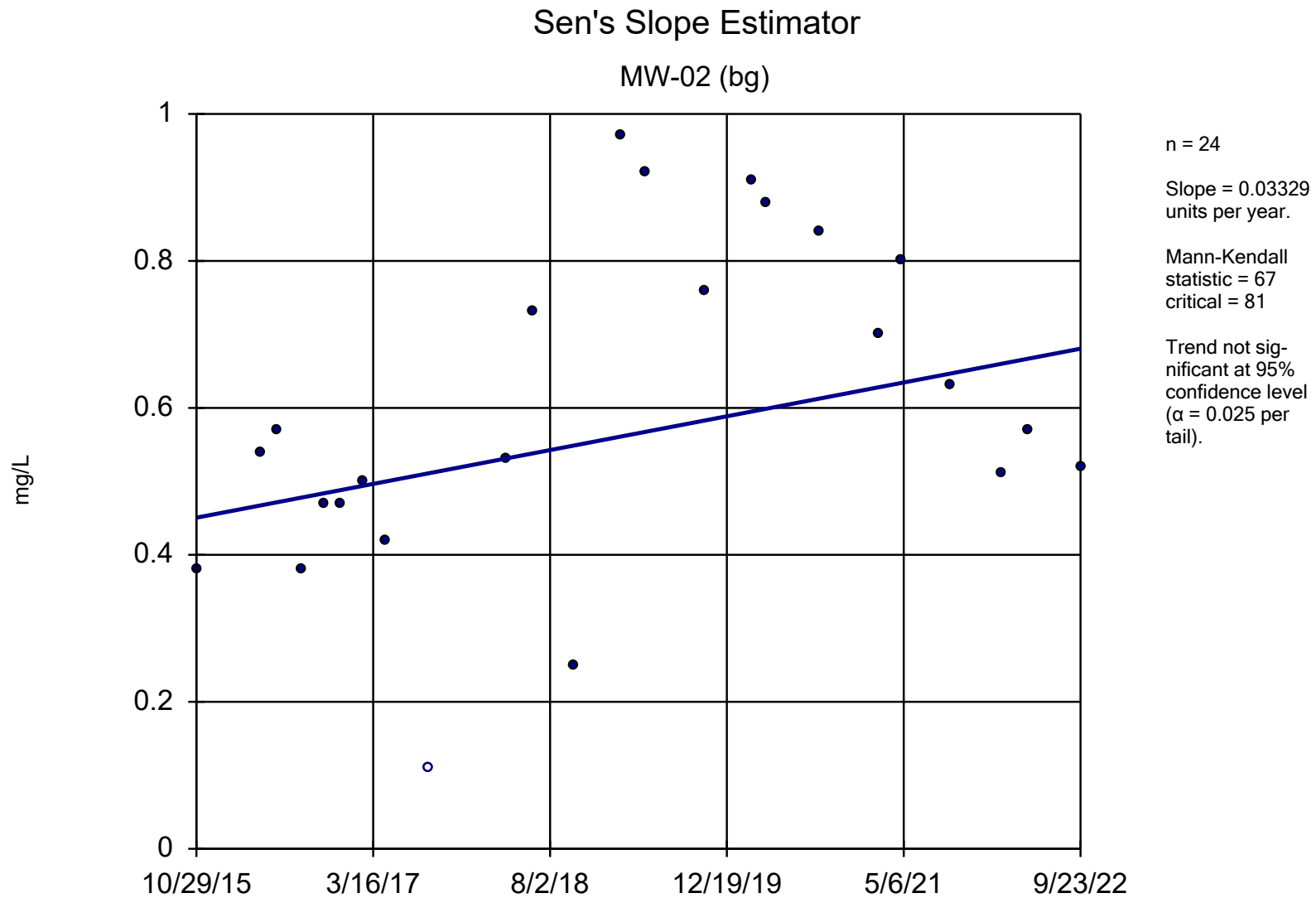
n = 19

Slope = -0.6513
units per year.

Mann-Kendall
statistic = -76
critical = -58

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

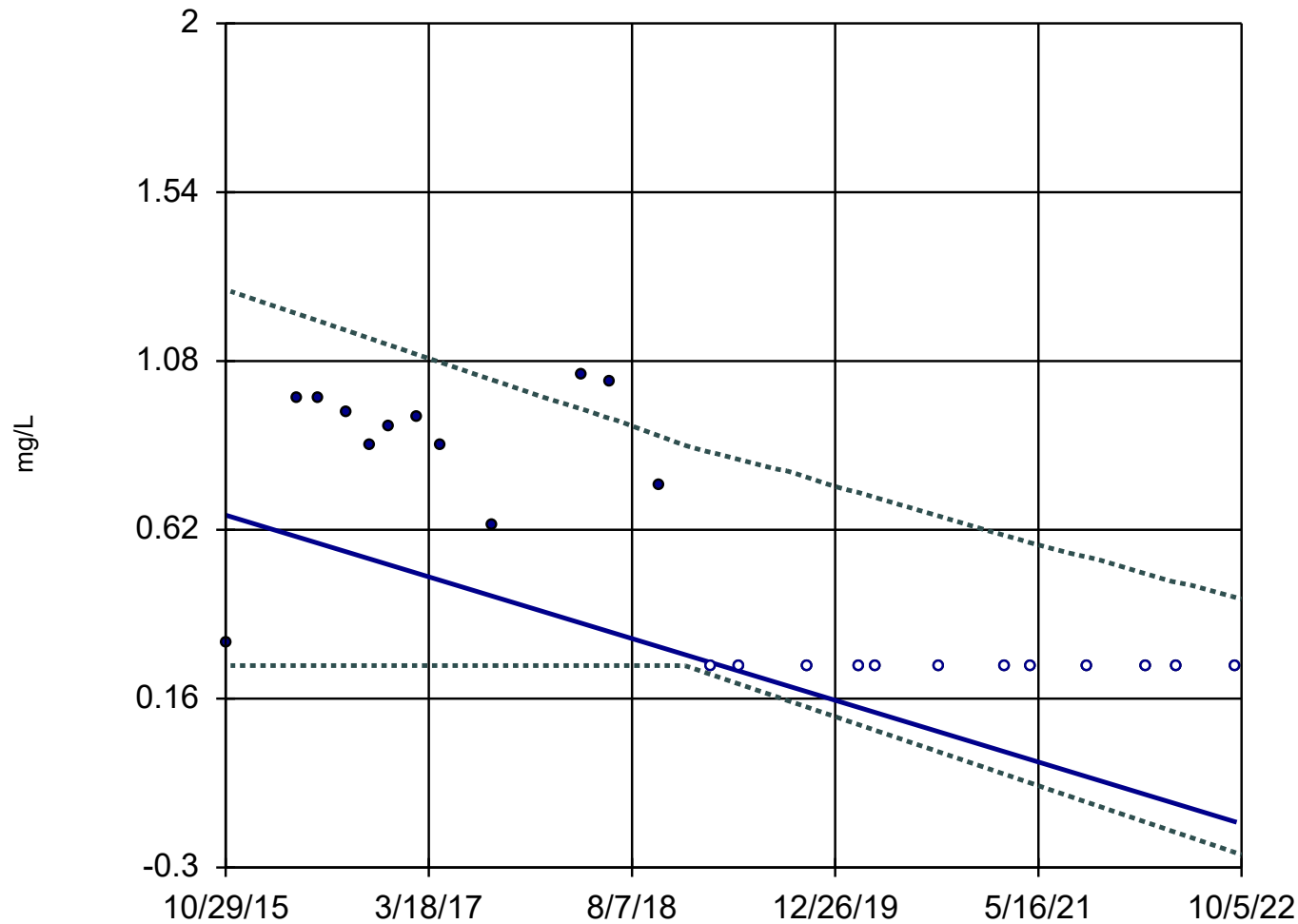
Constituent: Chloride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Fluoride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



n = 24

Slope = -0.1211
units per year.

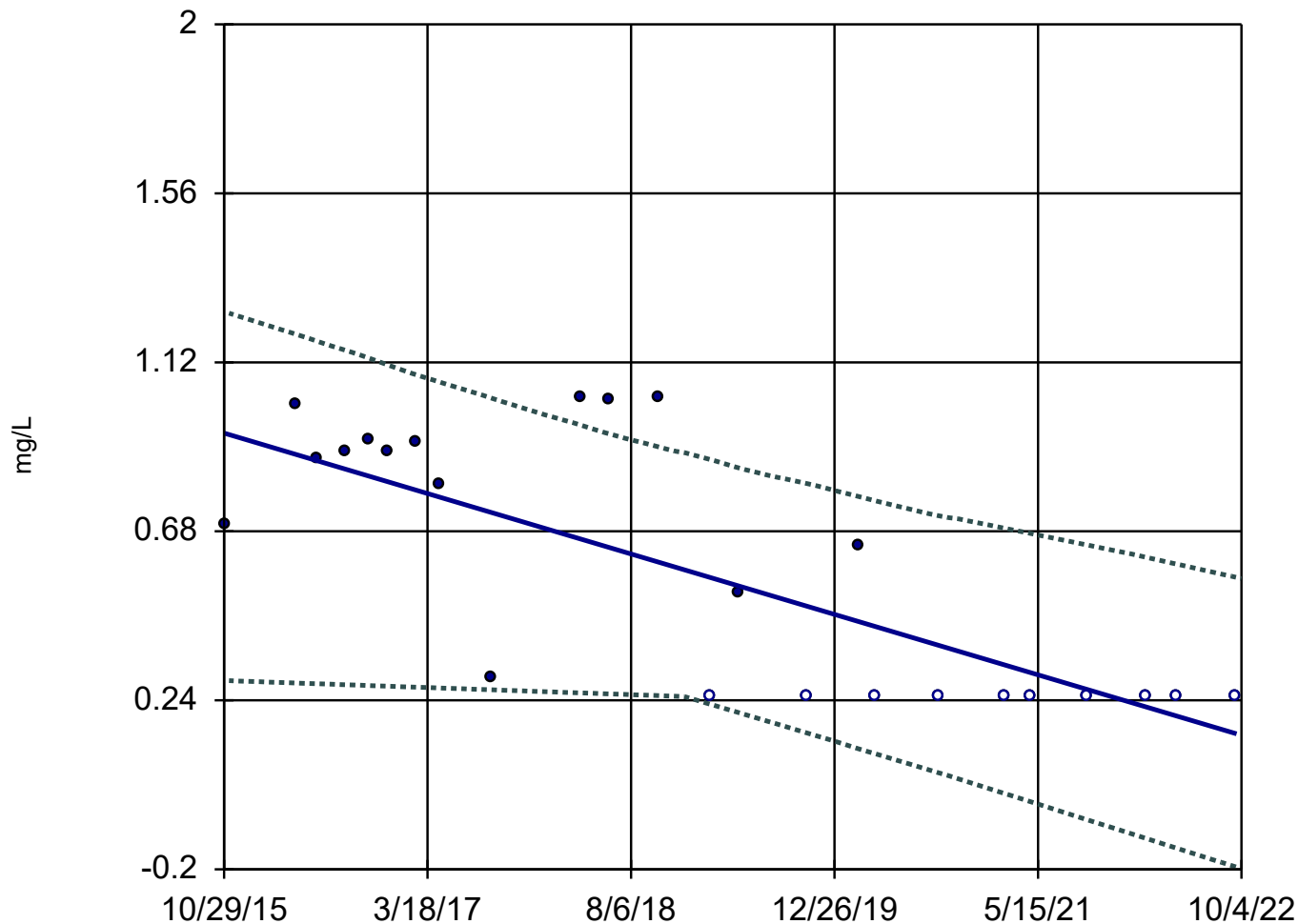
Mann-Kendall
statistic = -146
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Fluoride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

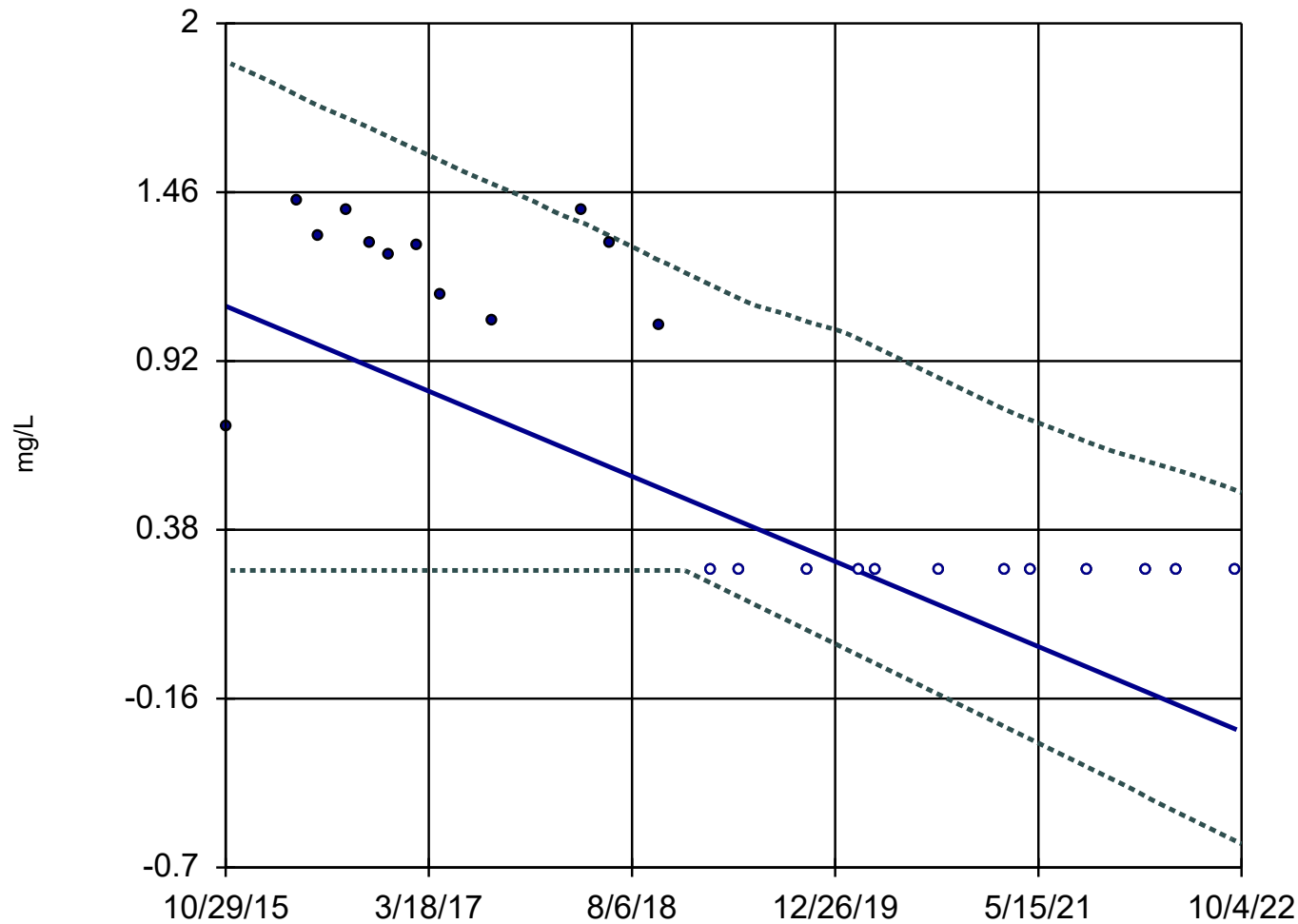
Sen's Slope and 95% Confidence Band

MW-04



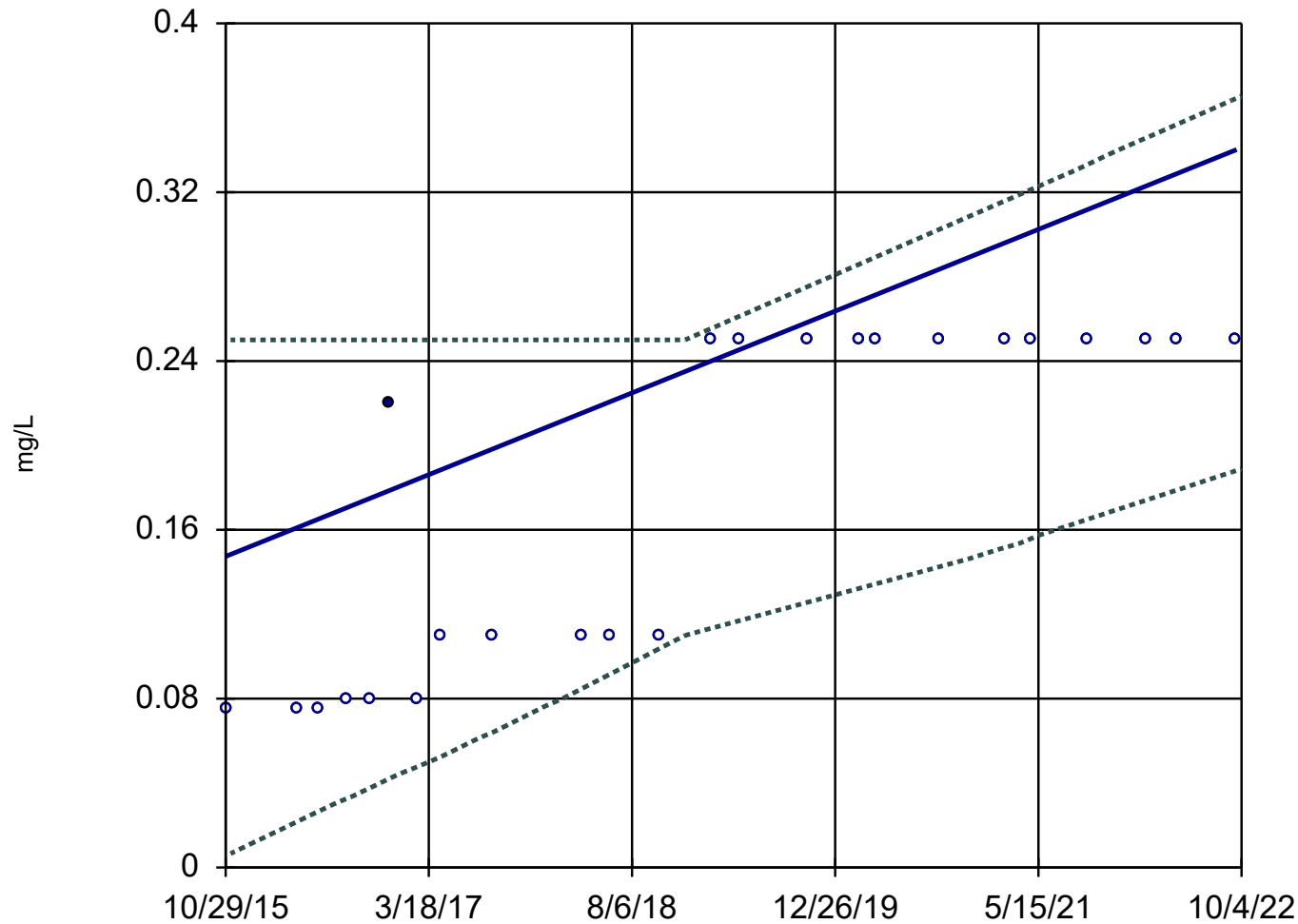
Sen's Slope and 95% Confidence Band

MW-05



Sen's Slope and 95% Confidence Band

MW-06



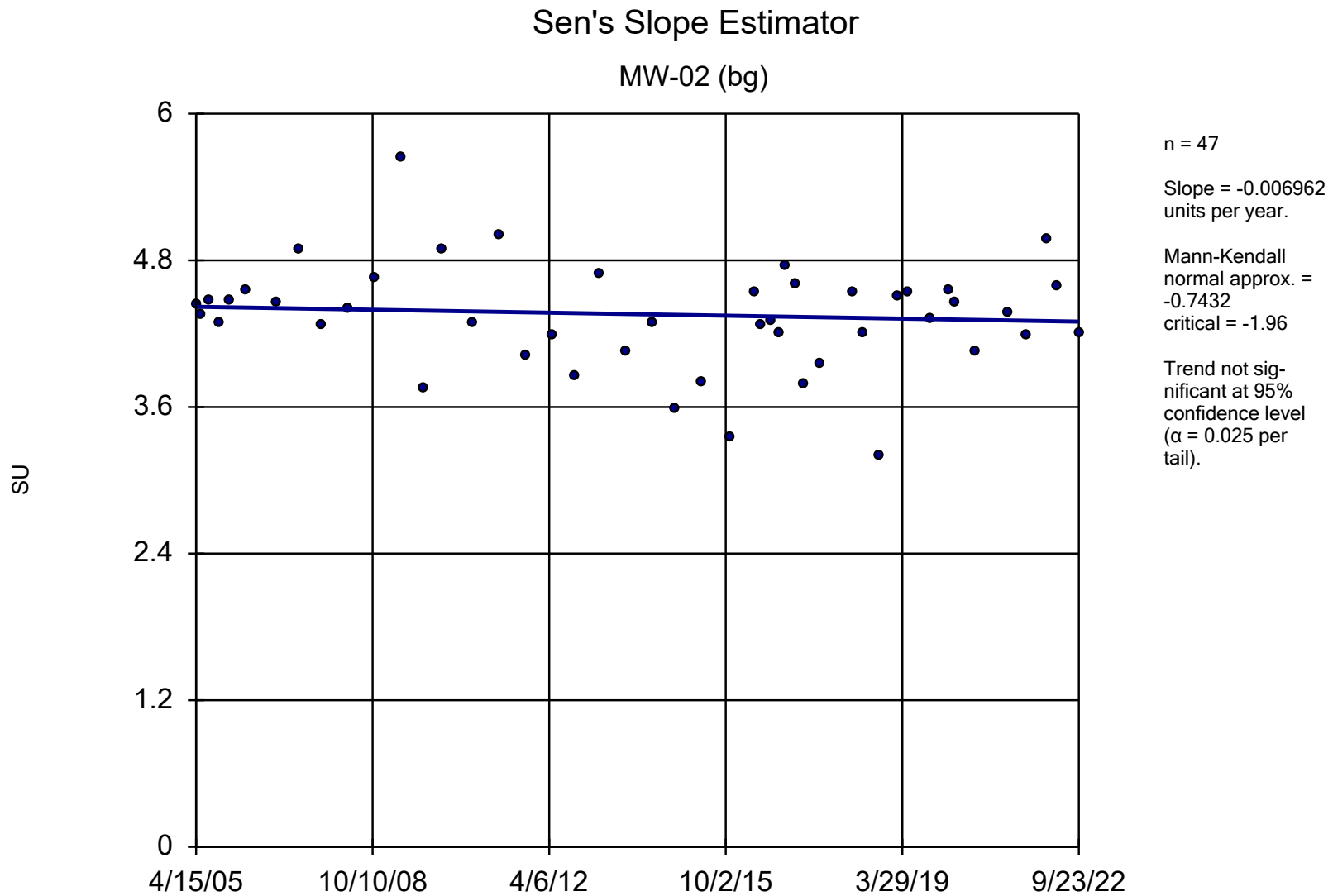
n = 24

Slope = 0.02792
units per year.

Mann-Kendall
statistic = 182
critical = 81

Increasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

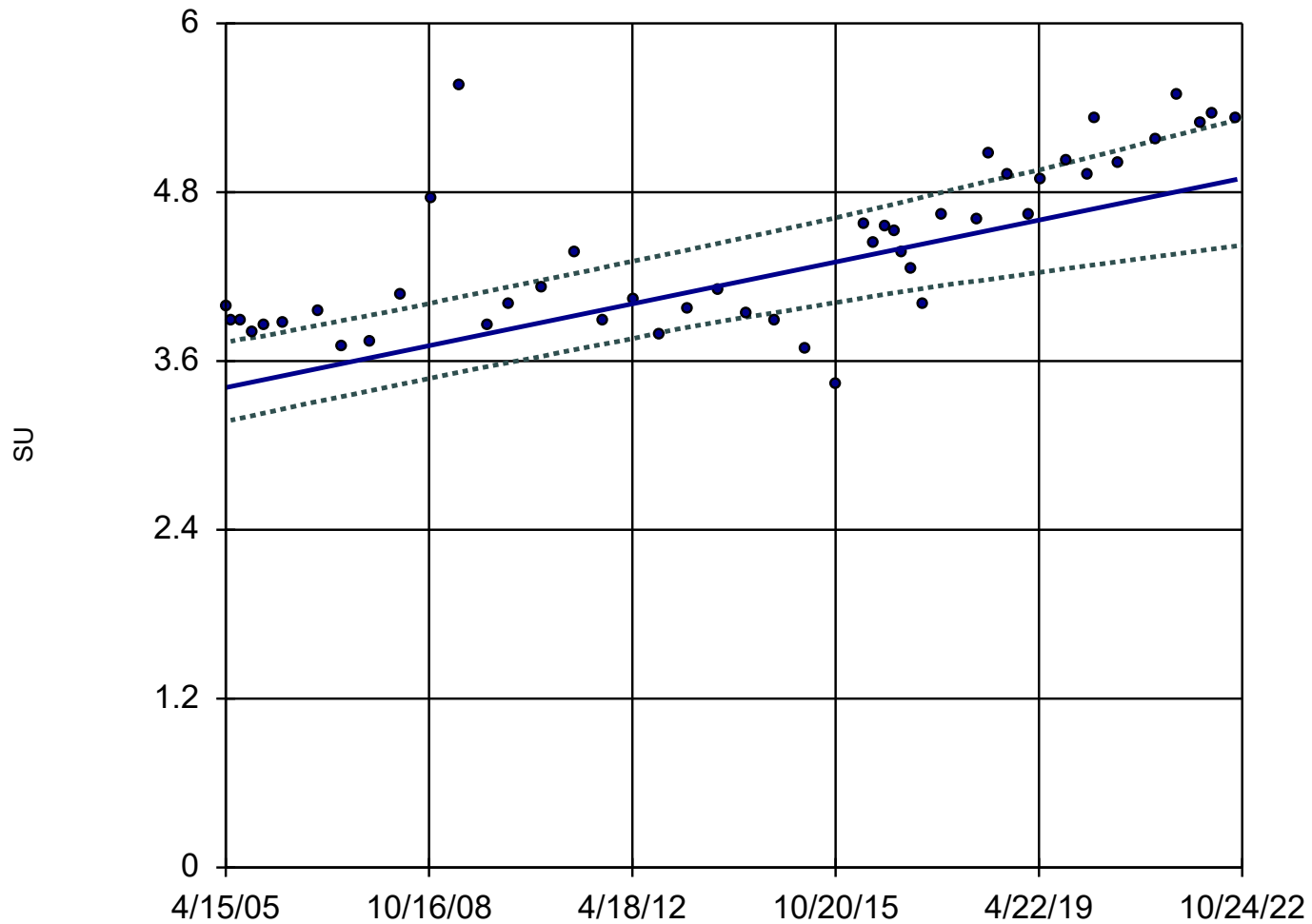
Constituent: Fluoride Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: pH Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



n = 47

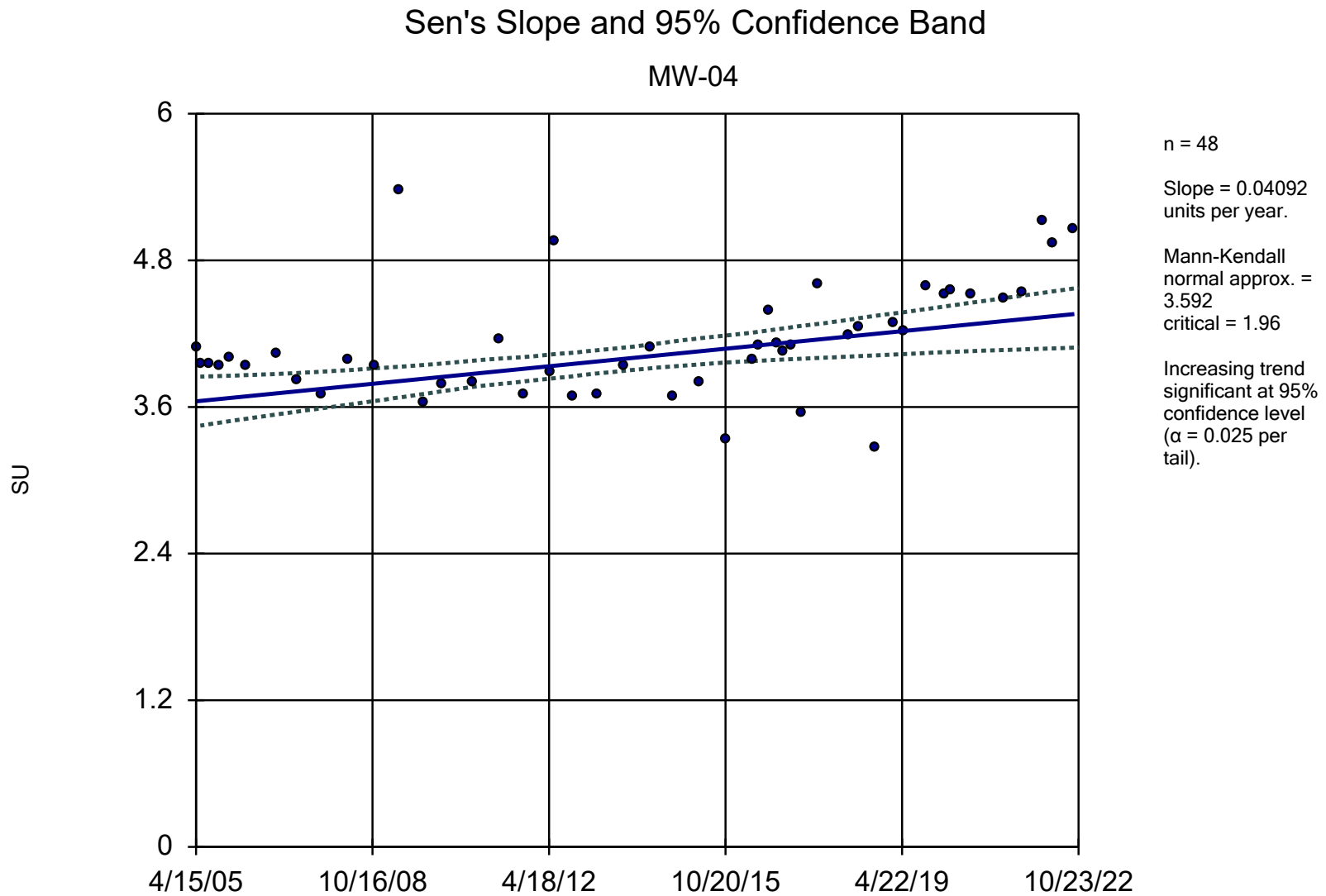
Slope = 0.08487
units per year.

Mann-Kendall
normal approx. =
5.633
critical = 1.96

Increasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: pH Analysis Run 11/11/2022 1:14 PM View: Landfill ApplII

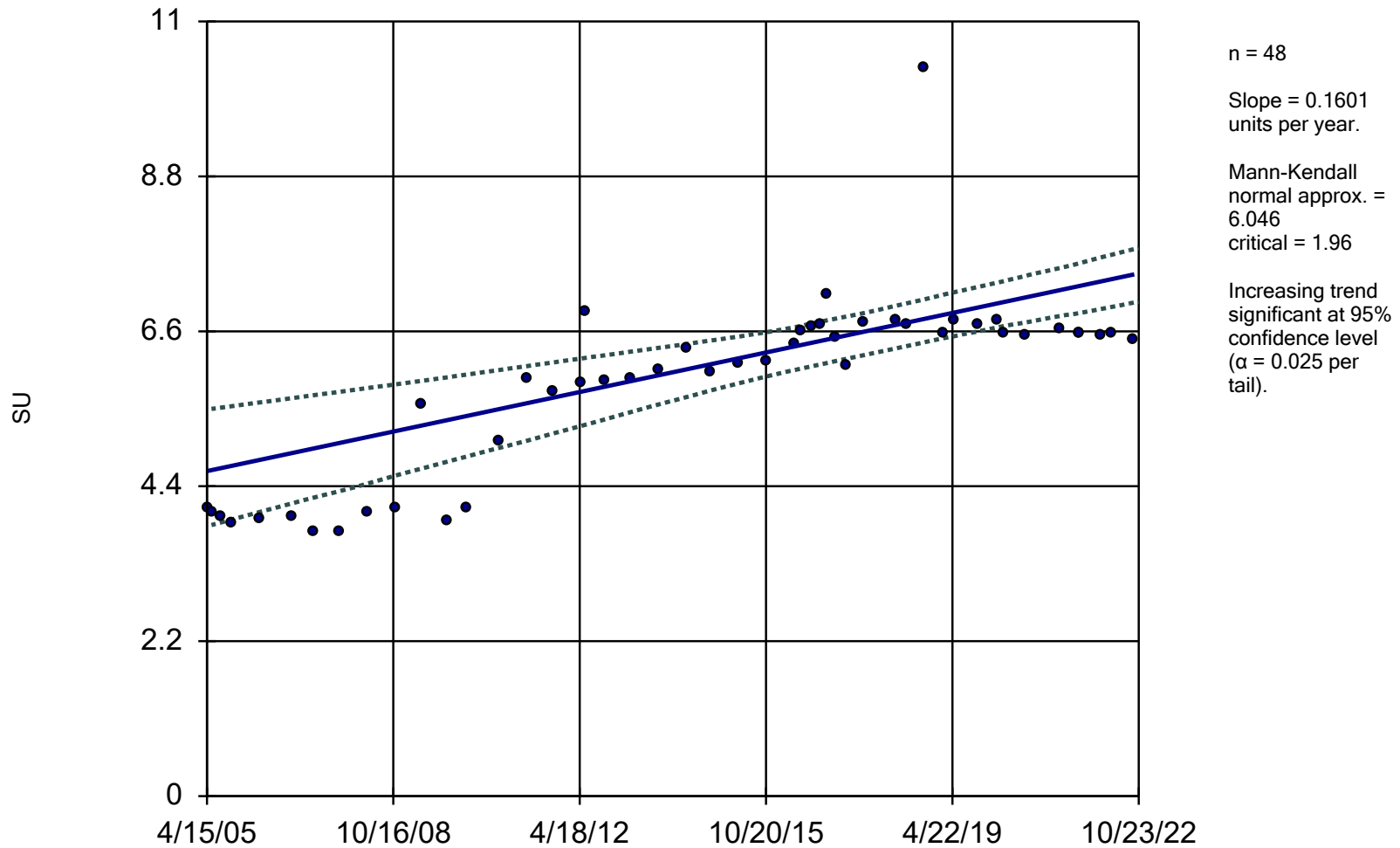
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: pH Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

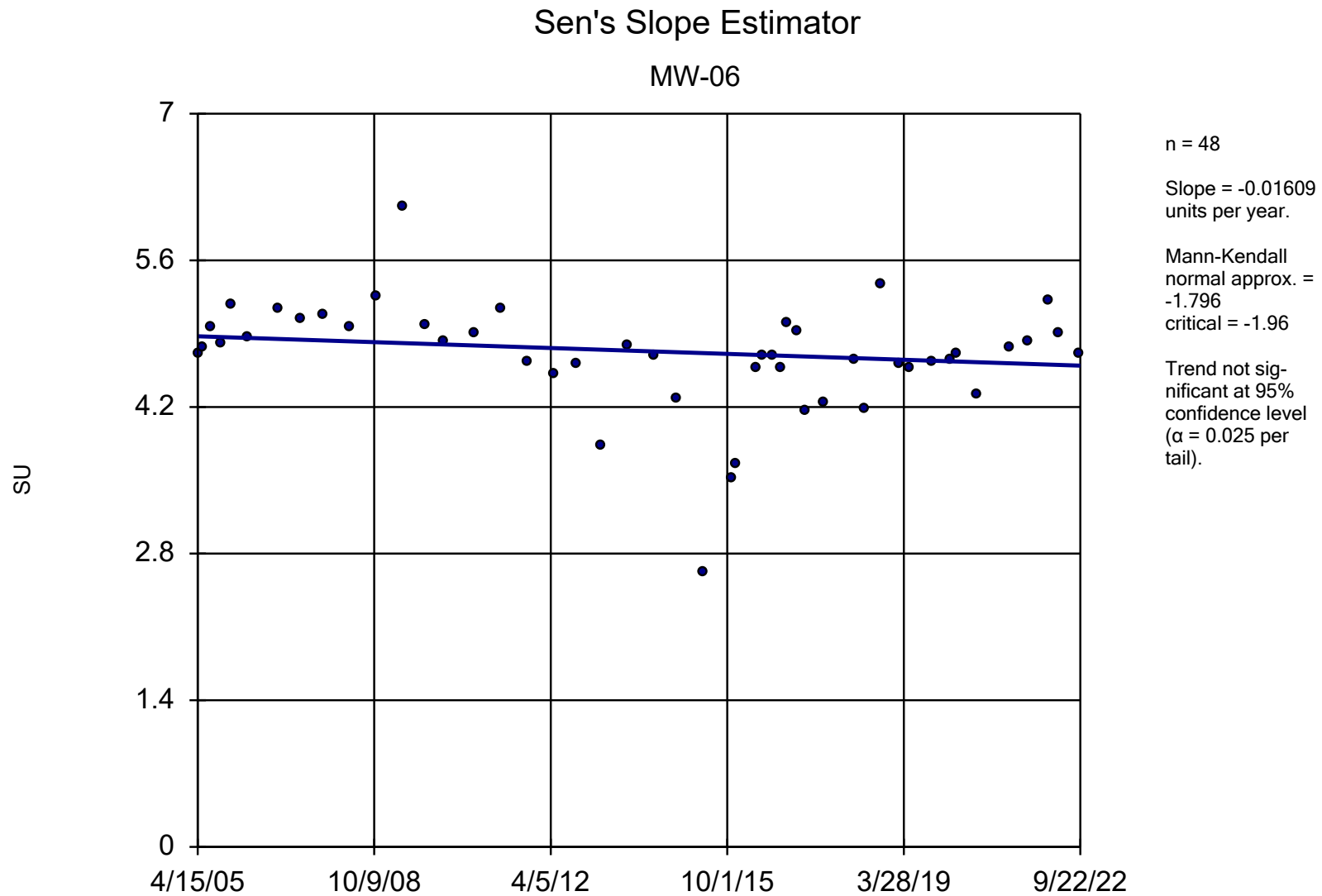
Sen's Slope and 95% Confidence Band

MW-05

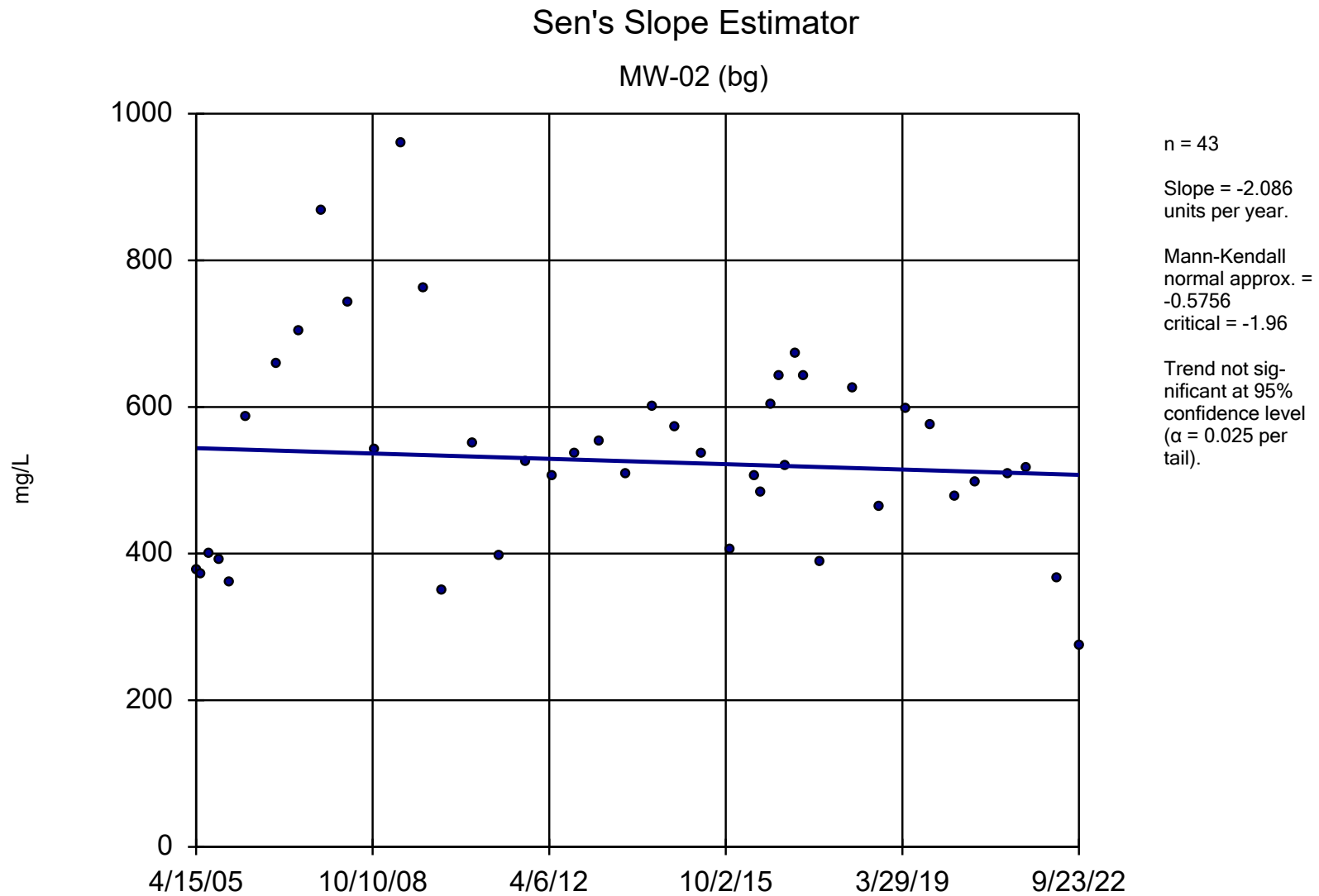


Constituent: pH Analysis Run 11/11/2022 1:14 PM View: Landfill ApplII

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



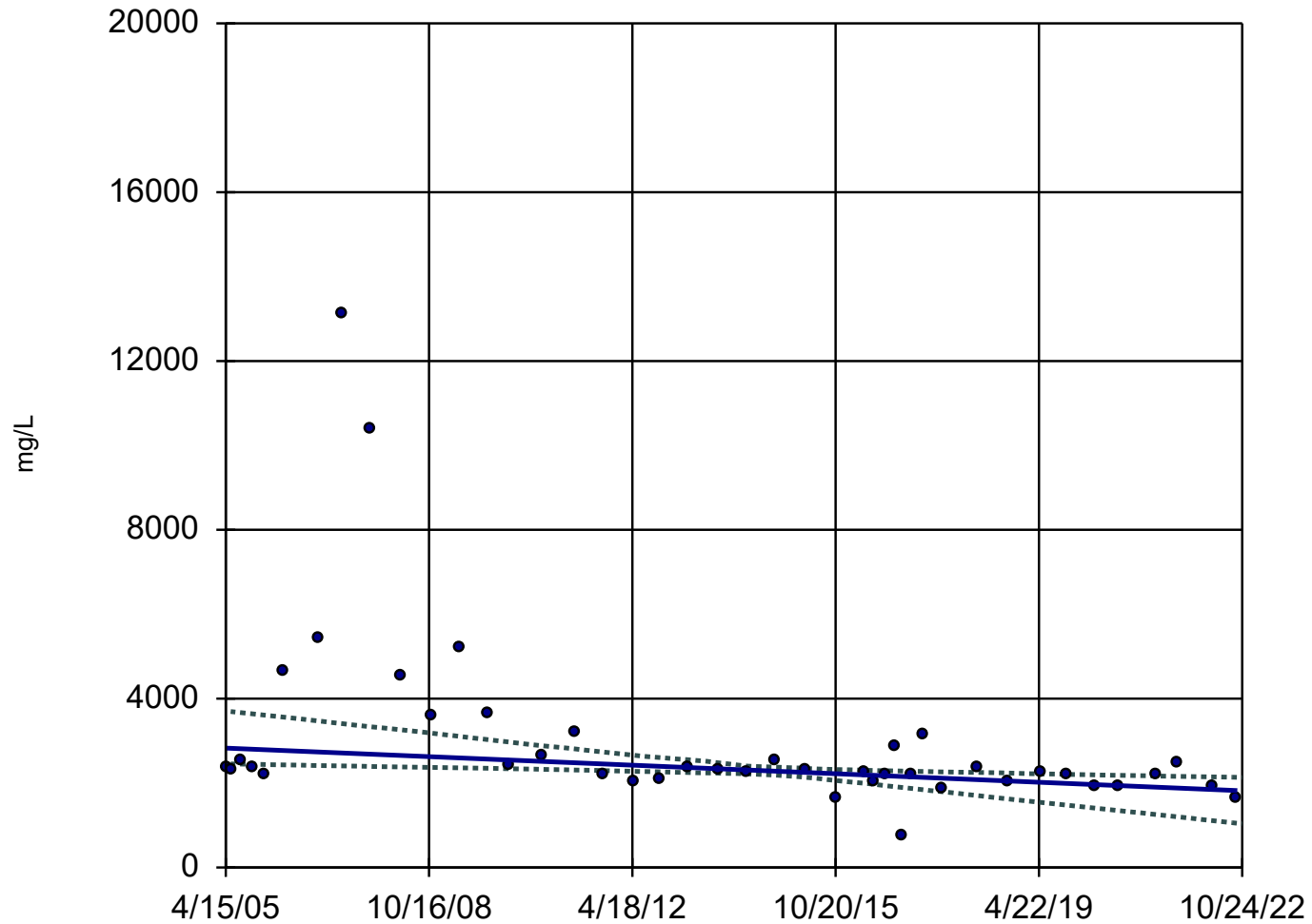
Constituent: pH Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

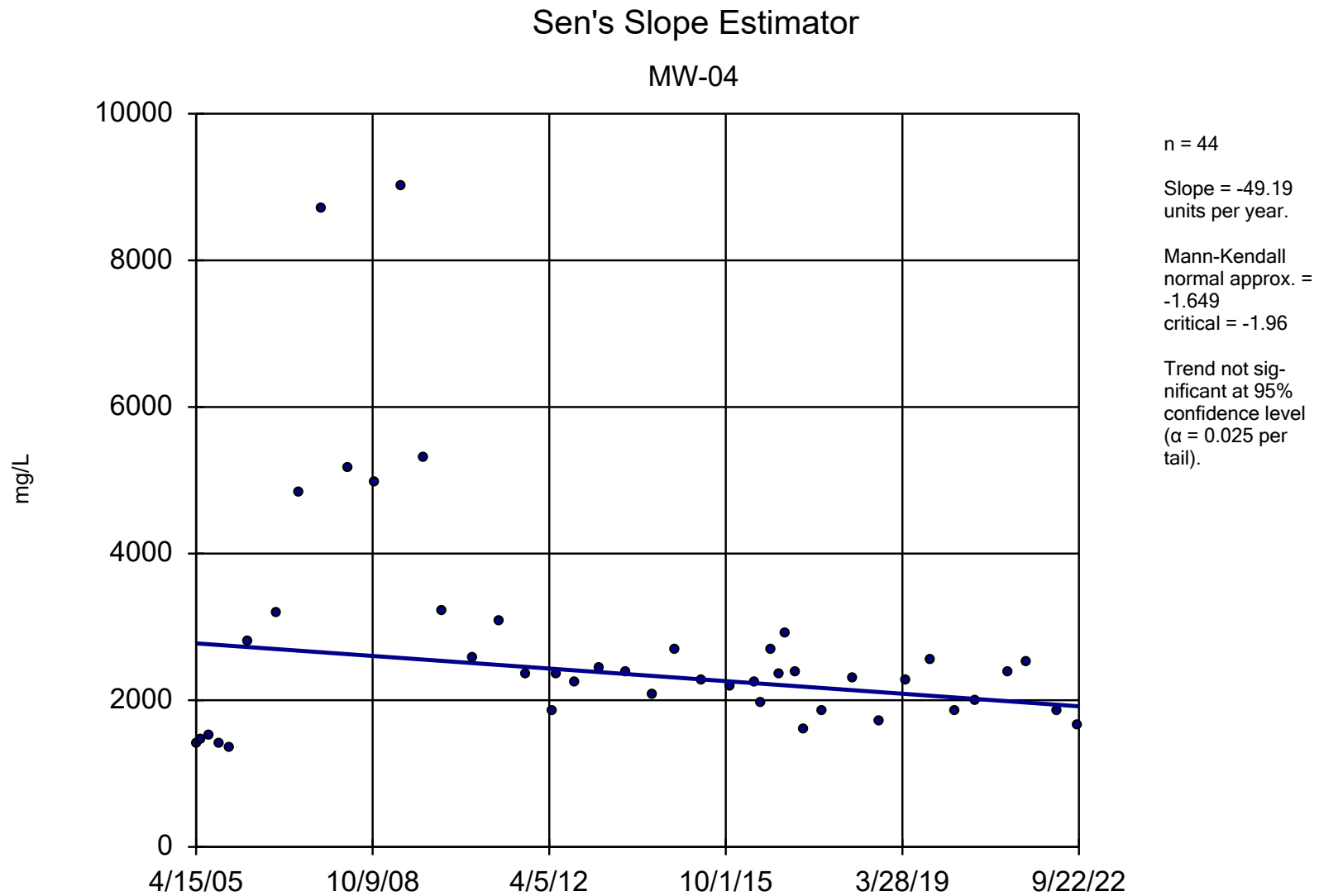


Constituent: Sulfate Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

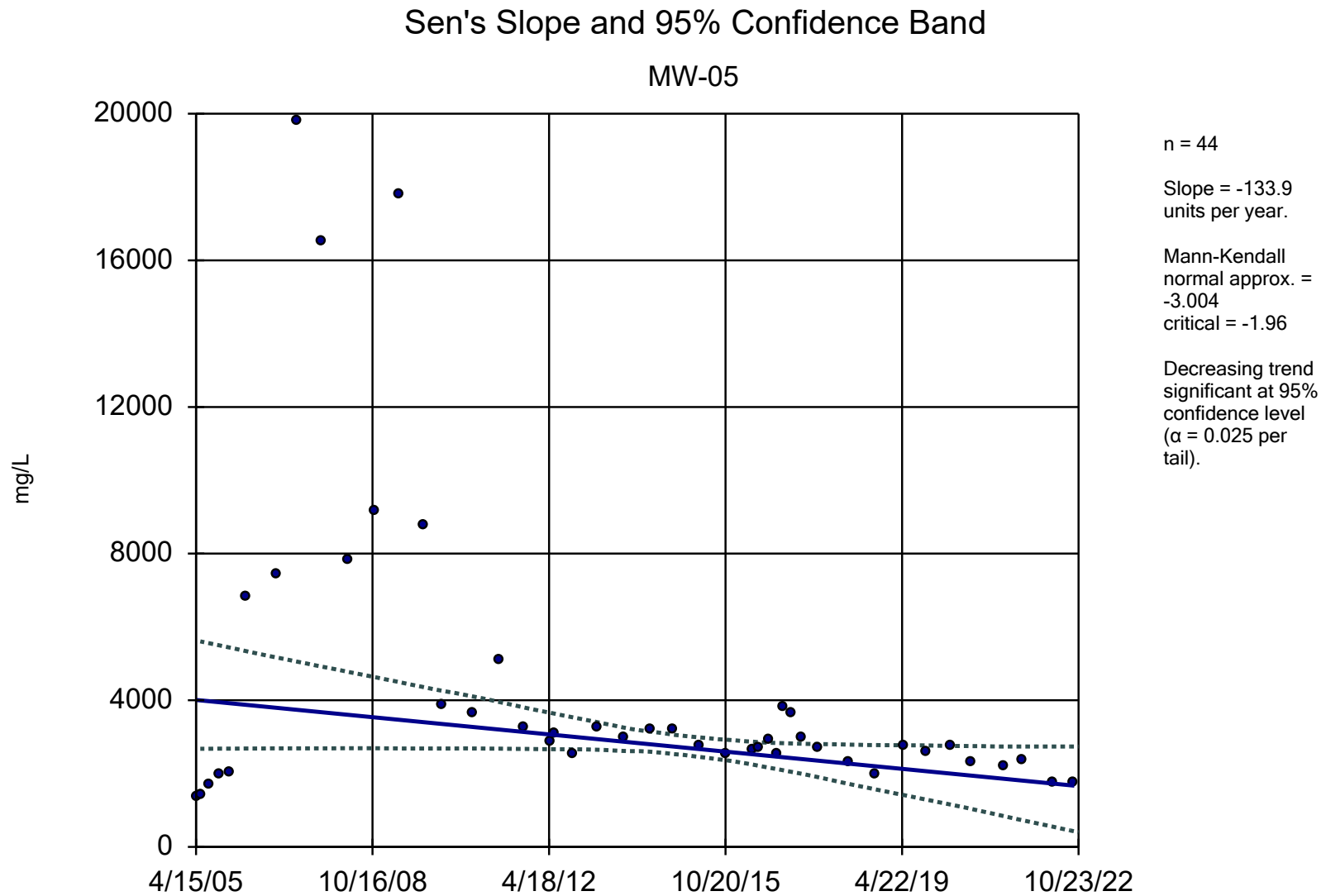
Sen's Slope and 95% Confidence Band

MW-03



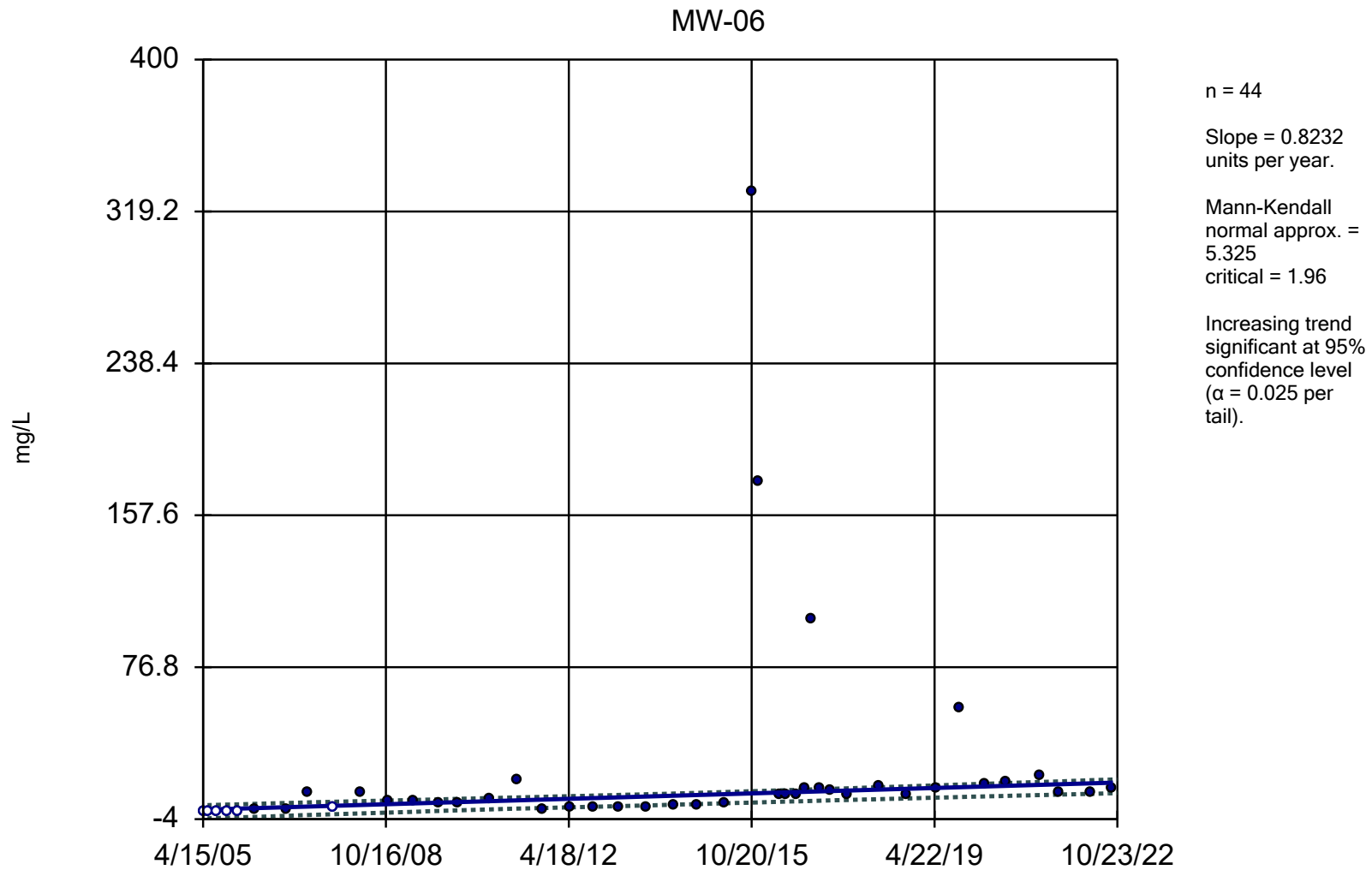


Constituent: Sulfate Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

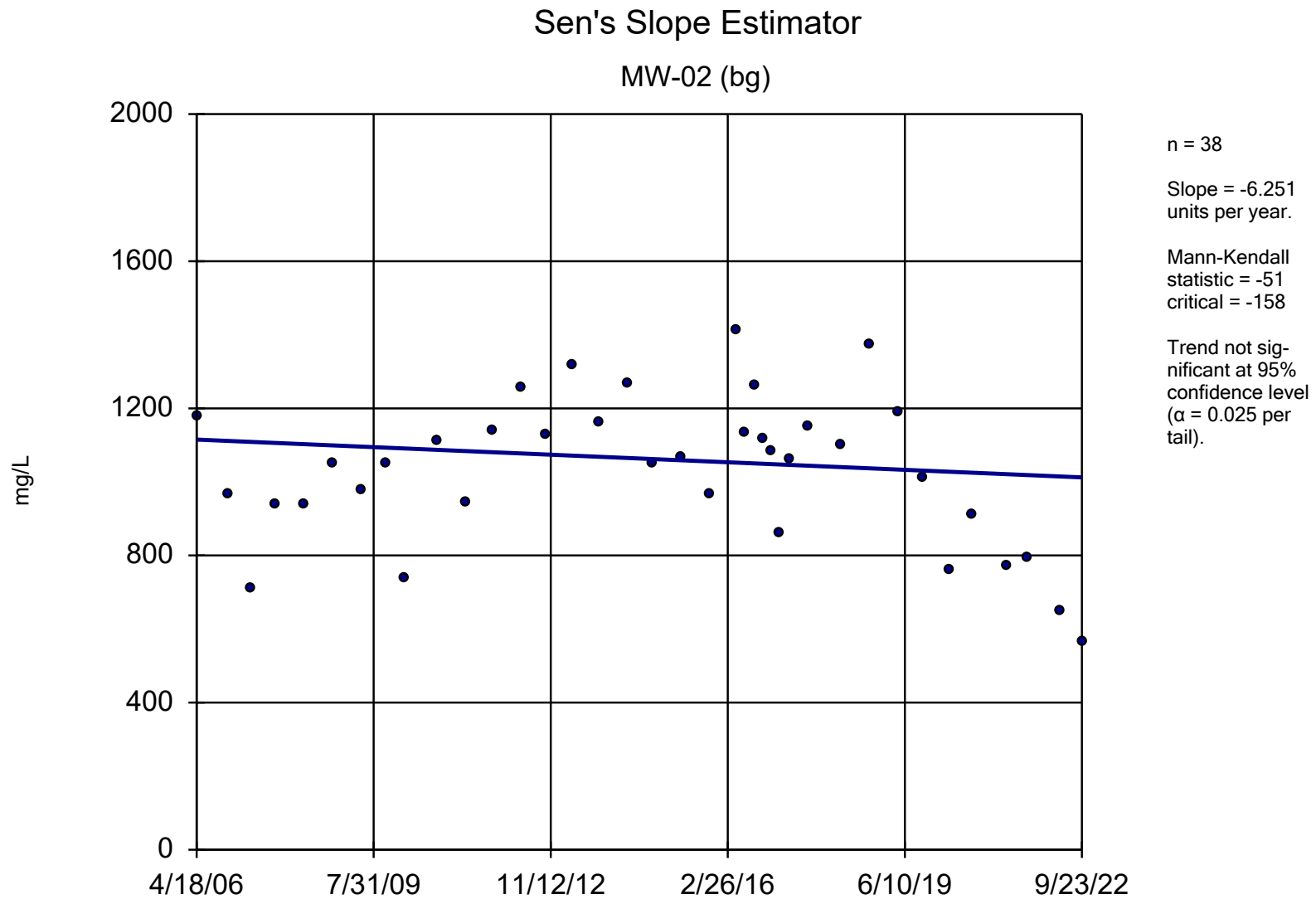


Constituent: Sulfate Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

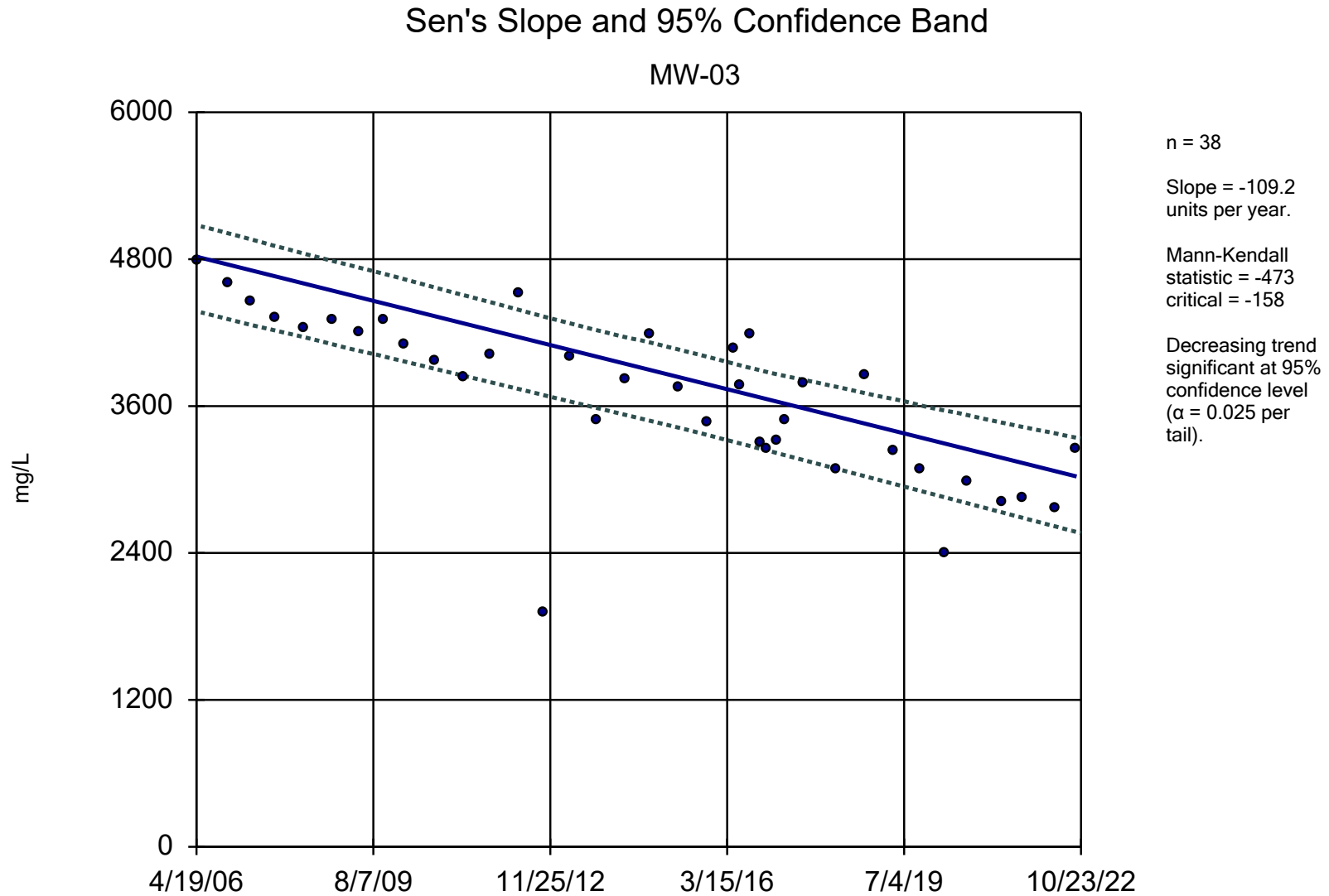
Sen's Slope and 95% Confidence Band



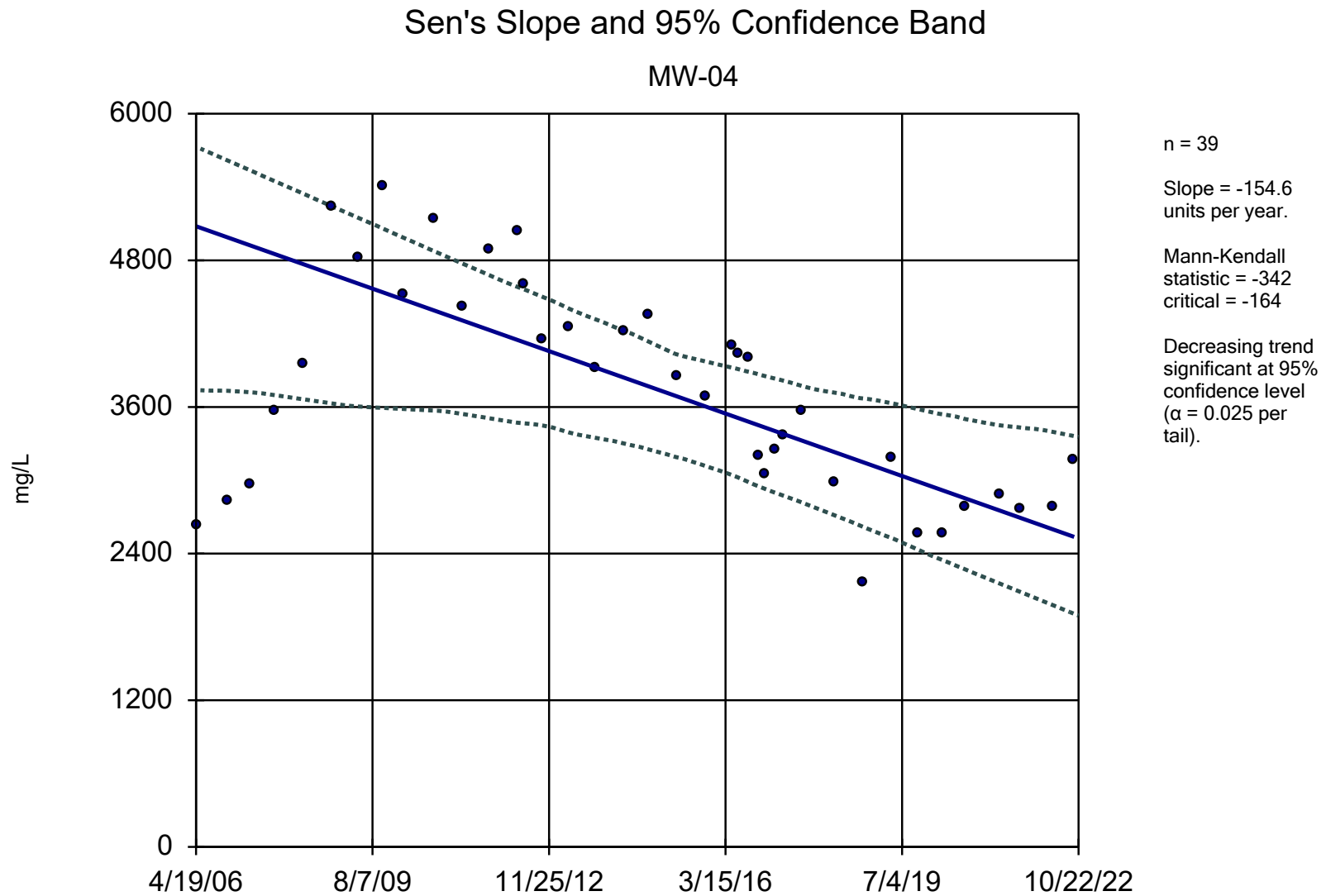
Constituent: Sulfate Analysis Run 11/11/2022 1:14 PM View: Landfill ApplIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



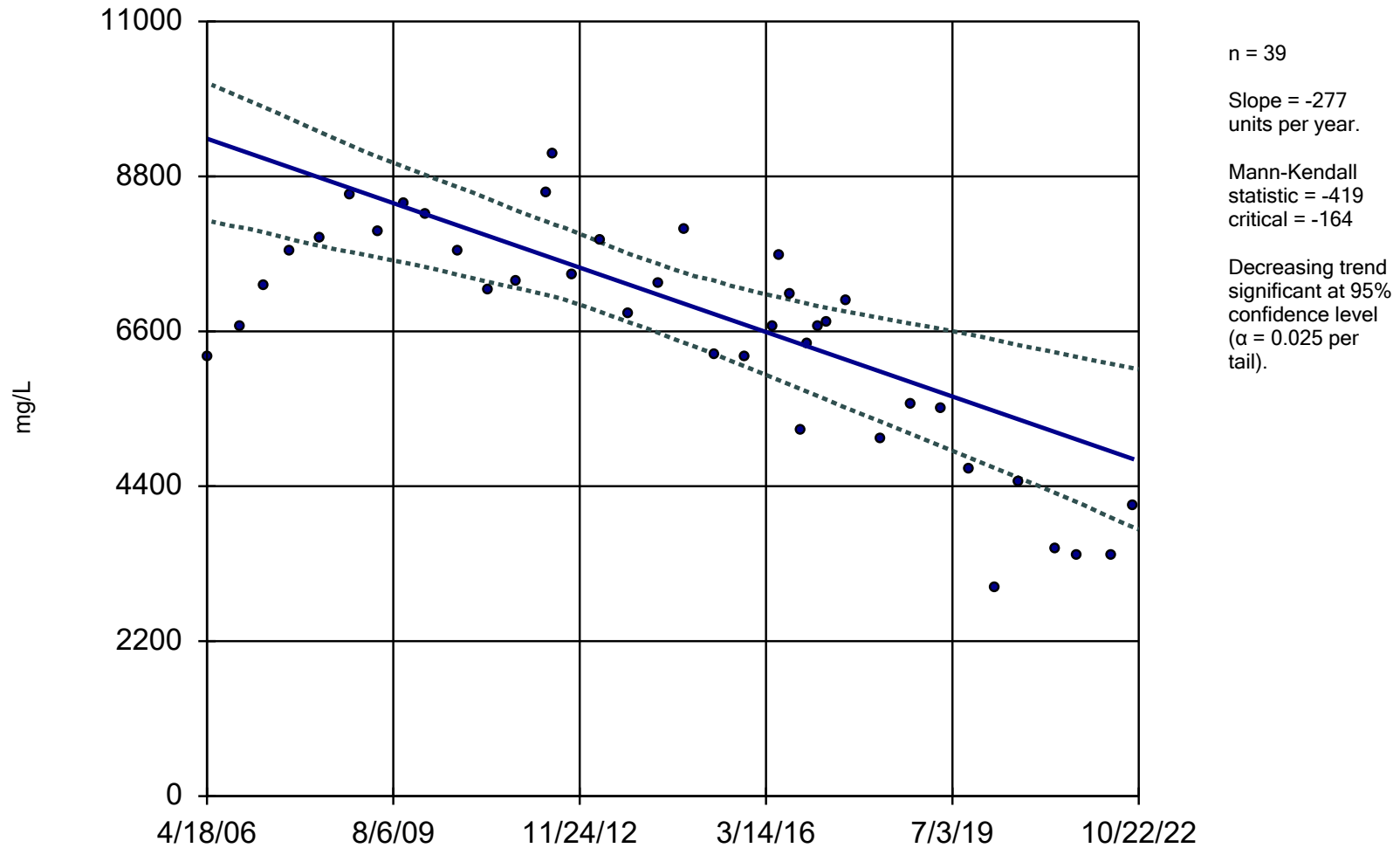
Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



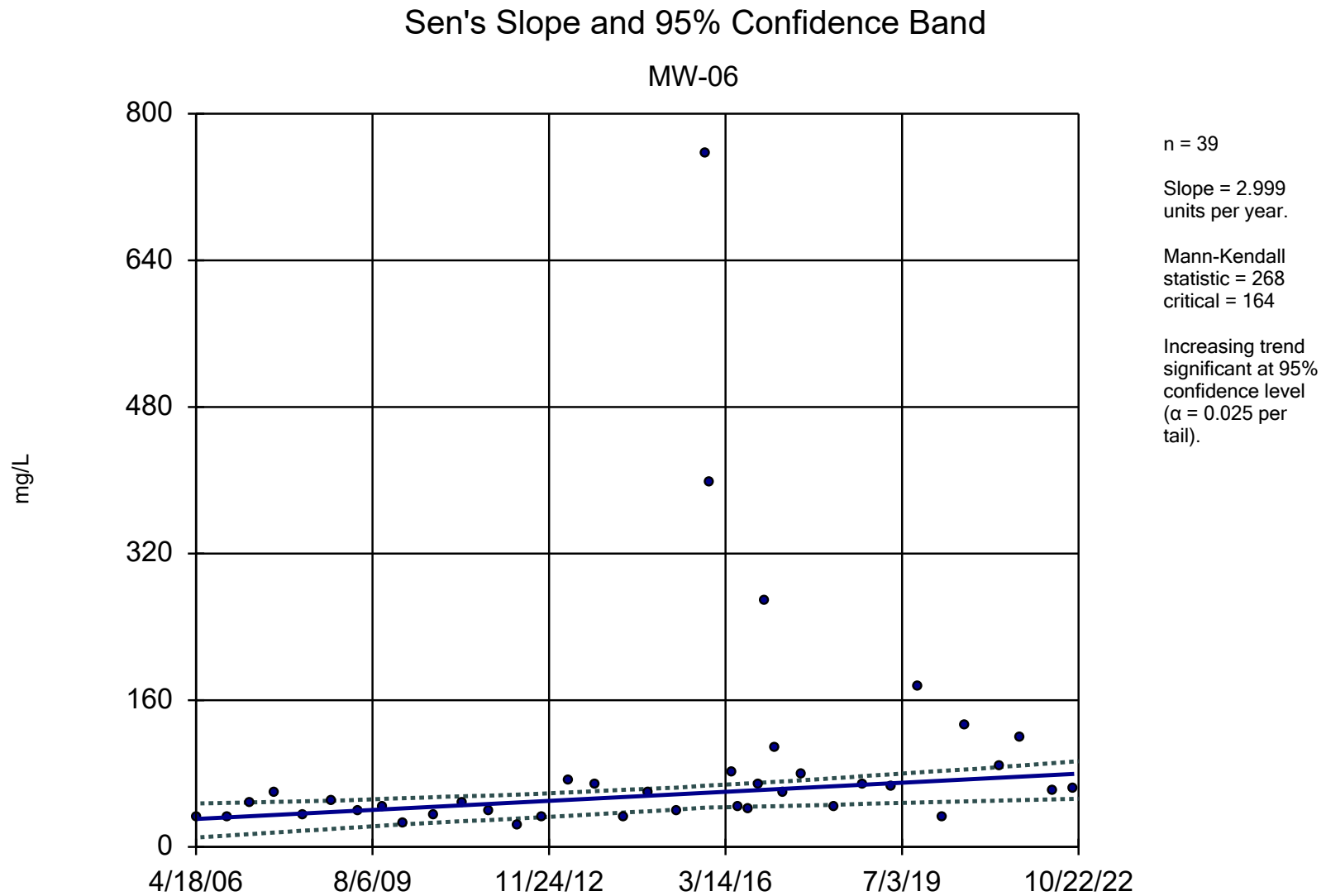
Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05



Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Total Dissolved Solids [TDS] Analysis Run 11/11/2022 1:14 PM View: Landfill AppIII
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

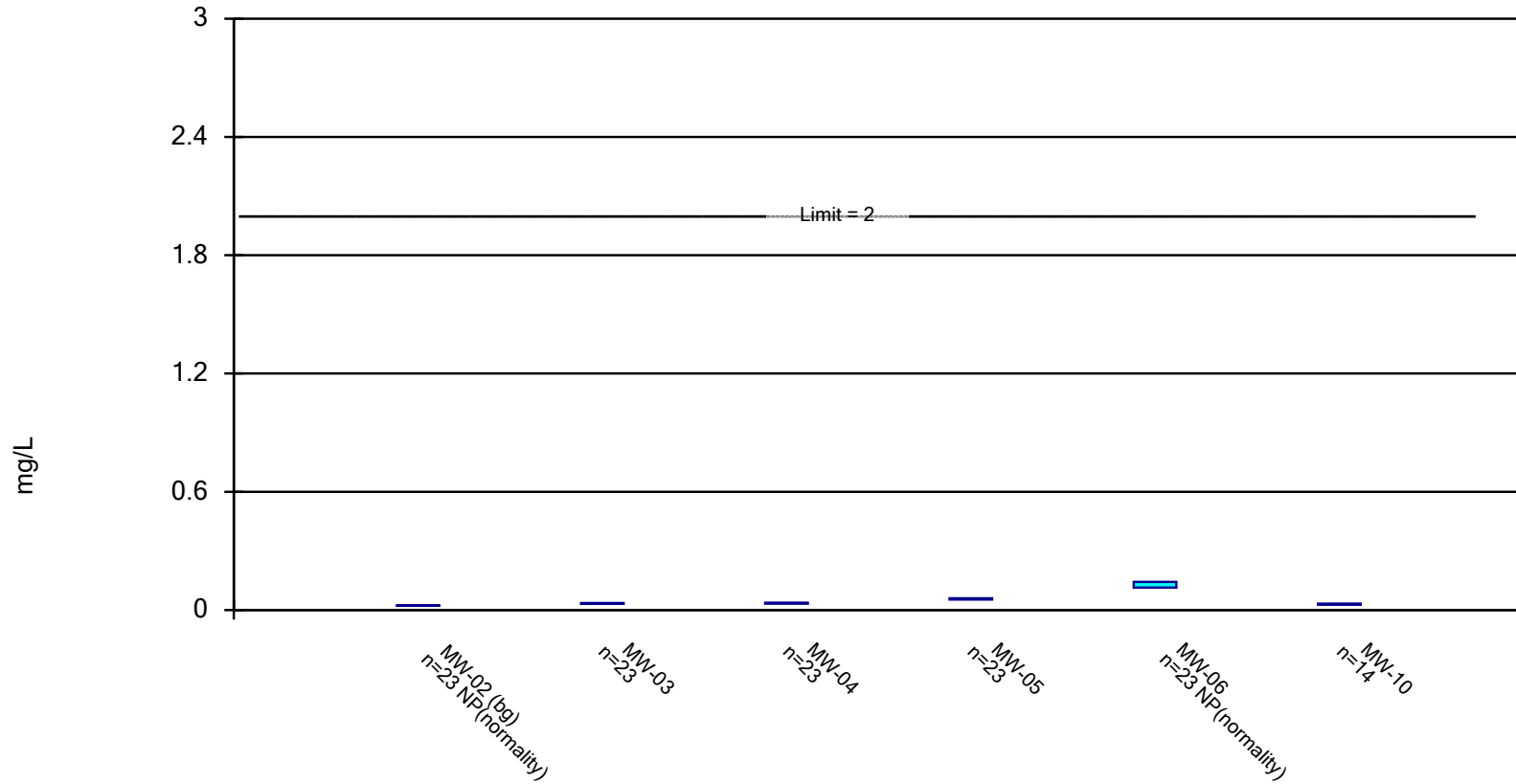
Confidence Interval

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen Printed 11/11/2022, 1:29 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	MW-02 (bg)	0.0234	0.022	2	No	23	0	No	0.01	NP (normality)
Barium (mg/L)	MW-03	0.03558	0.03175	2	No	23	0	No	0.01	Param.
Barium (mg/L)	MW-04	0.03728	0.03234	2	No	23	0	No	0.01	Param.
Barium (mg/L)	MW-05	0.05965	0.05307	2	No	23	0	No	0.01	Param.
Barium (mg/L)	MW-06	0.143	0.114	2	No	23	0	No	0.01	NP (normality)
Barium (mg/L)	MW-10	0.0321	0.0267	2	No	14	0	No	0.01	Param.
Beryllium (mg/L)	MW-02 (bg)	0.007638	0.006649	0.009669	No	48	4.167	x^2	0.01	Param.
Beryllium (mg/L)	MW-03	0.004	0.002	0.009669	No	49	51.02	No	0.01	NP (normality)
Beryllium (mg/L)	MW-04	0.0056	0.002	0.009669	No	50	44	No	0.01	NP (normality)
Beryllium (mg/L)	MW-05	0.0025	0.002	0.009669	No	49	75.51	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-06	0.002	0.0005	0.009669	No	49	100	No	0.01	NP (NDs)
Beryllium (mg/L)	MW-10	0.009785	0.008205	0.009669	No	14	0	No	0.01	Param.
Cobalt (mg/L)	MW-02 (bg)	0.1367	0.1146	0.1749	No	23	0	No	0.01	Param.
Cobalt (mg/L)	MW-03	0.055	0.03834	0.1749	No	24	0	No	0.01	Param.
Cobalt (mg/L)	MW-04	0.07765	0.05621	0.1749	No	24	0	No	0.01	Param.
Cobalt (mg/L)	MW-05	0.009942	0.00703	0.1749	No	24	0	No	0.01	Param.
Cobalt (mg/L)	MW-06	0.00203	0.00148	0.1749	No	23	0	No	0.01	NP (normality)
Cobalt (mg/L)	MW-10	0.1205	0.08946	0.1749	No	14	0	No	0.01	Param.
Combined Radium (pCi/L)	MW-02 (bg)	1.86	1.121	5	No	23	30.43	No	0.01	Param.
Combined Radium (pCi/L)	MW-03	3.773	2.003	5	No	23	17.39	No	0.01	Param.
Combined Radium (pCi/L)	MW-04	2.988	1.698	5	No	23	13.04	No	0.01	Param.
Combined Radium (pCi/L)	MW-05	1.959	1.165	5	No	23	30.43	No	0.01	Param.
Combined Radium (pCi/L)	MW-06	1.677	0.882	5	No	23	17.39	No	0.01	NP (Cohens/xfrm)
Combined Radium (pCi/L)	MW-10	1.921	1.245	5	No	14	14.29	No	0.01	Param.
Fluoride (mg/L)	MW-02 (bg)	0.7112	0.4855	4	No	24	4.167	No	0.01	Param.
Fluoride (mg/L)	MW-03	0.93	0.25	4	No	24	50	No	0.01	NP (normality)
Fluoride (mg/L)	MW-04	0.91	0.25	4	No	24	41.67	No	0.01	NP (normality)
Fluoride (mg/L)	MW-05	1.29	0.25	4	No	24	50	No	0.01	NP (normality)
Fluoride (mg/L)	MW-06	0.25	0.08	4	No	24	95.83	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-10	0.6624	0.519	4	No	14	7.143	x^2	0.01	Param.
Lead (mg/L)	MW-02 (bg)	0.004462	0.00291	0.015	No	48	8.333	sqrt(x)	0.01	Param.
Lead (mg/L)	MW-03	0.0167	0.008621	0.015	No	49	6.122	sqrt(x)	0.01	Param.
Lead (mg/L)	MW-04	0.01266	0.006476	0.015	No	50	10	sqrt(x)	0.01	Param.
Lead (mg/L)	MW-05	0.00207	0.0005	0.015	No	50	68	No	0.01	NP (normality)
Lead (mg/L)	MW-06	0.0005	0.0005	0.015	No	49	91.84	No	0.01	NP (NDs)
Lead (mg/L)	MW-10	0.003456	0.002747	0.015	No	14	0	No	0.01	Param.
Lithium (mg/L)	MW-02 (bg)	0.025	0.02	1.42	No	23	91.3	No	0.01	NP (NDs)
Lithium (mg/L)	MW-03	0.7198	0.4927	1.42	No	23	0	No	0.01	Param.
Lithium (mg/L)	MW-04	0.8481	0.4764	1.42	No	23	4.348	No	0.01	Param.
Lithium (mg/L)	MW-05	6.462	3.912	1.42	Yes	23	0	No	0.01	Param.
Lithium (mg/L)	MW-06	0.025	0.02	1.42	No	23	100	No	0.01	NP (NDs)
Lithium (mg/L)	MW-10	0.465	0.3289	1.42	No	14	0	No	0.01	Param.
Molybdenum (mg/L)	MW-02 (bg)	0.0025	0.0005	0.1	No	23	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-03	0.00727	0.0005	0.1	No	24	95.83	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-04	0.006	0.0005	0.1	No	24	91.67	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-05	6.59	4.525	0.1	Yes	25	0	No	0.01	Param.
Molybdenum (mg/L)	MW-06	0.005	0.0005	0.1	No	23	91.3	No	0.01	NP (NDs)
Molybdenum (mg/L)	MW-10	0.0025	0.0005	0.1	No	14	100	No	0.01	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

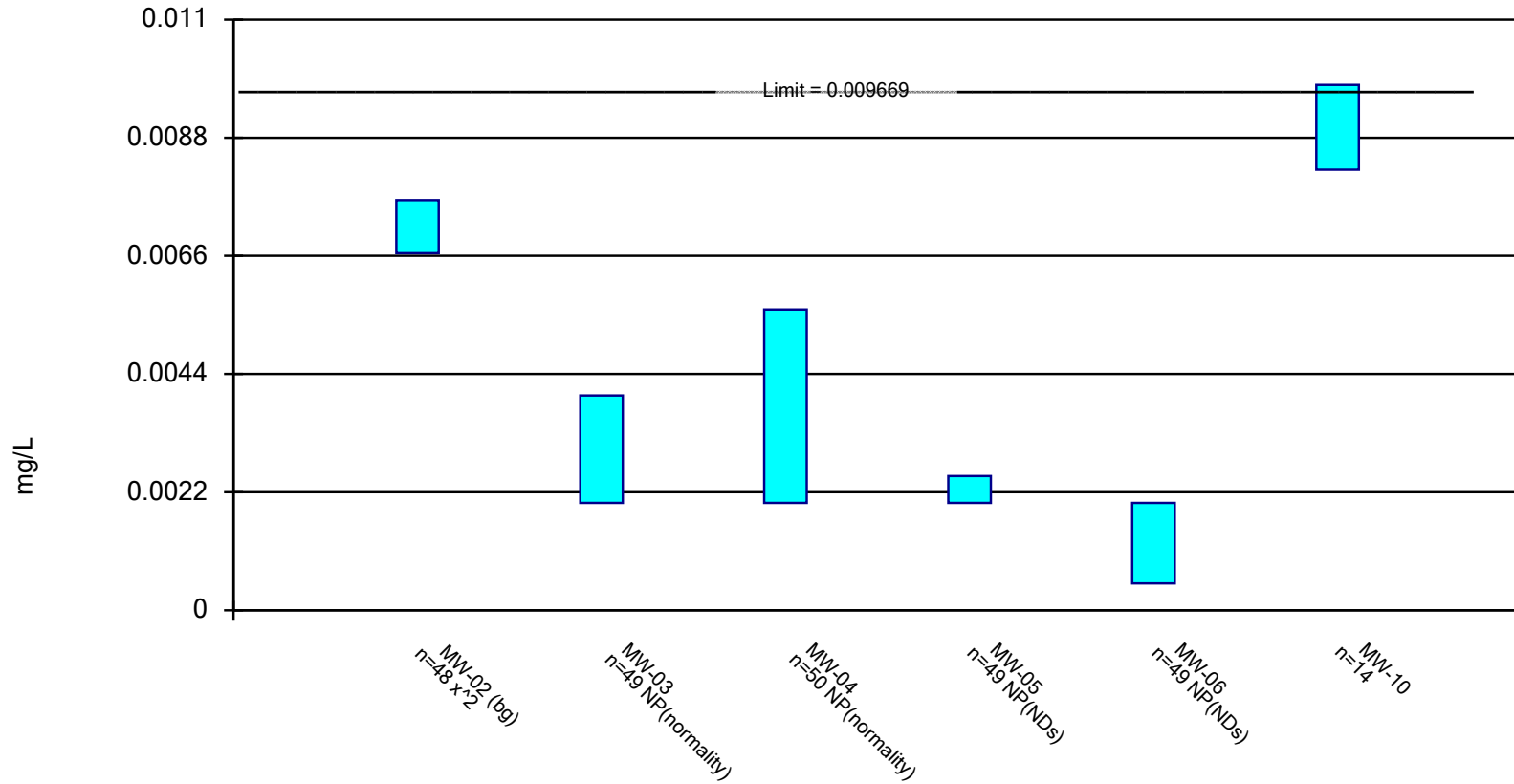
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

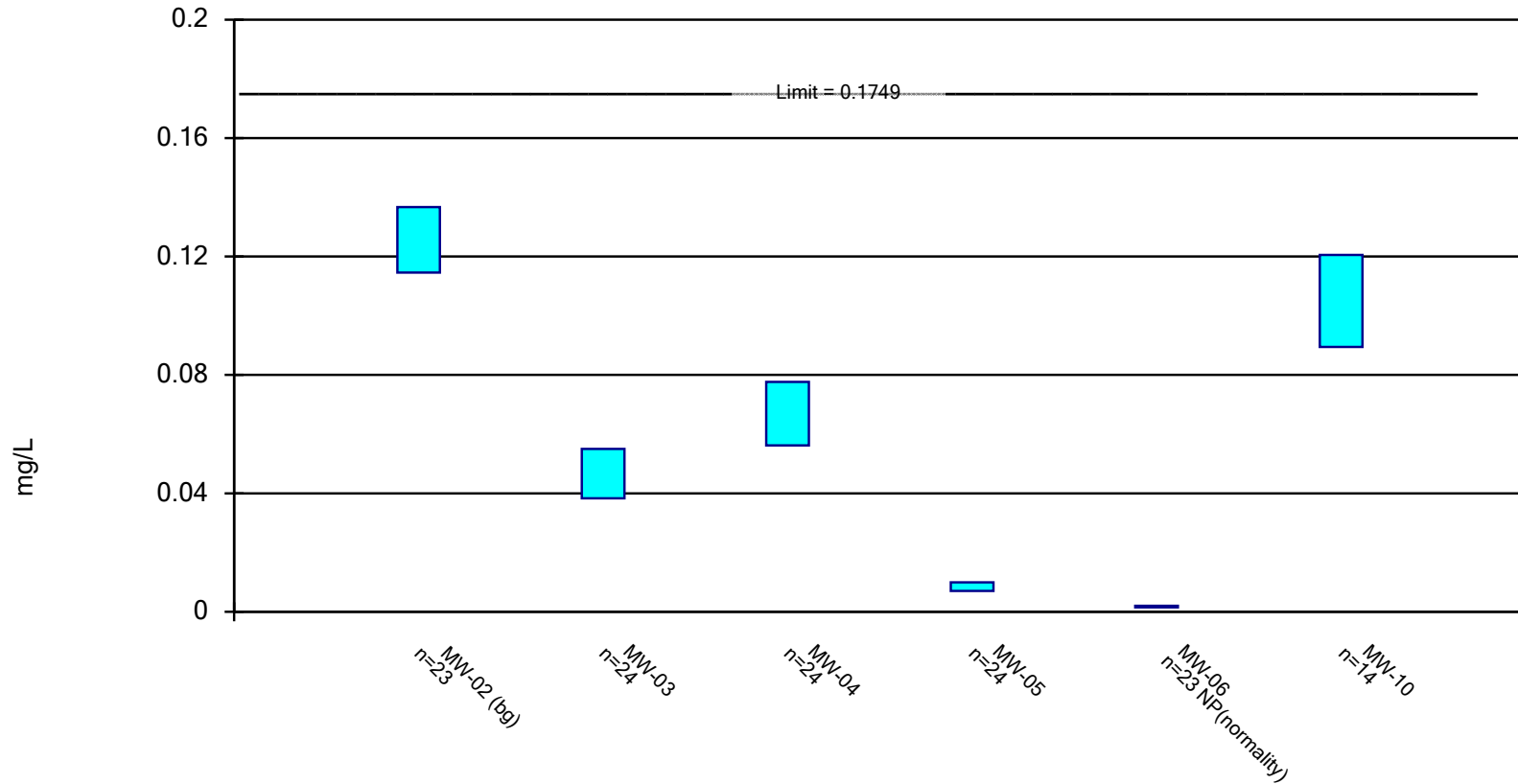
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: multiple



Constituent: Beryllium Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

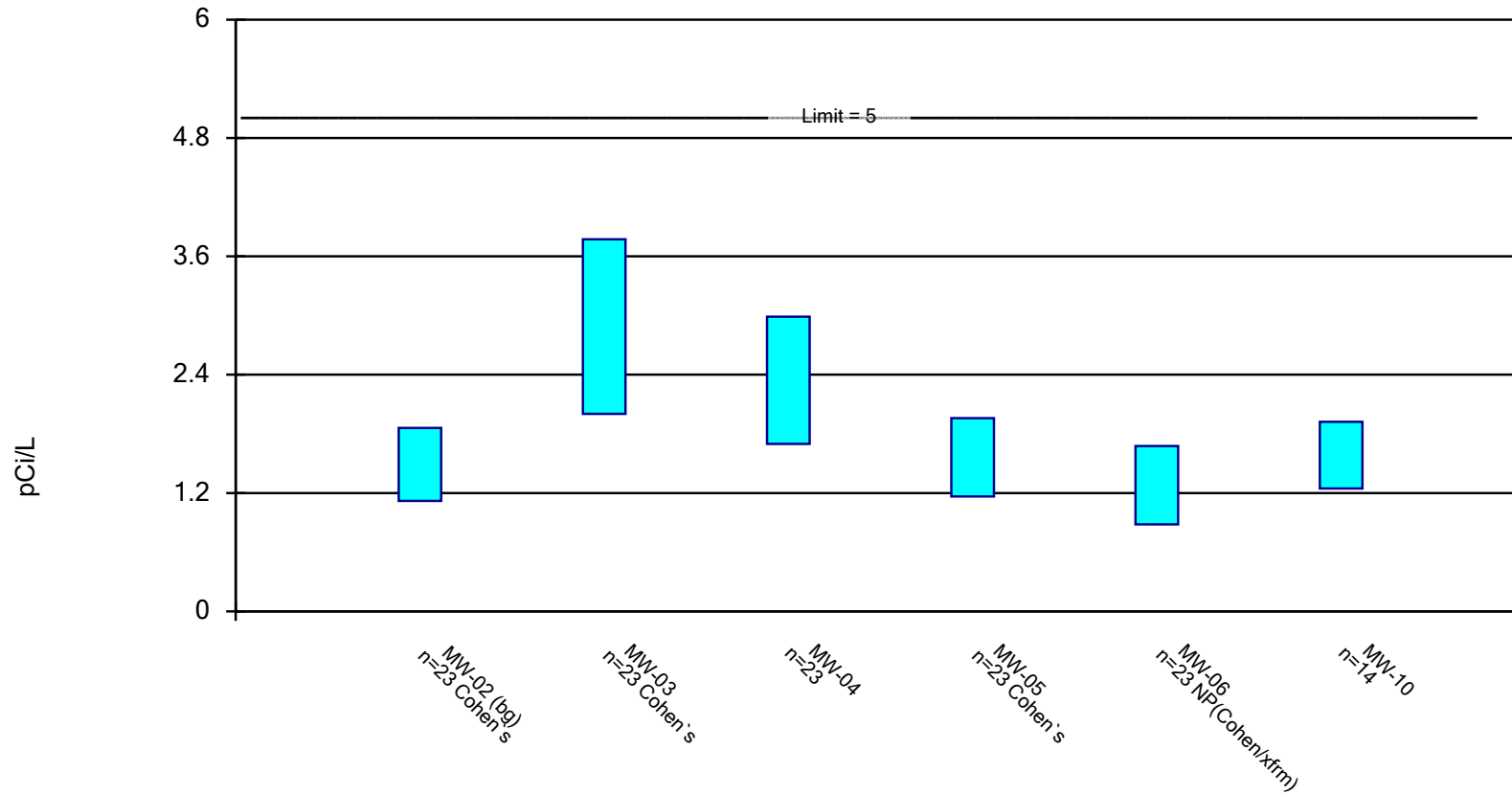
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

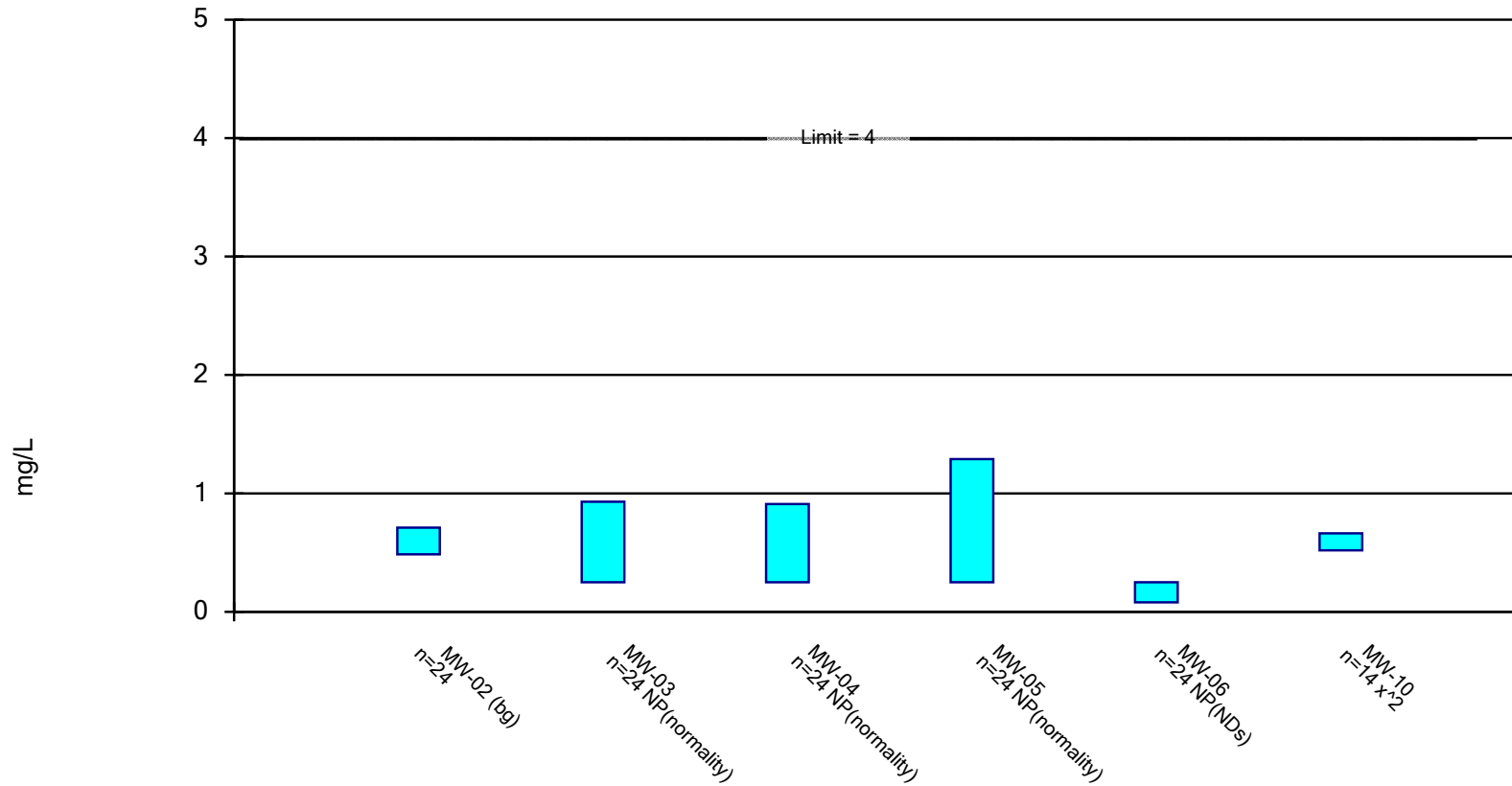
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

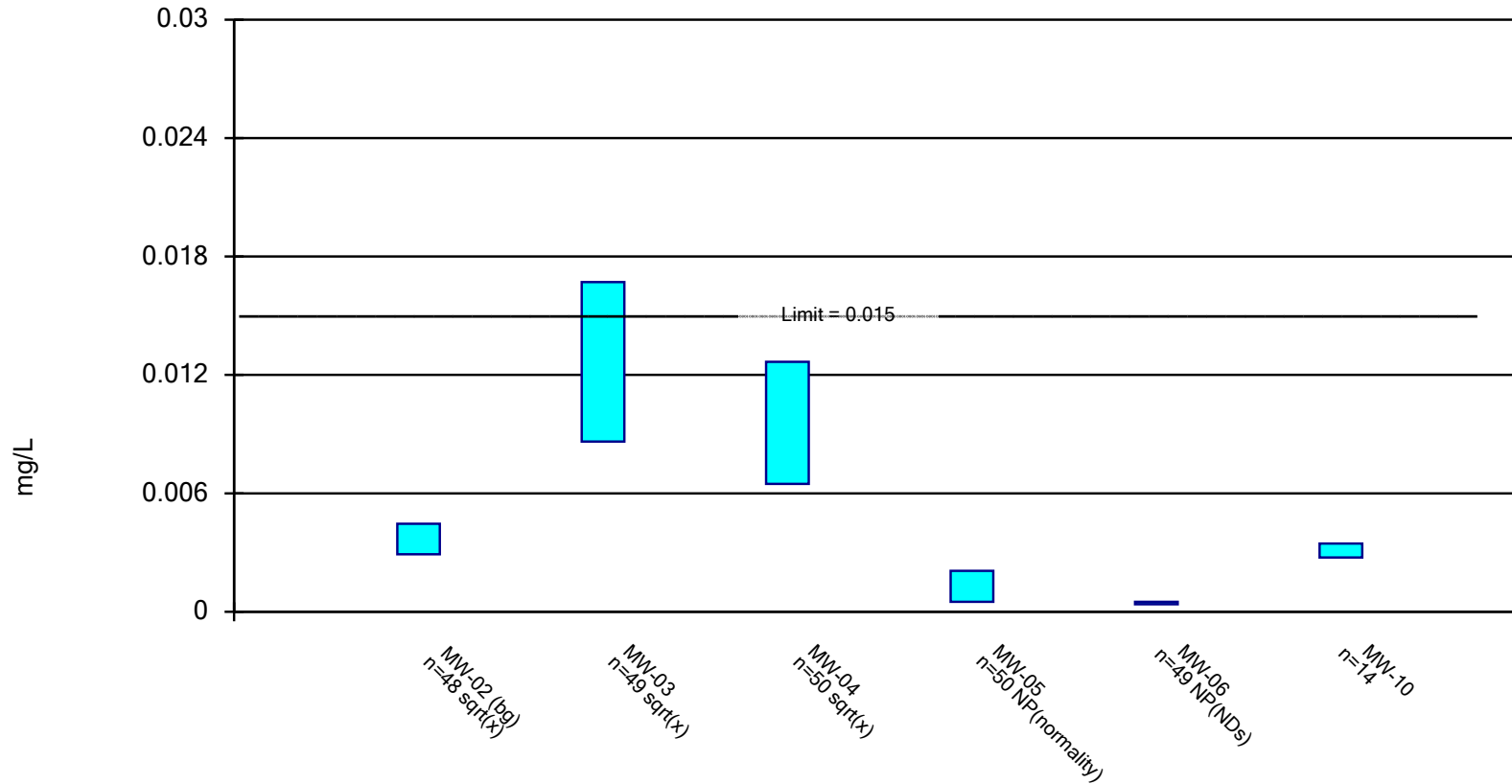
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

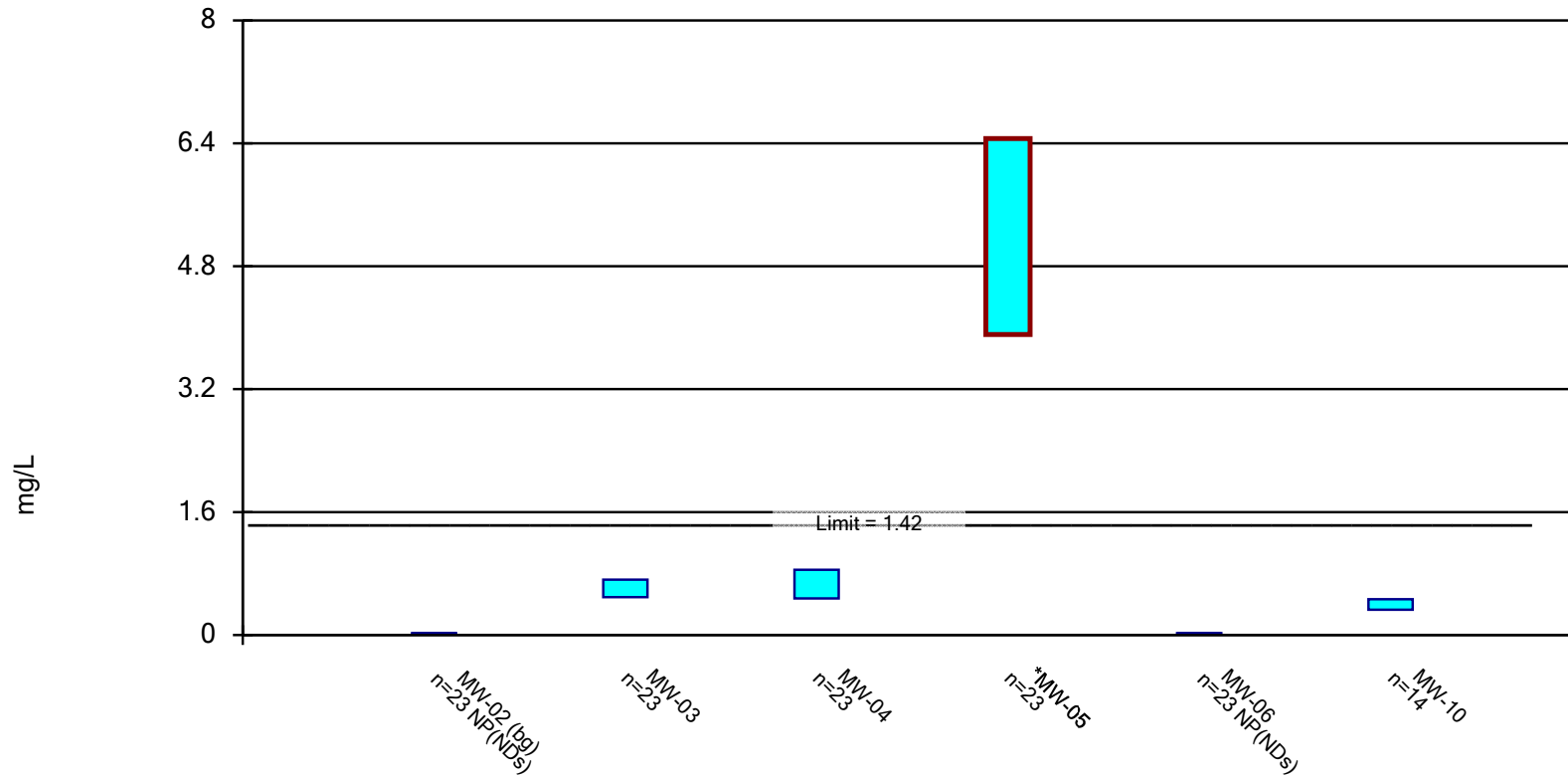
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: multiple



Constituent: Lead Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Parametric and Non-Parametric (NP) Confidence Interval

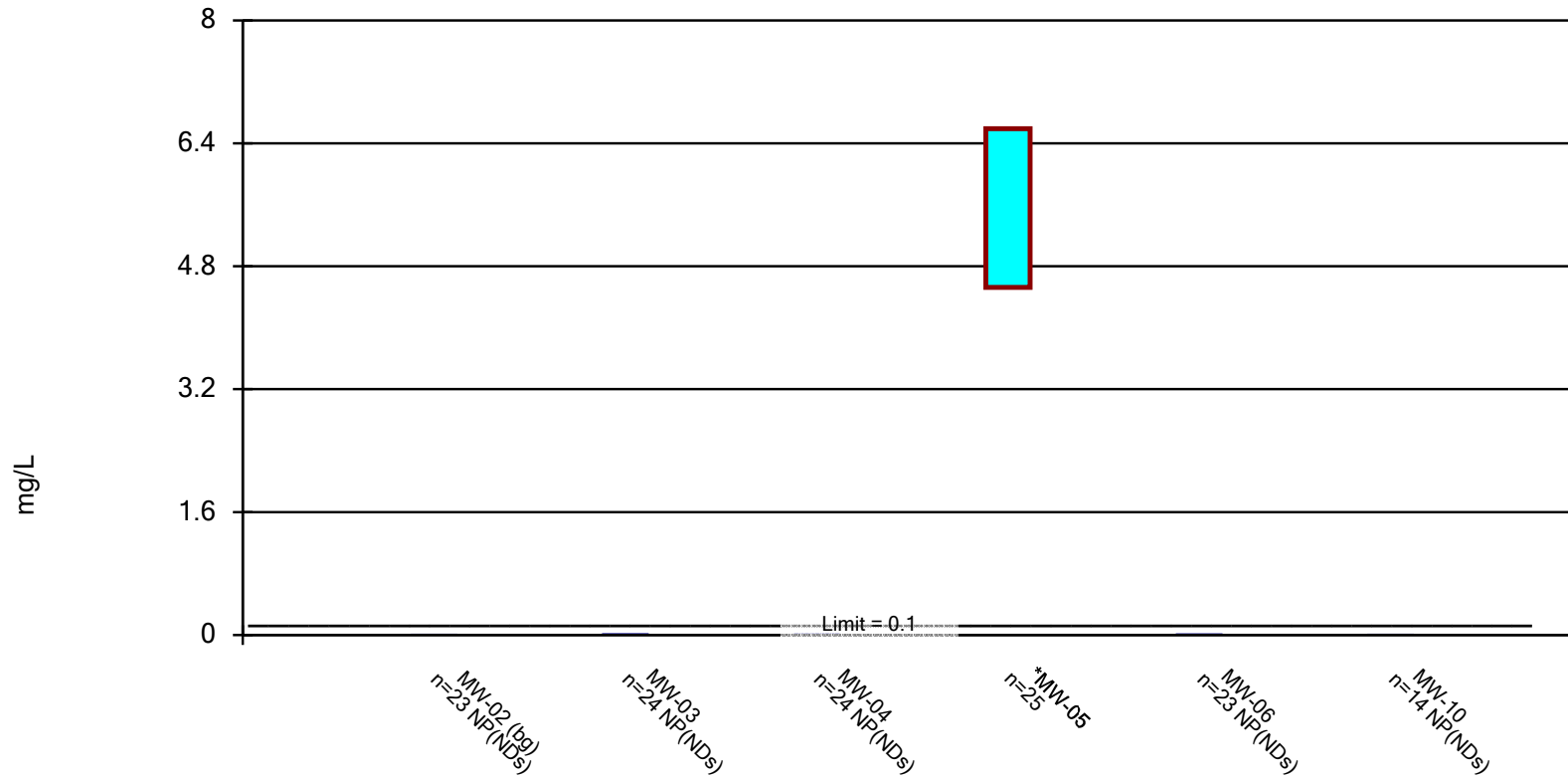
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

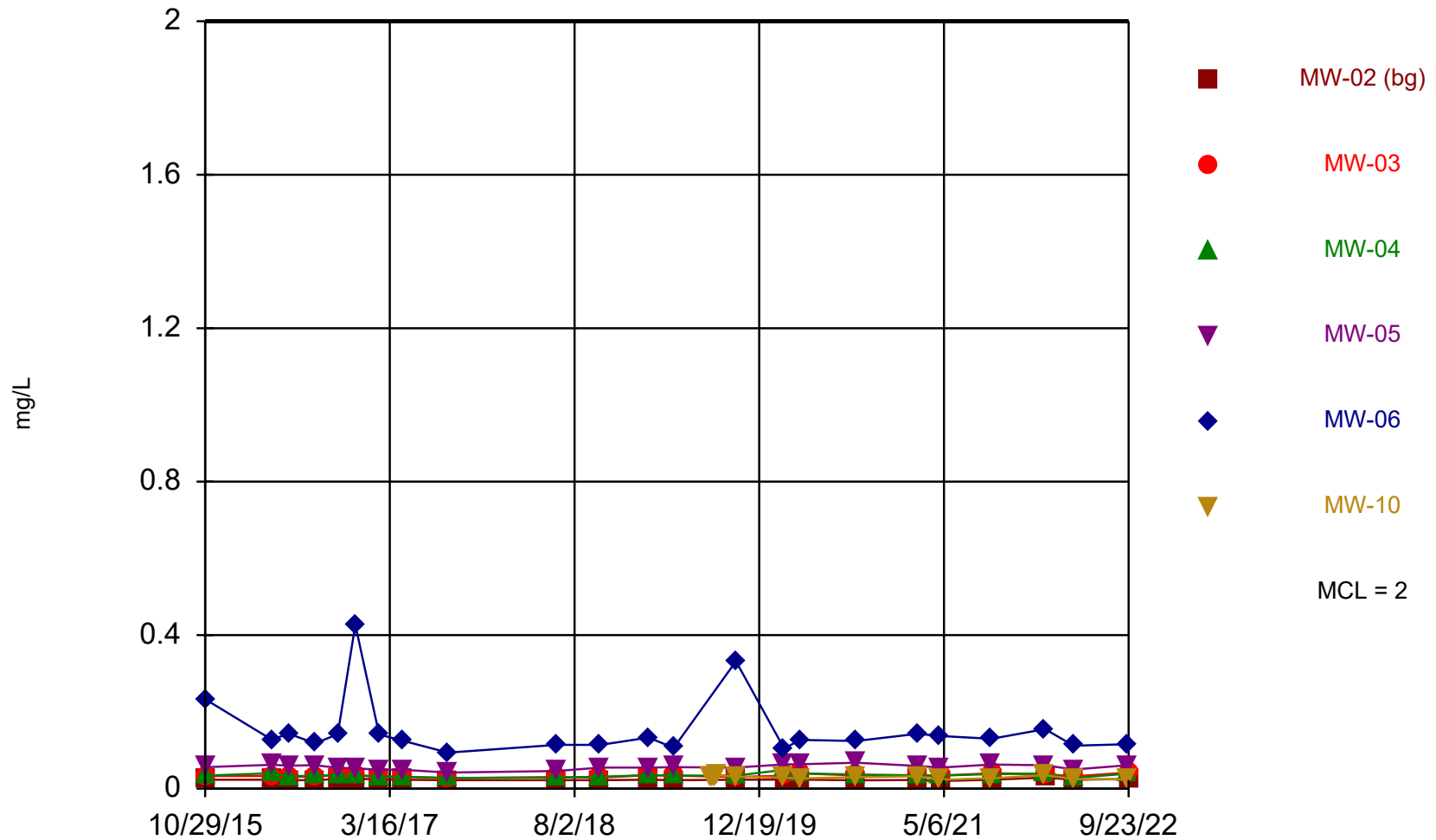
Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



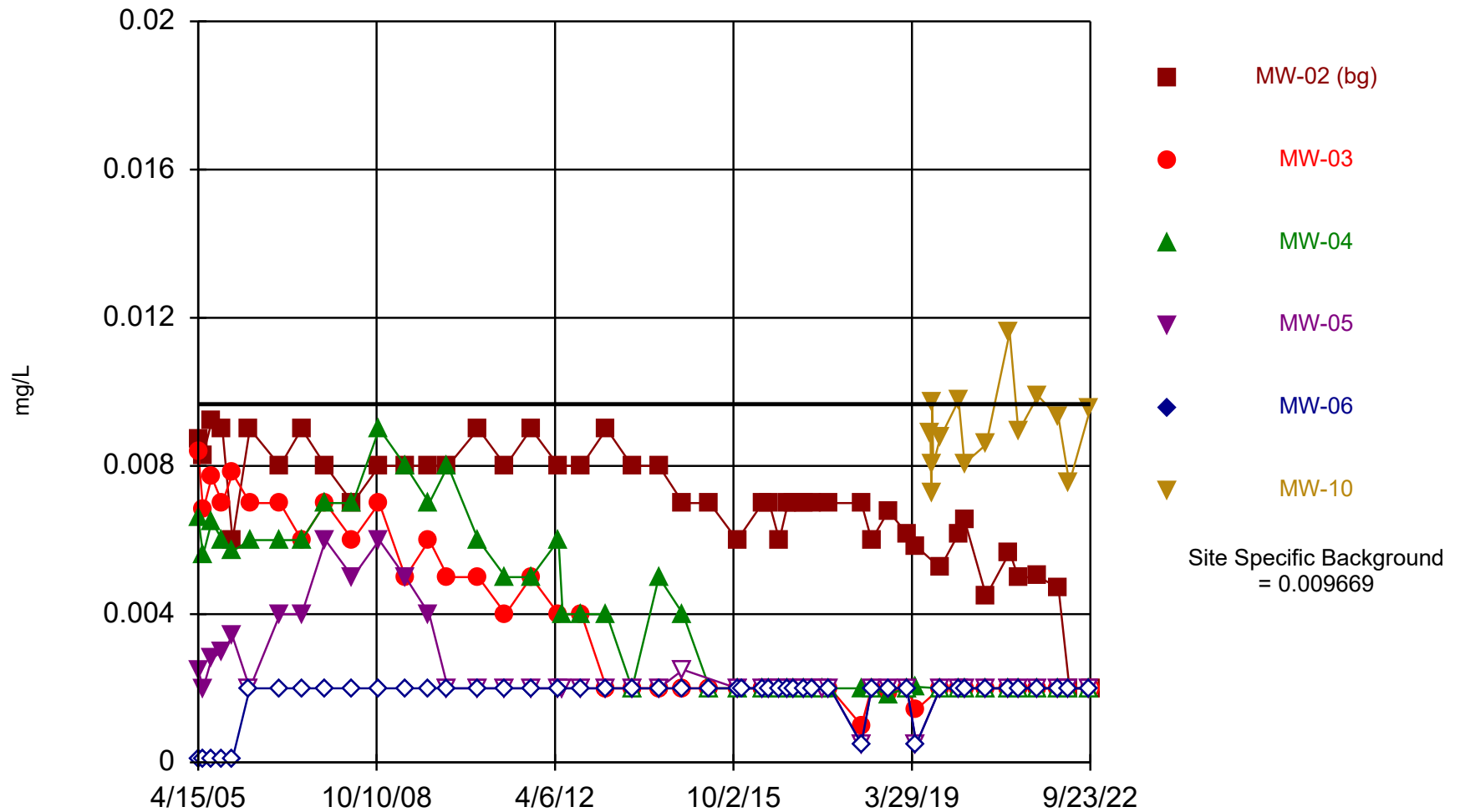
Constituent: Molybdenum Analysis Run 11/11/2022 1:28 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



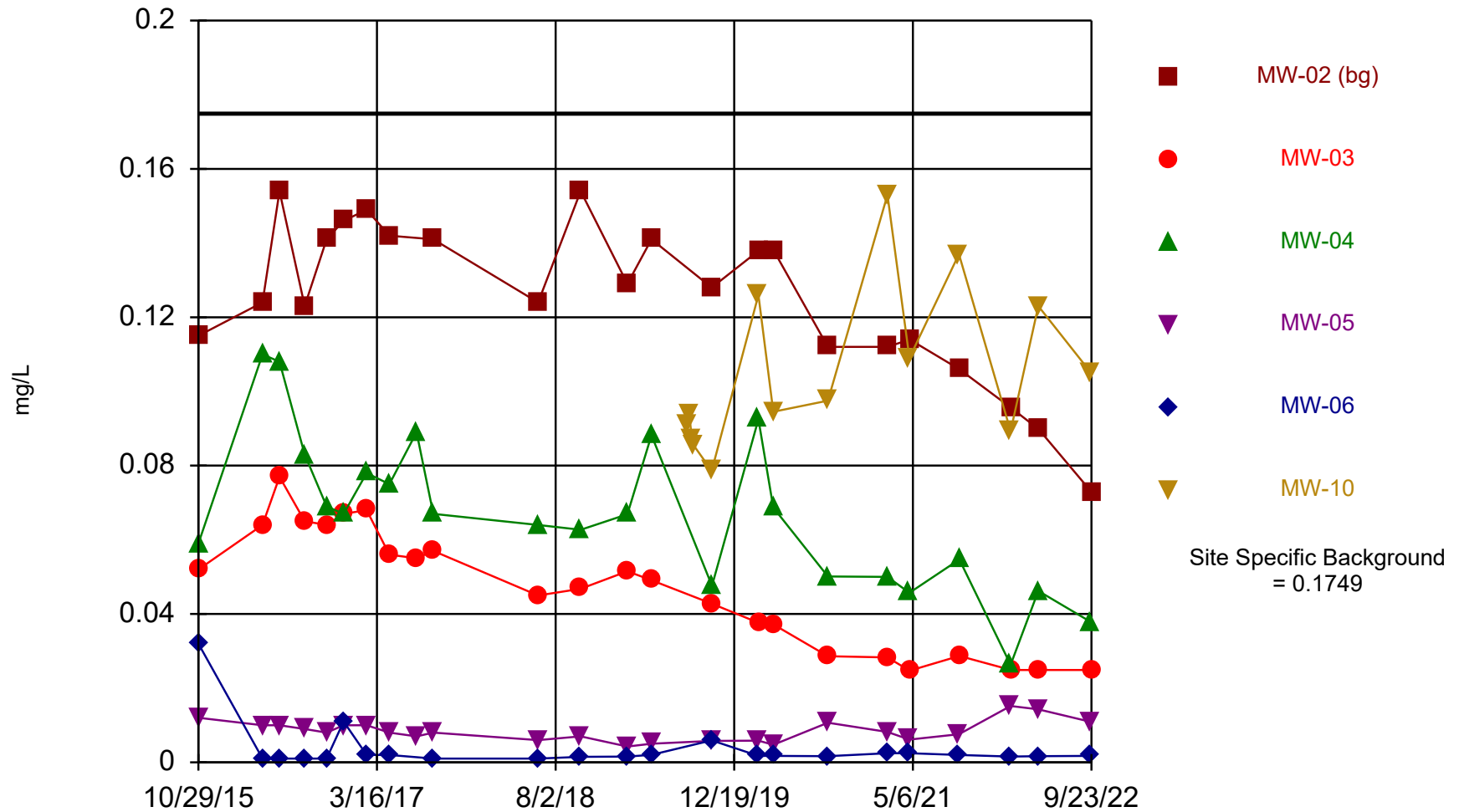
Constituent: Barium Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



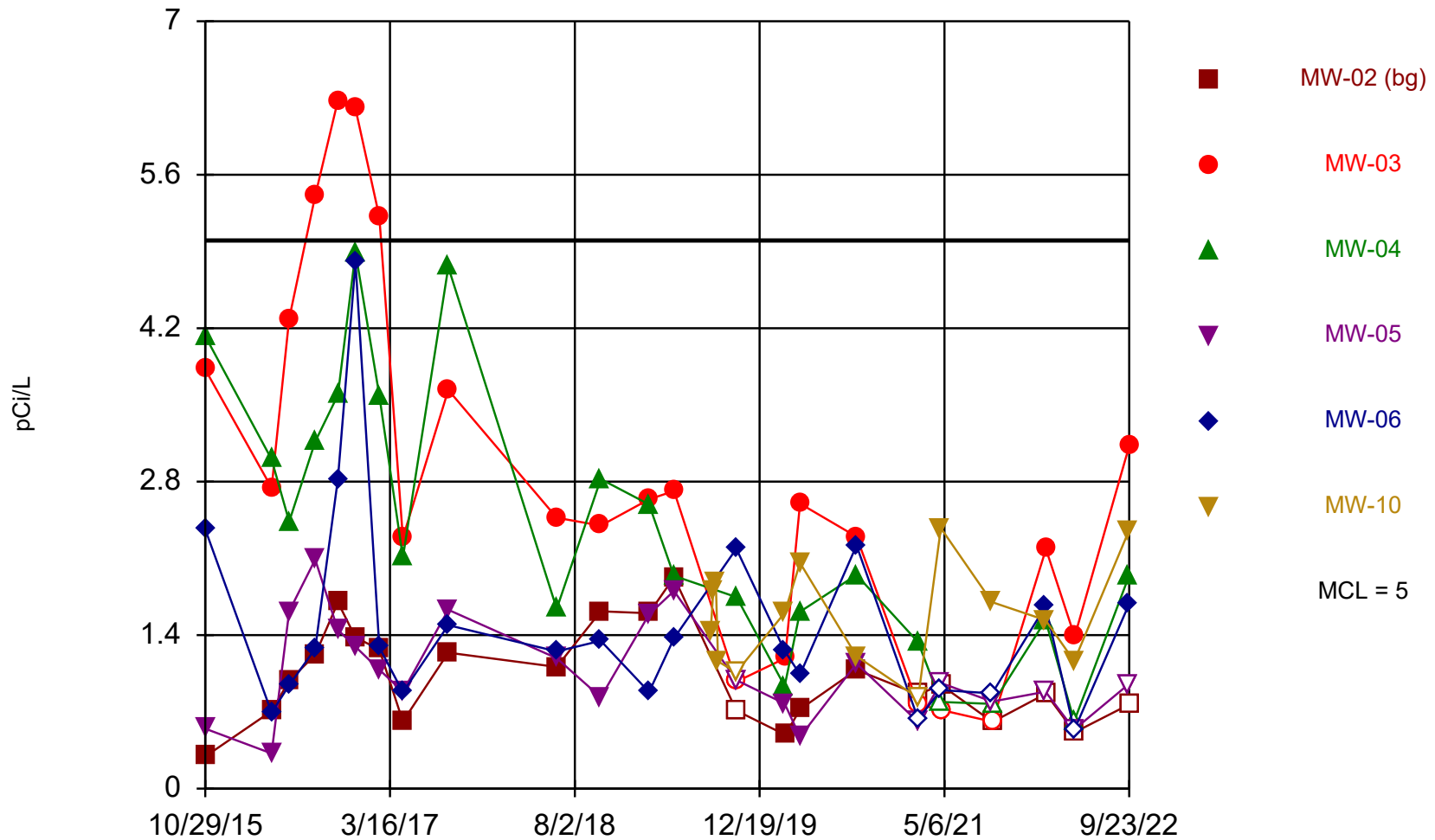
Constituent: Beryllium Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series

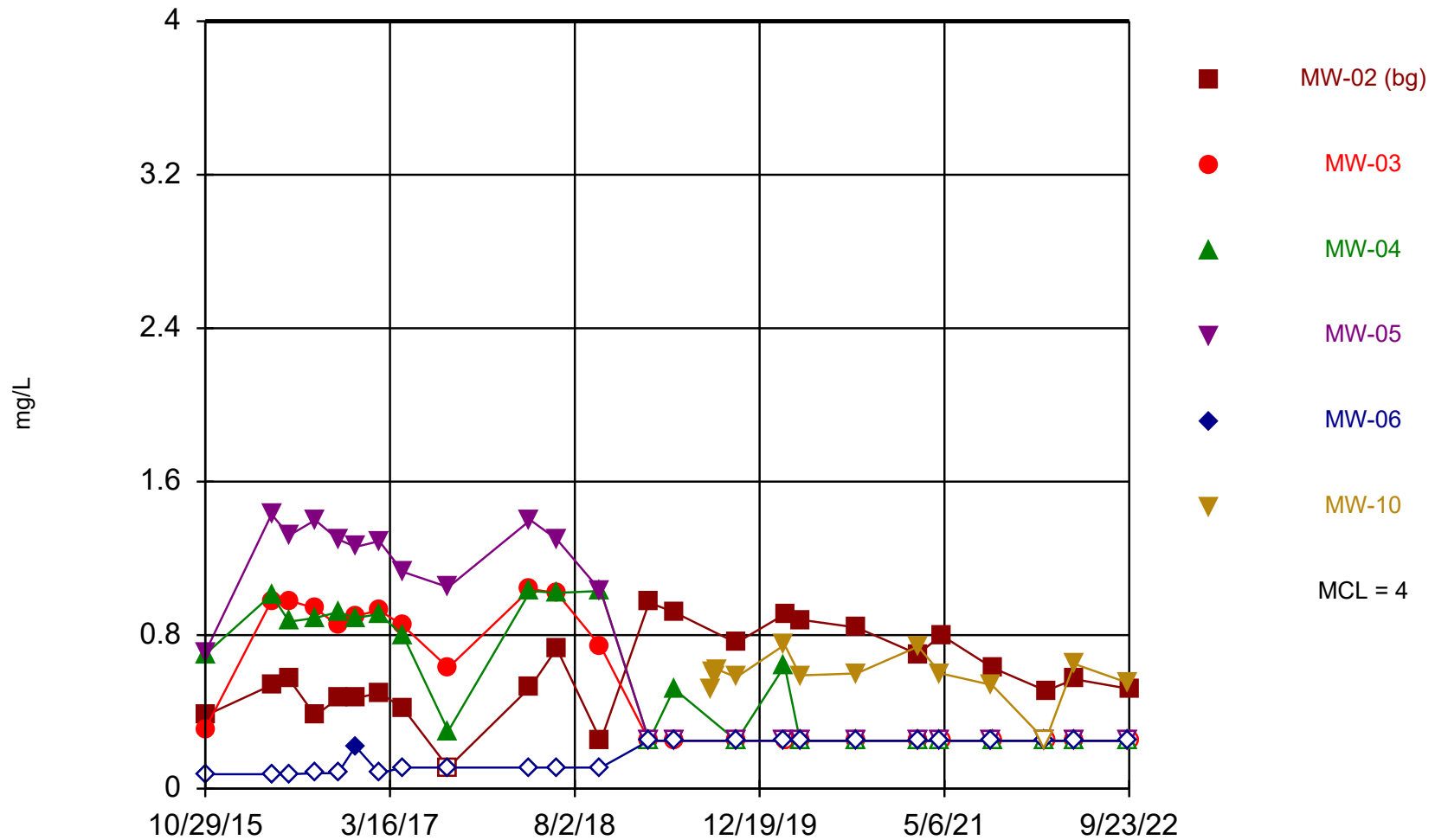


Constituent: Cobalt Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series

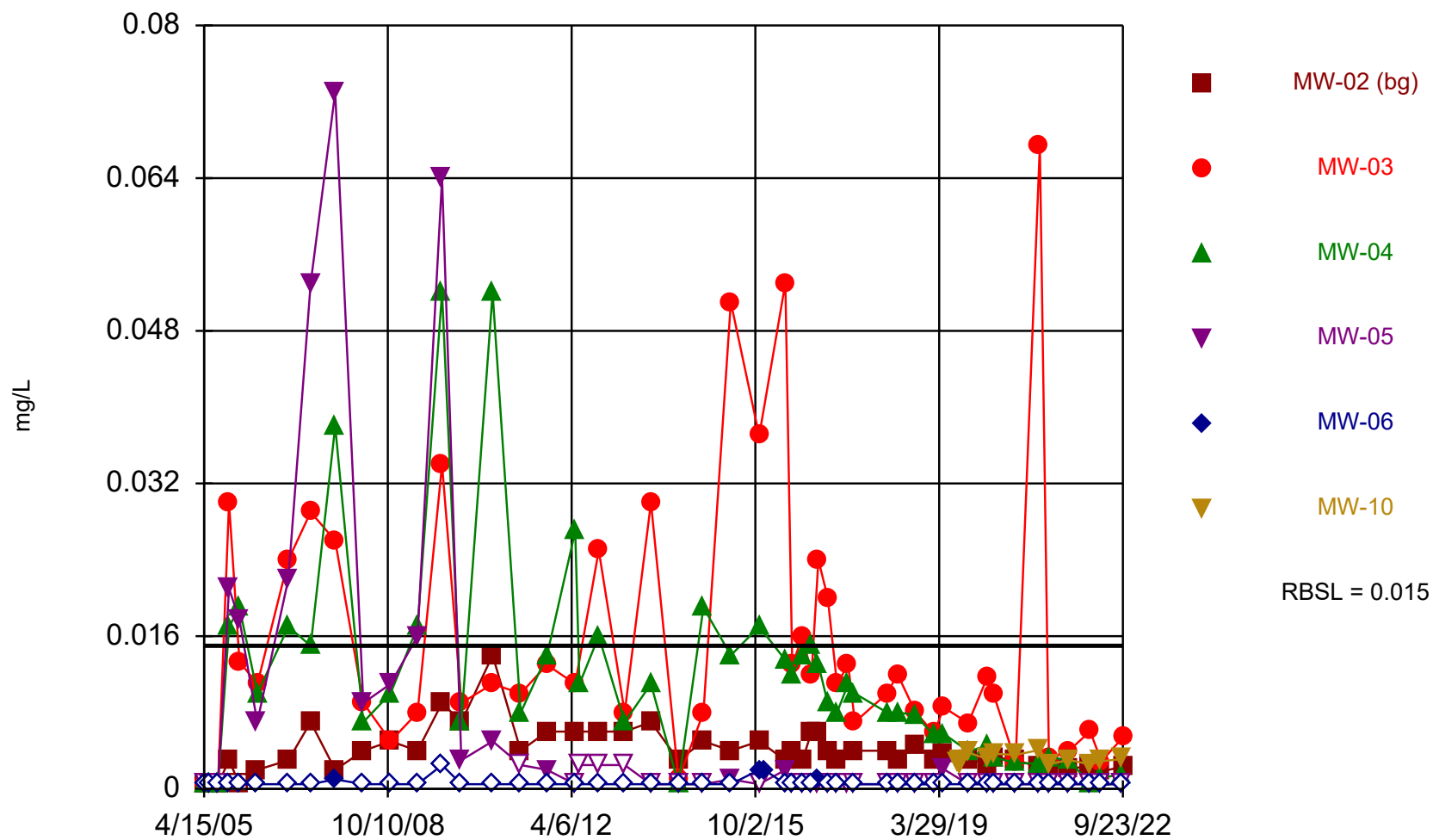


Time Series



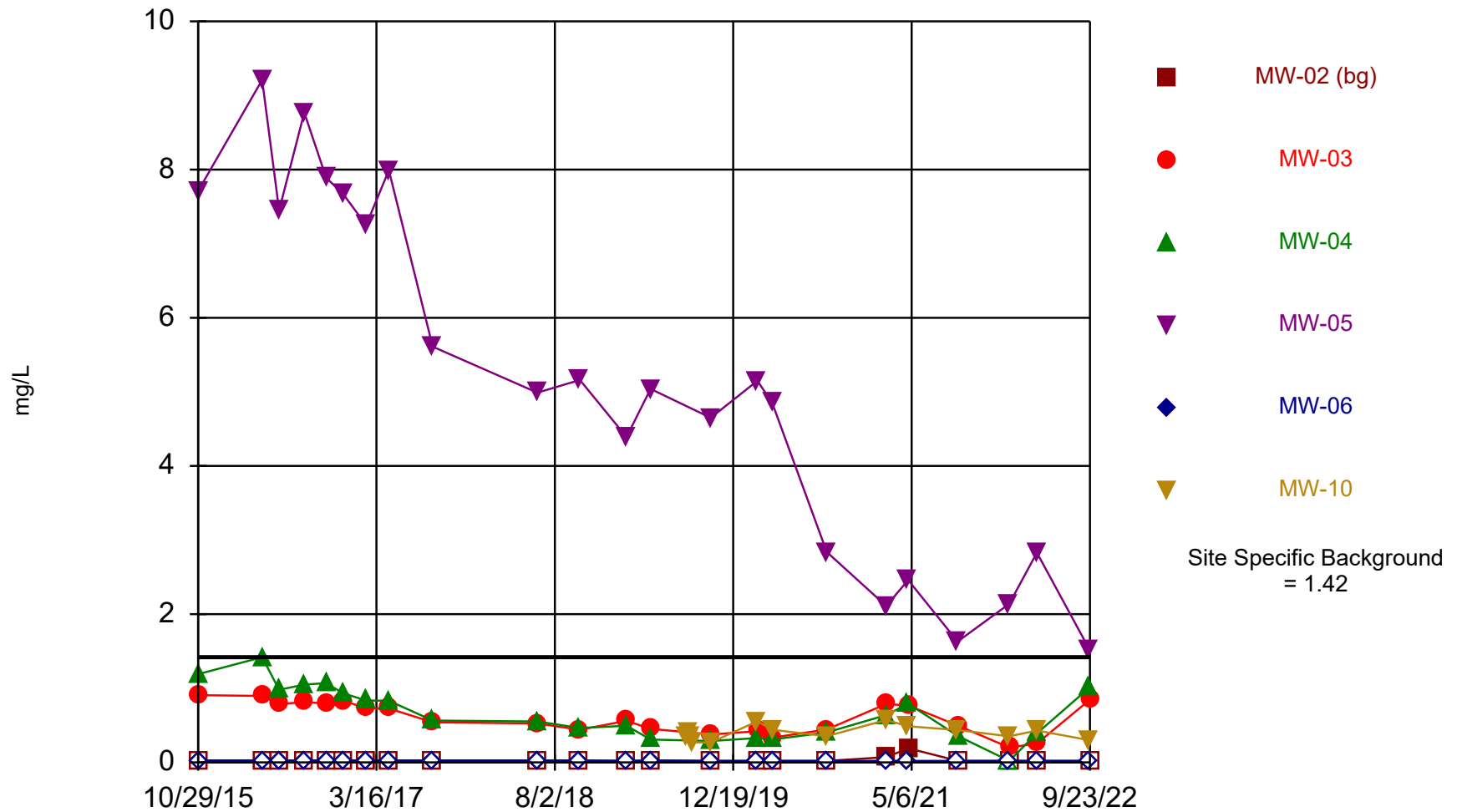
Constituent: Fluoride Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series

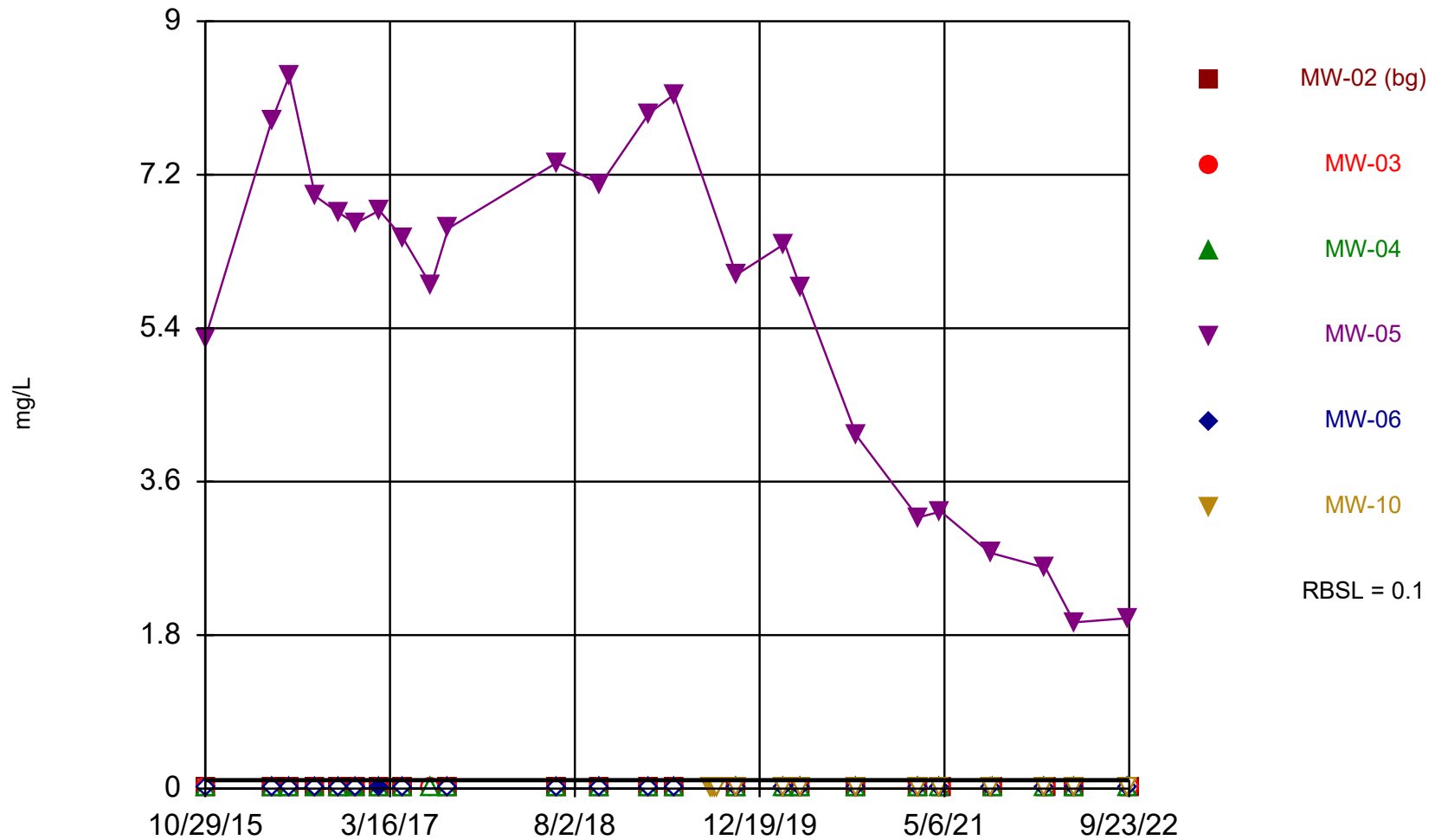


Constituent: Lead Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Time Series



Time Series



Constituent: Molybdenum Analysis Run 11/11/2022 1:32 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Tolerance Limit

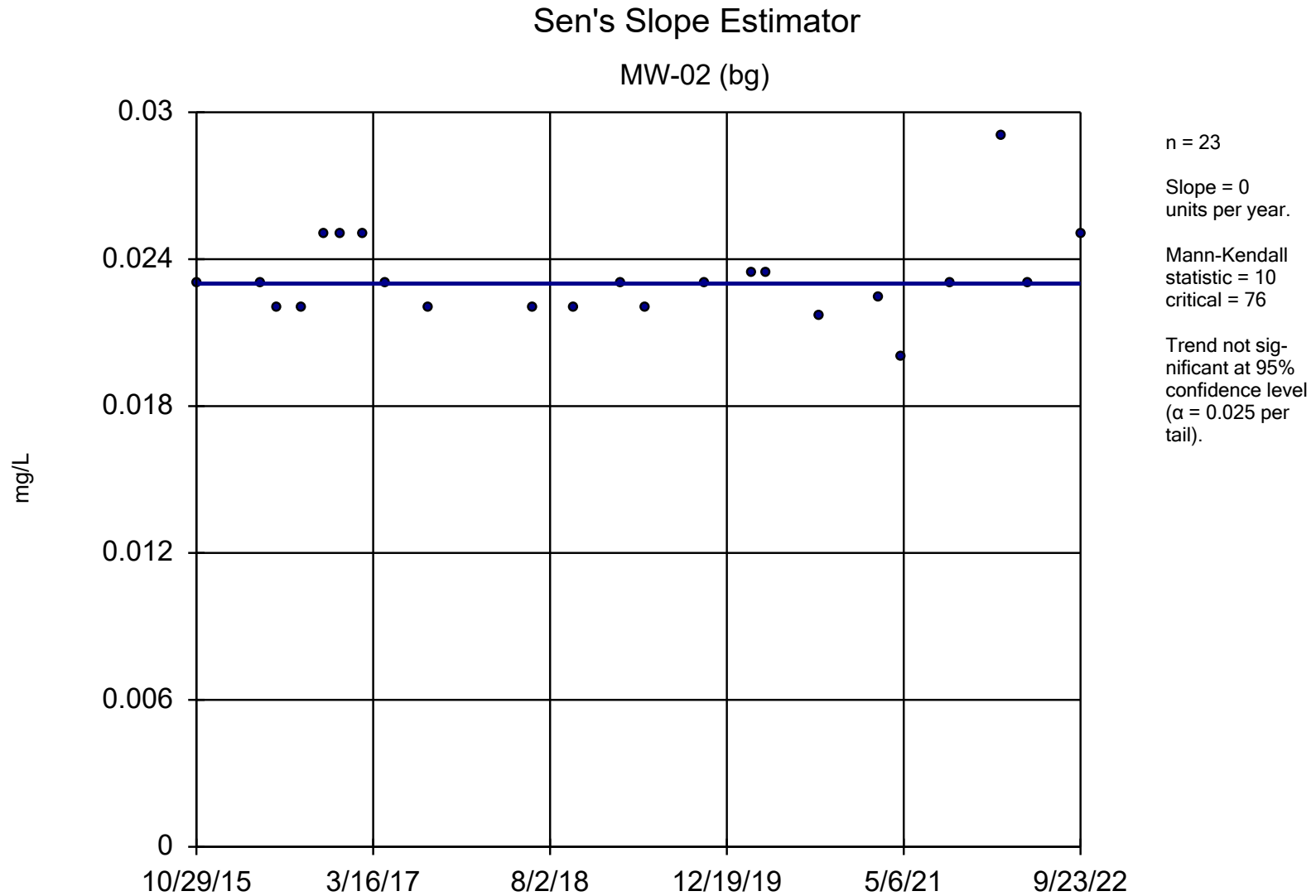
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen Printed 11/11/2022, 1:24 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Barium (mg/L)	n/a	0.029	n/a	n/a	n/a	23	0	n/a	0.3074	NP Inter(normal...
Beryllium (mg/L)	n/a	0.009669	n/a	n/a	n/a	48	4.167	x^2	0.05	Inter
Cobalt (mg/L)	n/a	0.1749	n/a	n/a	n/a	23	0	No	0.05	Inter
Combined Radium (pCi/L)	n/a	3.136	n/a	n/a	n/a	23	30.43	No	0.05	Inter
Fluoride (mg/L)	n/a	1.109	n/a	n/a	n/a	24	4.167	No	0.05	Inter
Lead (mg/L)	n/a	0.009752	n/a	n/a	n/a	48	8.333	sqrt(x)	0.05	Inter
Lithium (mg/L)	n/a	1.42	n/a	n/a	n/a	69	31.88	n/a	0.02904	NP Inter(normal...
Molybdenum (mg/L)	n/a	0.0025	n/a	n/a	n/a	23	100	n/a	0.3074	NP Inter(NDs)

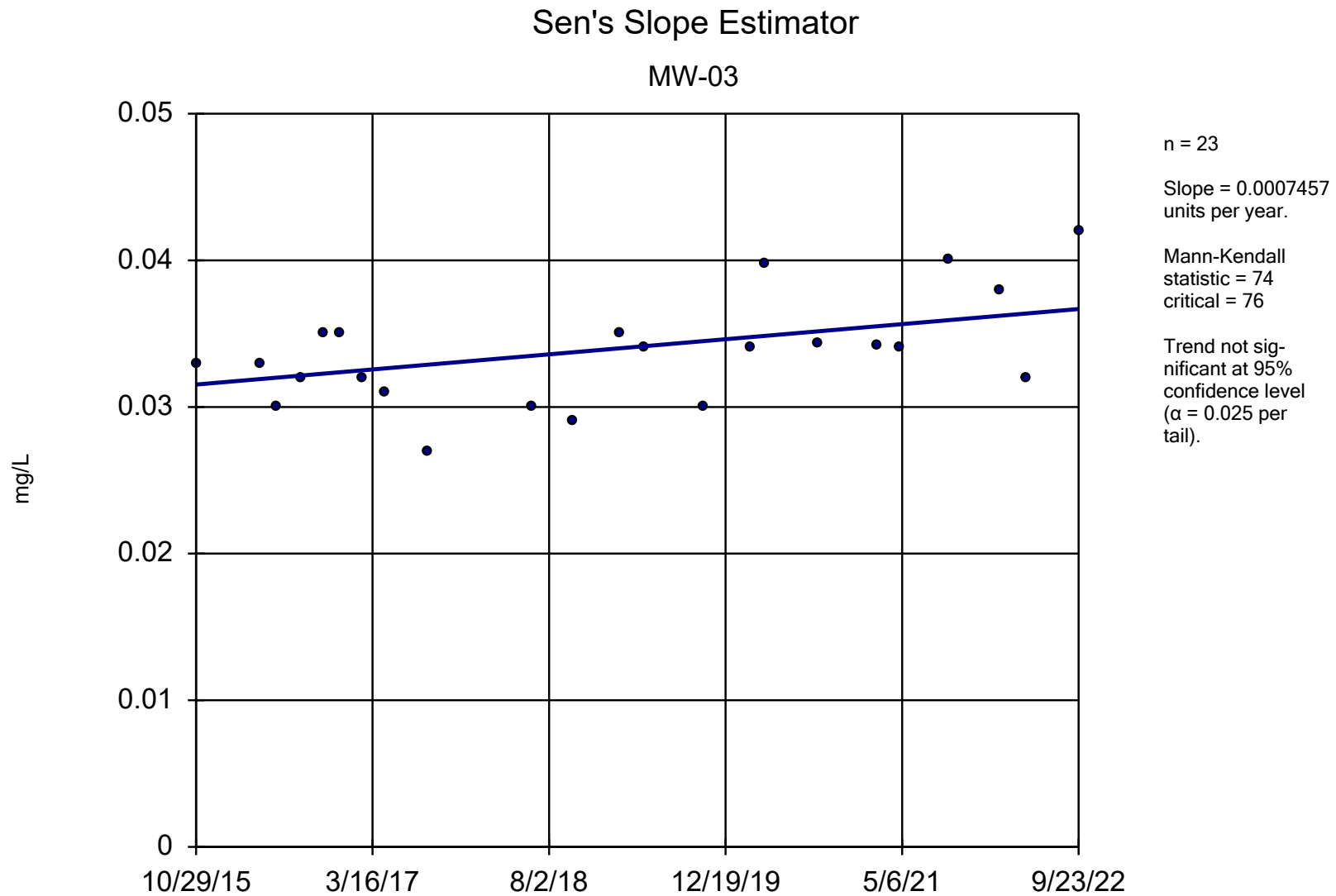
Trend Test

RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen Printed 11/11/2022, 1:35 PM

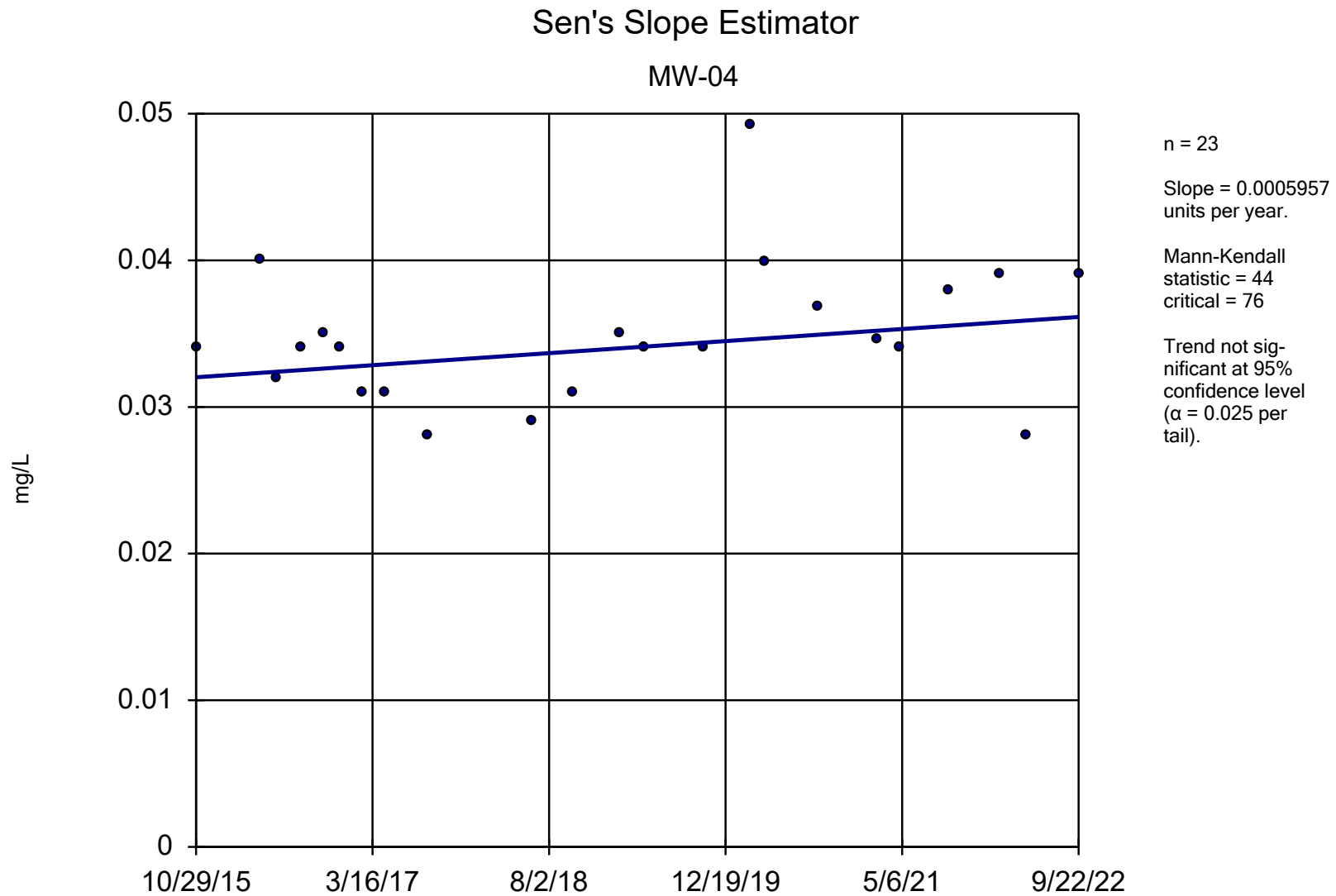
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Barium (mg/L)	MW-02 (bg)	0	10	76	No	23	0	n/a	n/a	0.05	NP
Barium (mg/L)	MW-03	0.000...	74	76	No	23	0	n/a	n/a	0.05	NP
Barium (mg/L)	MW-04	0.000...	44	76	No	23	0	n/a	n/a	0.05	NP
Barium (mg/L)	MW-05	0.000...	42	76	No	23	0	n/a	n/a	0.05	NP
Barium (mg/L)	MW-06	-0.00...	-39	-76	No	23	0	n/a	n/a	0.05	NP
Barium (mg/L)	MW-10	-0.00...	-33	-37	No	14	0	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-02 (bg)	-0.00...	-6.828	-1.96	Yes	48	4.167	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-03	-0.00...	-6.675	-1.96	Yes	49	51.02	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-04	-0.00...	-6.211	-1.96	Yes	50	44	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-05	0	-4.156	-1.96	Yes	49	75.51	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-06	0	2.579	1.96	Yes	49	100	n/a	n/a	0.05	NP
Beryllium (mg/L)	MW-10	0.000...	19	37	No	14	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-02 (bg)	-0.00...	-124	-76	Yes	23	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-03	-0.00...	-210	-81	Yes	24	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-04	-0.00...	-151	-81	Yes	24	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-05	-0.00...	-31	-81	No	24	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-06	0.000...	43	76	No	23	0	n/a	n/a	0.05	NP
Cobalt (mg/L)	MW-10	0.008993	31	37	No	14	0	n/a	n/a	0.05	NP
Combined Radium (...)	MW-02 (bg)	-0.05798	-39	-76	No	23	30.43	n/a	n/a	0.05	NP
Combined Radium (...)	MW-03	-0.4817	-131	-76	Yes	23	17.39	n/a	n/a	0.05	NP
Combined Radium (...)	MW-04	-0.4139	-157	-76	Yes	23	13.04	n/a	n/a	0.05	NP
Combined Radium (...)	MW-05	-0.08332	-65	-76	No	23	30.43	n/a	n/a	0.05	NP
Combined Radium (...)	MW-06	-0.06573	-33	-76	No	23	17.39	n/a	n/a	0.05	NP
Combined Radium (...)	MW-10	0.04635	7	37	No	14	14.29	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-02 (bg)	0.03329	67	81	No	24	4.167	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-03	-0.1211	-146	-81	Yes	24	50	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-04	-0.1134	-133	-81	Yes	24	41.67	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-05	-0.1962	-162	-81	Yes	24	50	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-06	0.02792	182	81	Yes	24	95.83	n/a	n/a	0.05	NP
Fluoride (mg/L)	MW-10	-0.00...	-3	-37	No	14	7.143	n/a	n/a	0.05	NP
Lead (mg/L)	MW-02 (bg)	-0.00...	-1.531	-1.96	No	48	8.333	n/a	n/a	0.05	NP
Lead (mg/L)	MW-03	-0.00...	-1.476	-1.96	No	49	6.122	n/a	n/a	0.05	NP
Lead (mg/L)	MW-04	-0.00...	-4.064	-1.96	Yes	50	10	n/a	n/a	0.05	NP
Lead (mg/L)	MW-05	-0.00...	-5.078	-1.96	Yes	50	68	n/a	n/a	0.05	NP
Lead (mg/L)	MW-06	0	-0.7087	-1.96	No	49	91.84	n/a	n/a	0.05	NP
Lead (mg/L)	MW-10	0.000...	3	37	No	14	0	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-02 (bg)	0	-79	-76	Yes	23	91.3	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-03	-0.08976	-125	-76	Yes	23	0	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-04	-0.1373	-133	-76	Yes	23	4.348	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-05	-1.061	-197	-76	Yes	23	0	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-06	-0.00...	-130	-76	Yes	23	100	n/a	n/a	0.05	NP
Lithium (mg/L)	MW-10	0.009442	7	37	No	14	0	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-02 (bg)	0	22	76	No	23	100	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-03	0	35	81	No	24	95.83	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-04	0	-10	-81	No	24	91.67	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-05	-0.8188	-177	-85	Yes	25	0	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-06	0	31	76	No	23	91.3	n/a	n/a	0.05	NP
Molybdenum (mg/L)	MW-10	0	40	37	Yes	14	100	n/a	n/a	0.05	NP



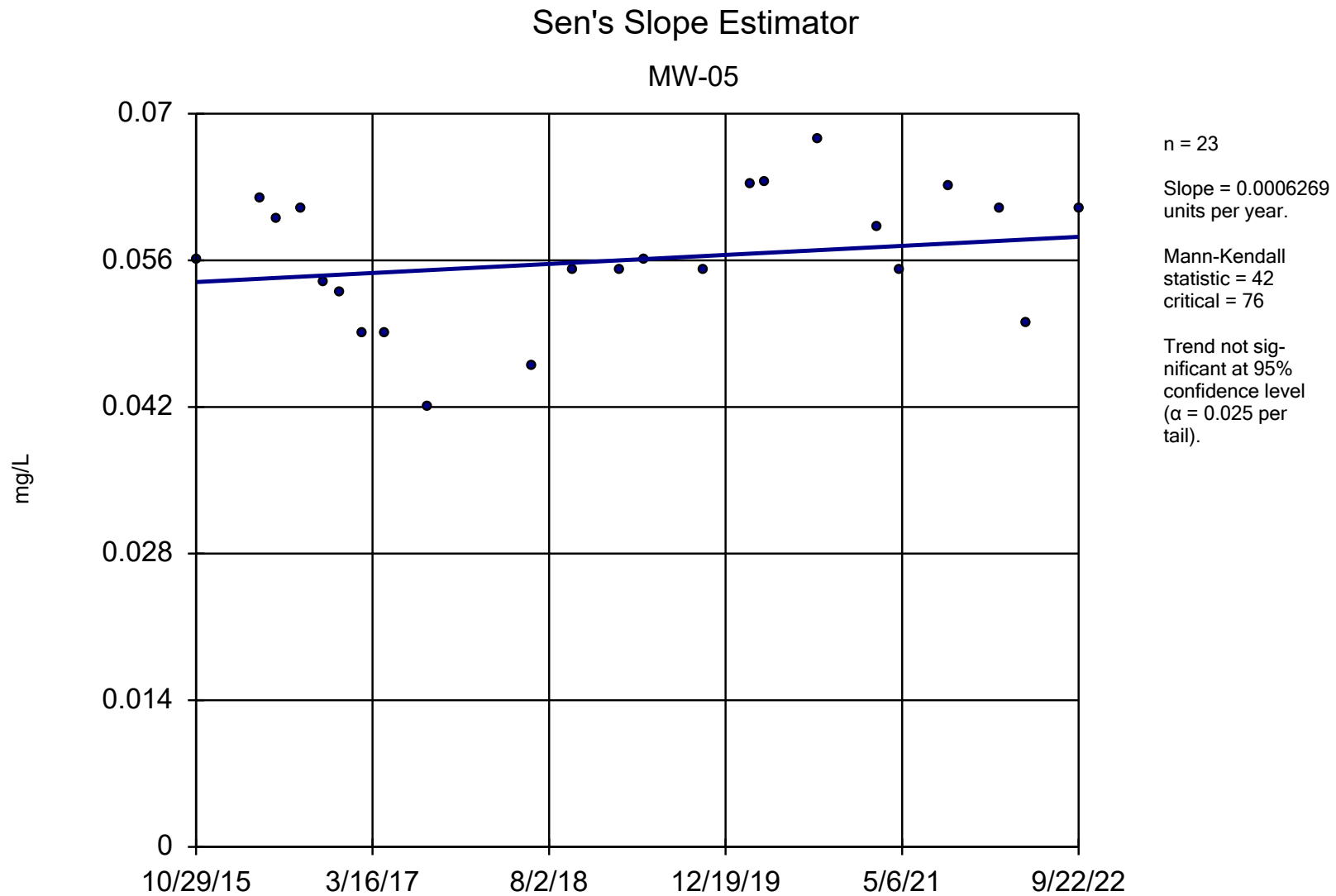
Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



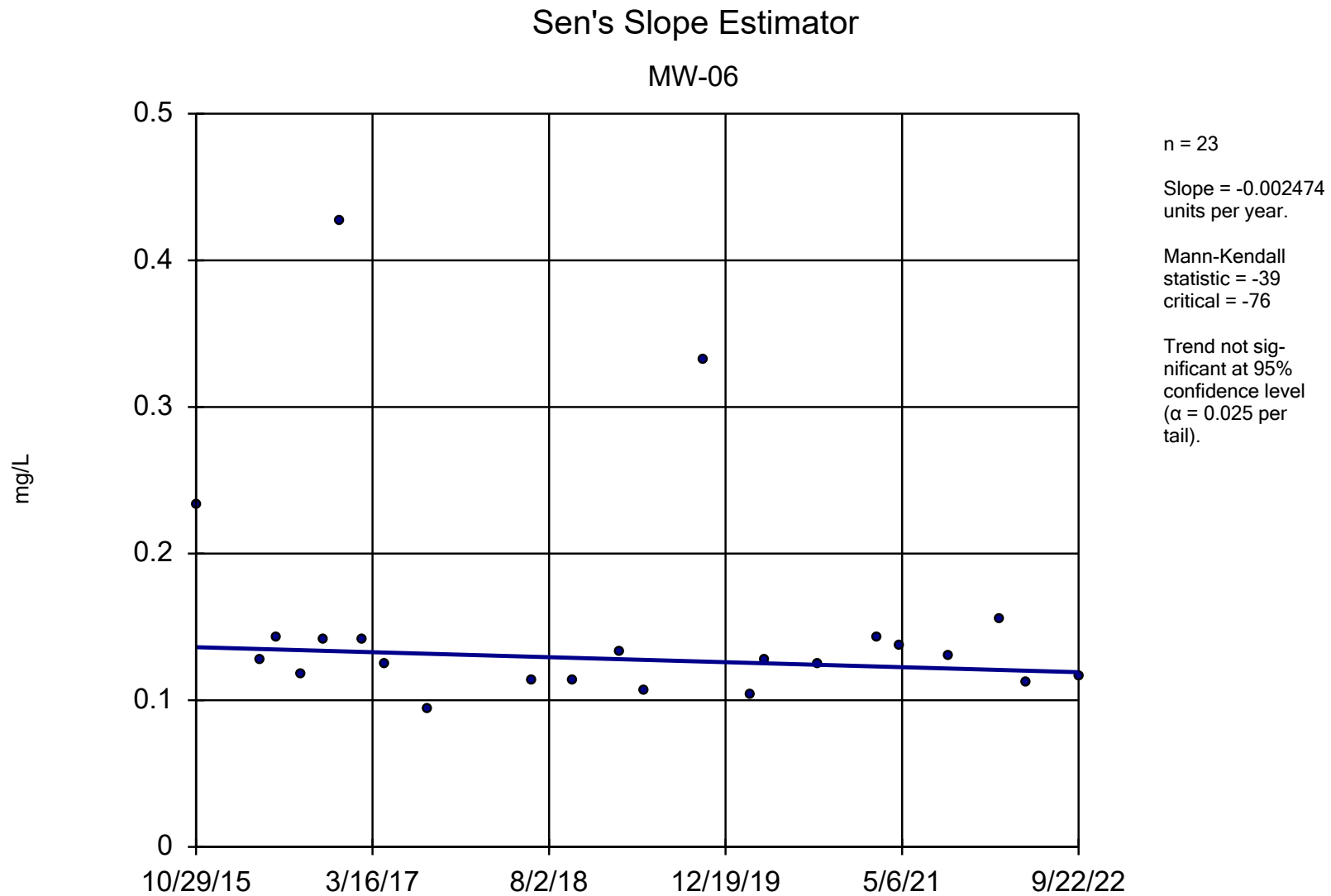
Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



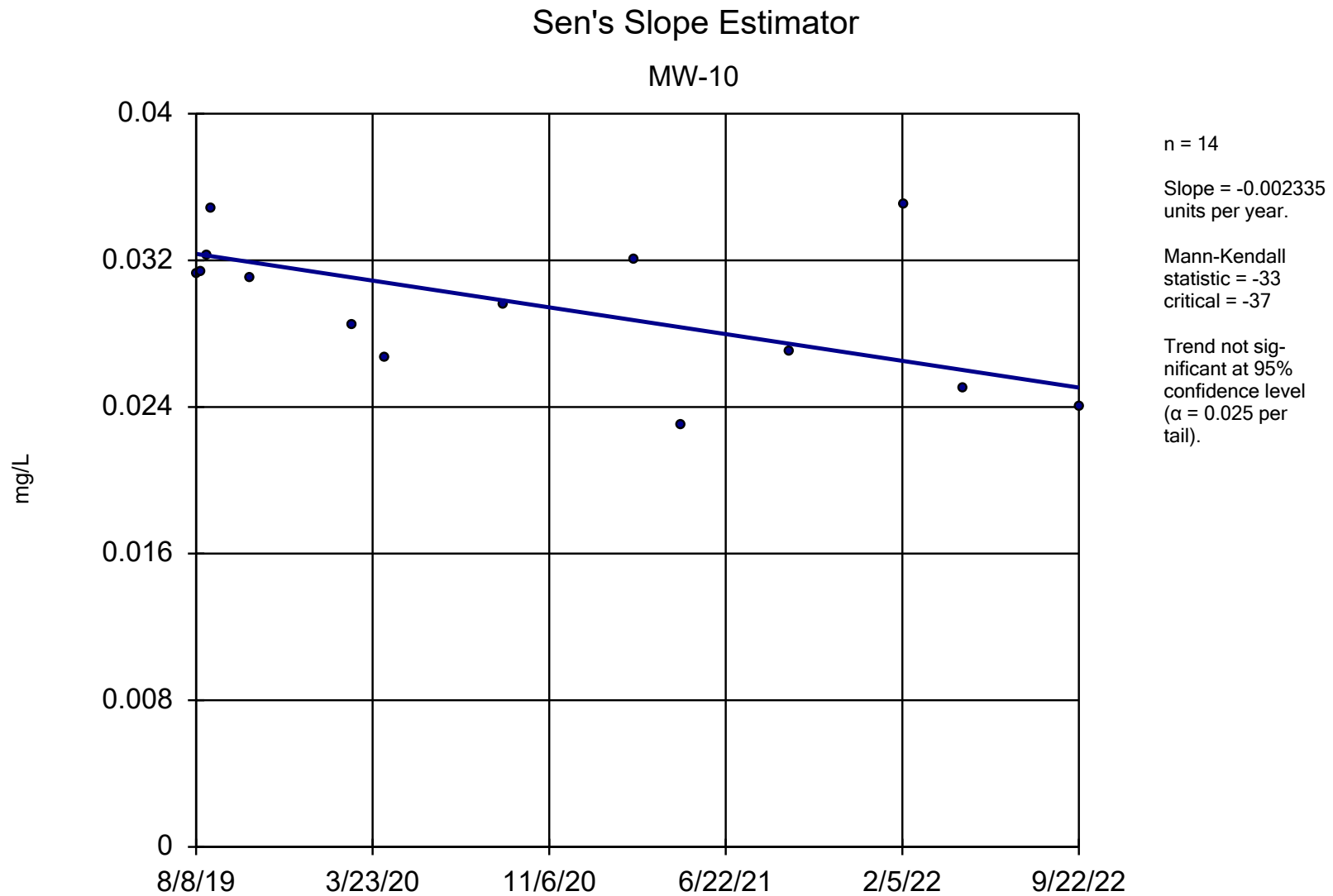
Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

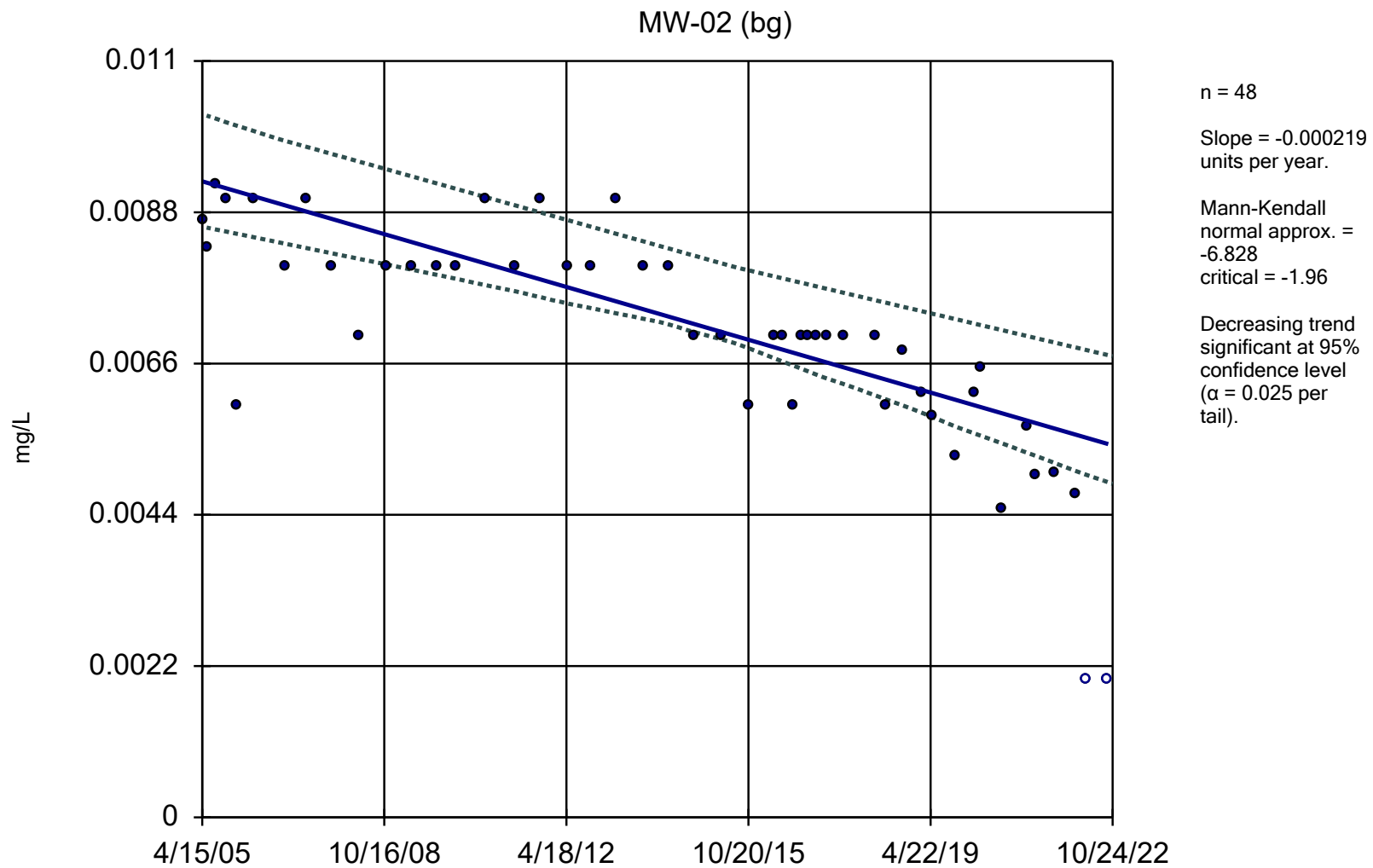


Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Barium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

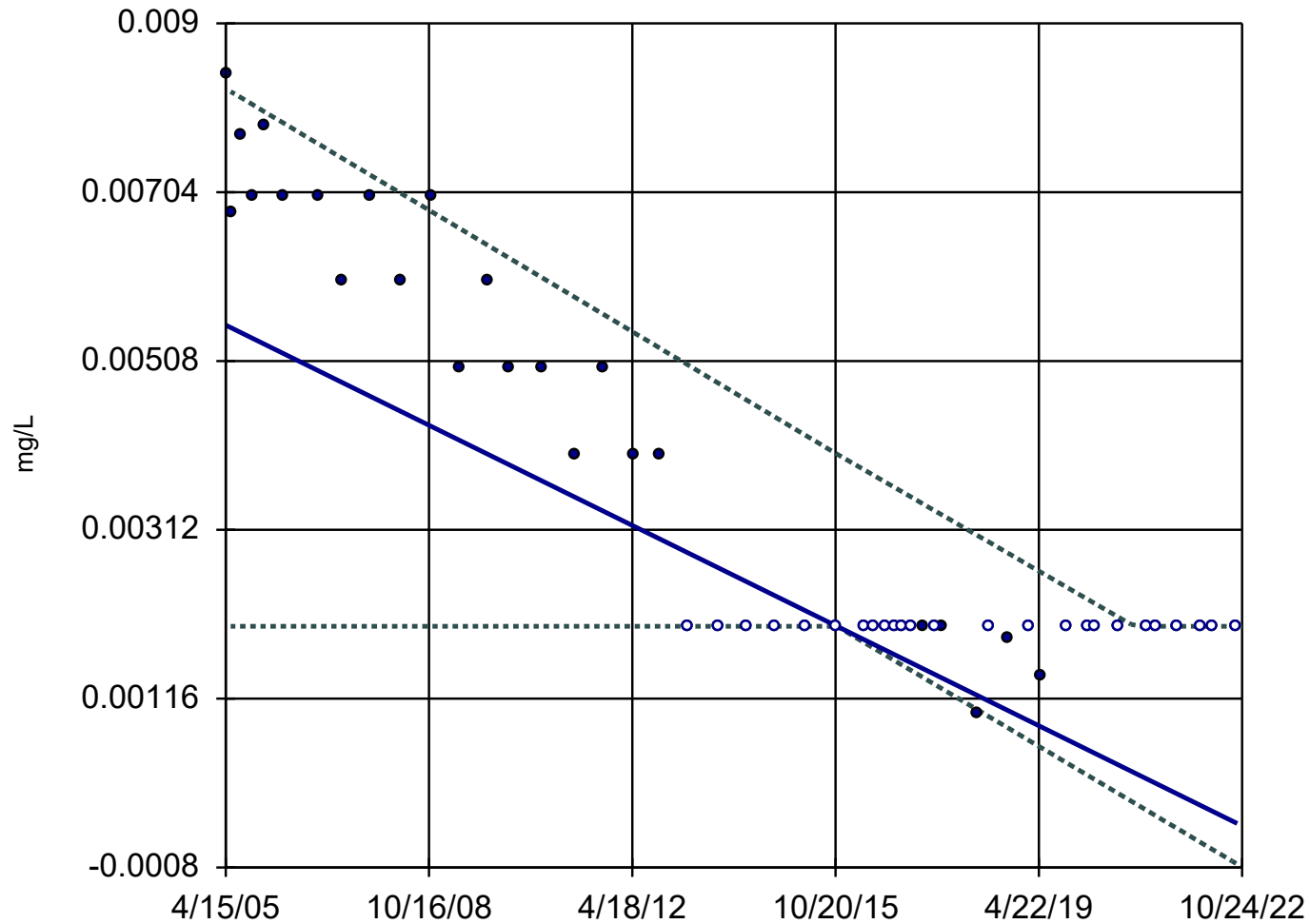
Sen's Slope and 95% Confidence Band



Constituent: Beryllium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

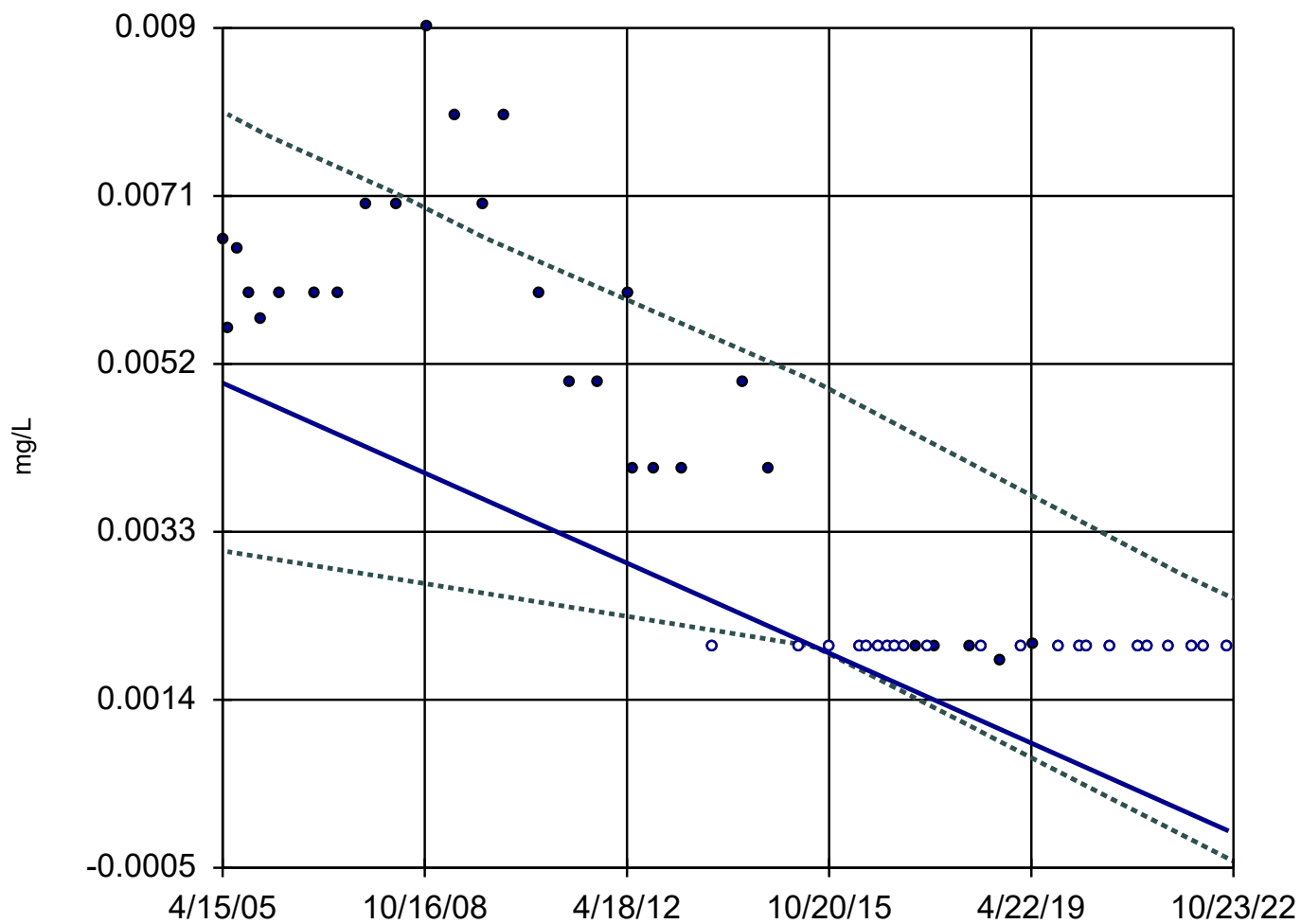
Sen's Slope and 95% Confidence Band

MW-03



Sen's Slope and 95% Confidence Band

MW-04



$n = 50$

Slope = -0.0002904
units per year.

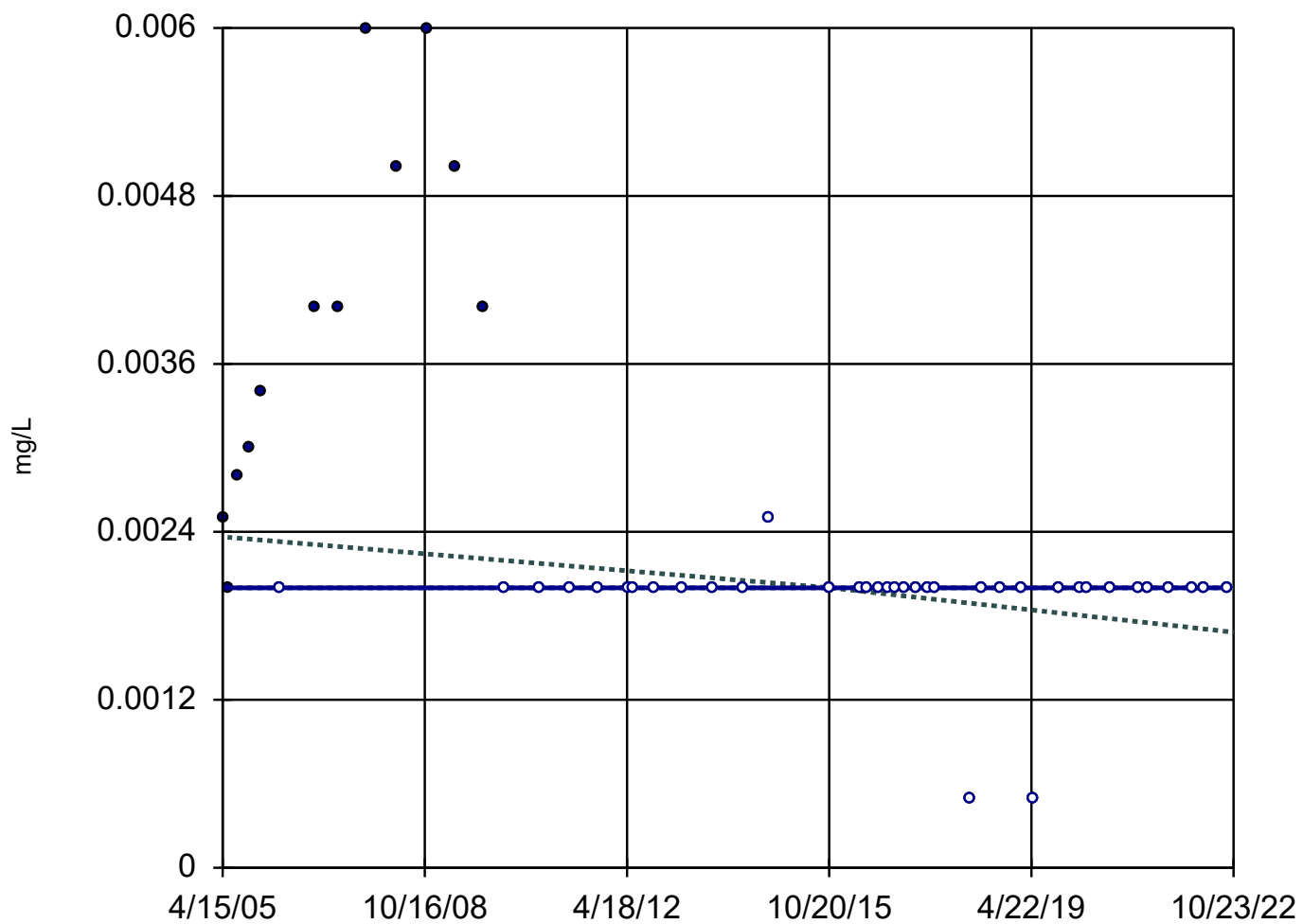
Mann-Kendall
normal approx. =
-6.211
critical = -1.96

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Beryllium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05



n = 49

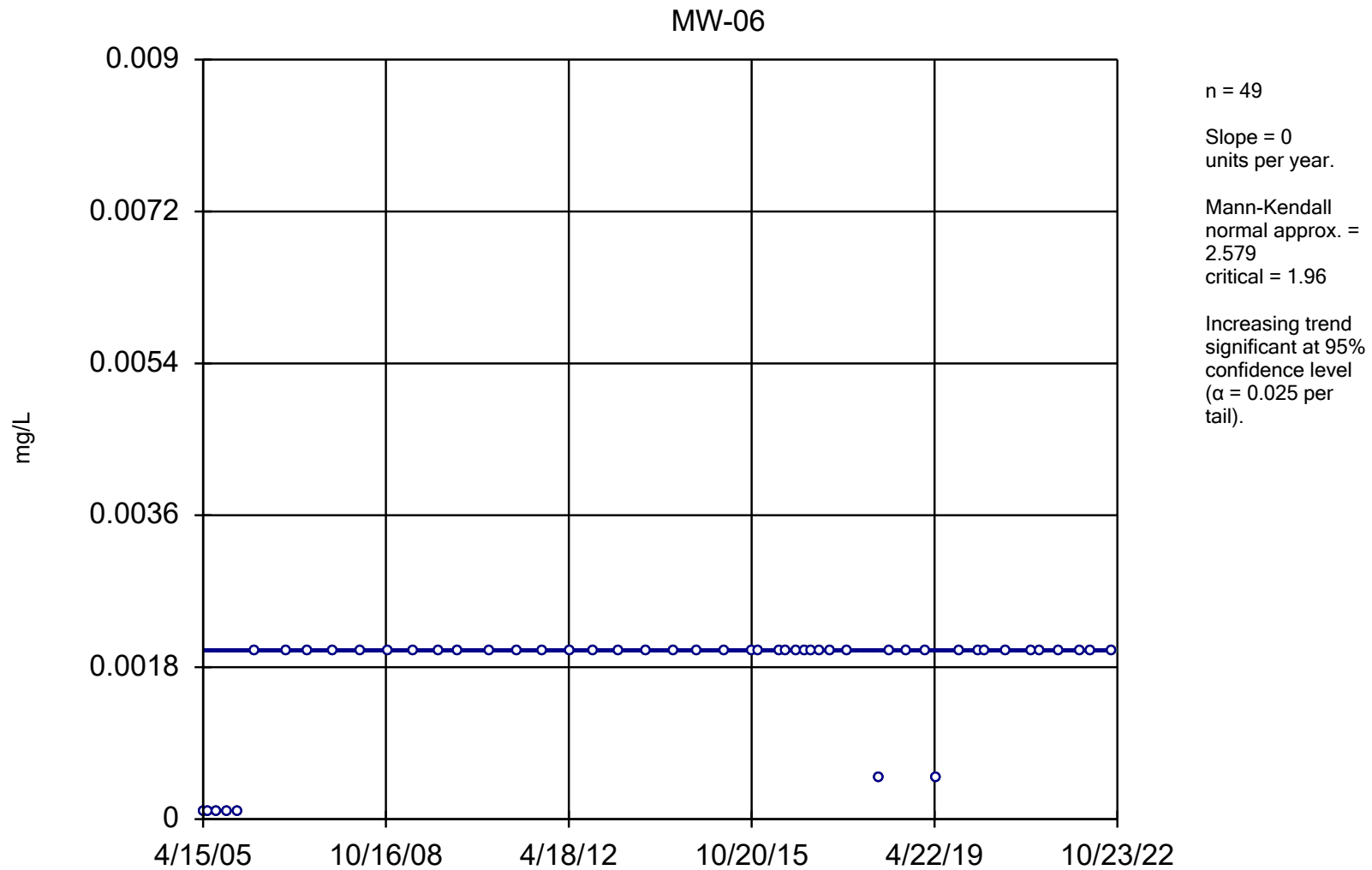
Slope = 0
units per year.

Mann-Kendall
normal approx. =
-4.156
critical = -1.96

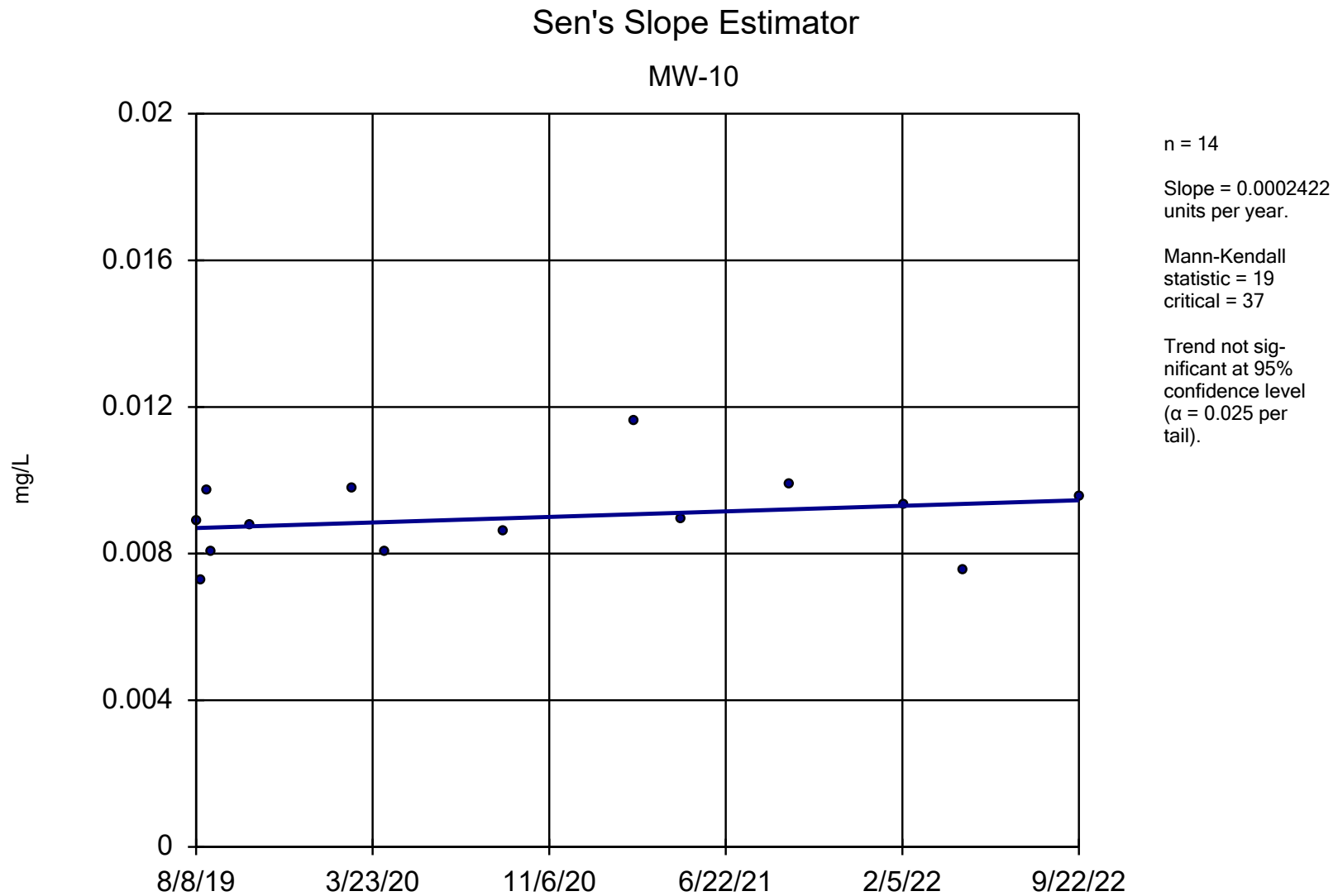
Decreasing trend significant at 95% confidence level ($\alpha = 0.025$ per tail).

Constituent: Beryllium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

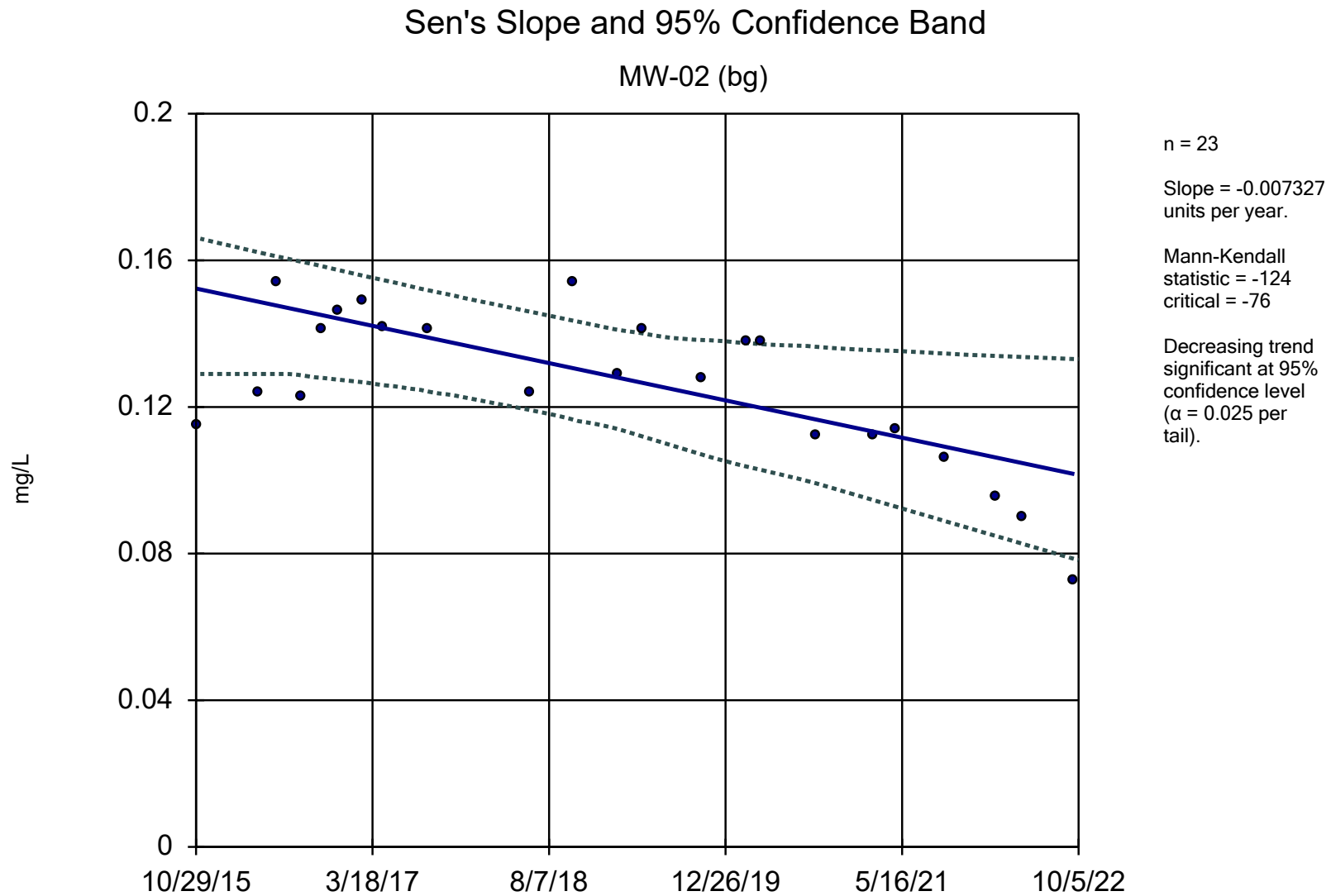
Sen's Slope and 95% Confidence Band



Constituent: Beryllium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



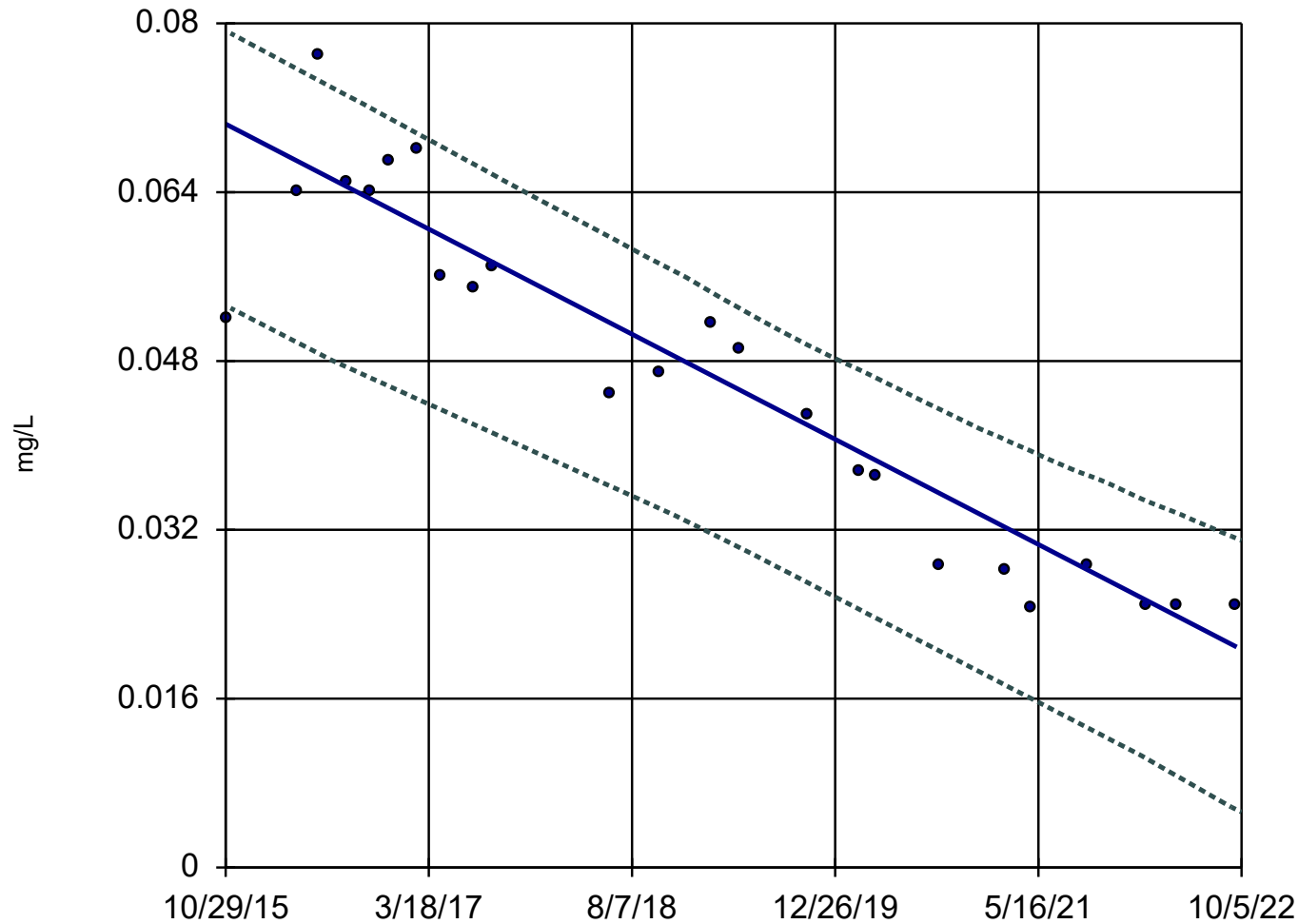
Constituent: Beryllium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Cobalt Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



n = 24

Slope = -0.007177
units per year.

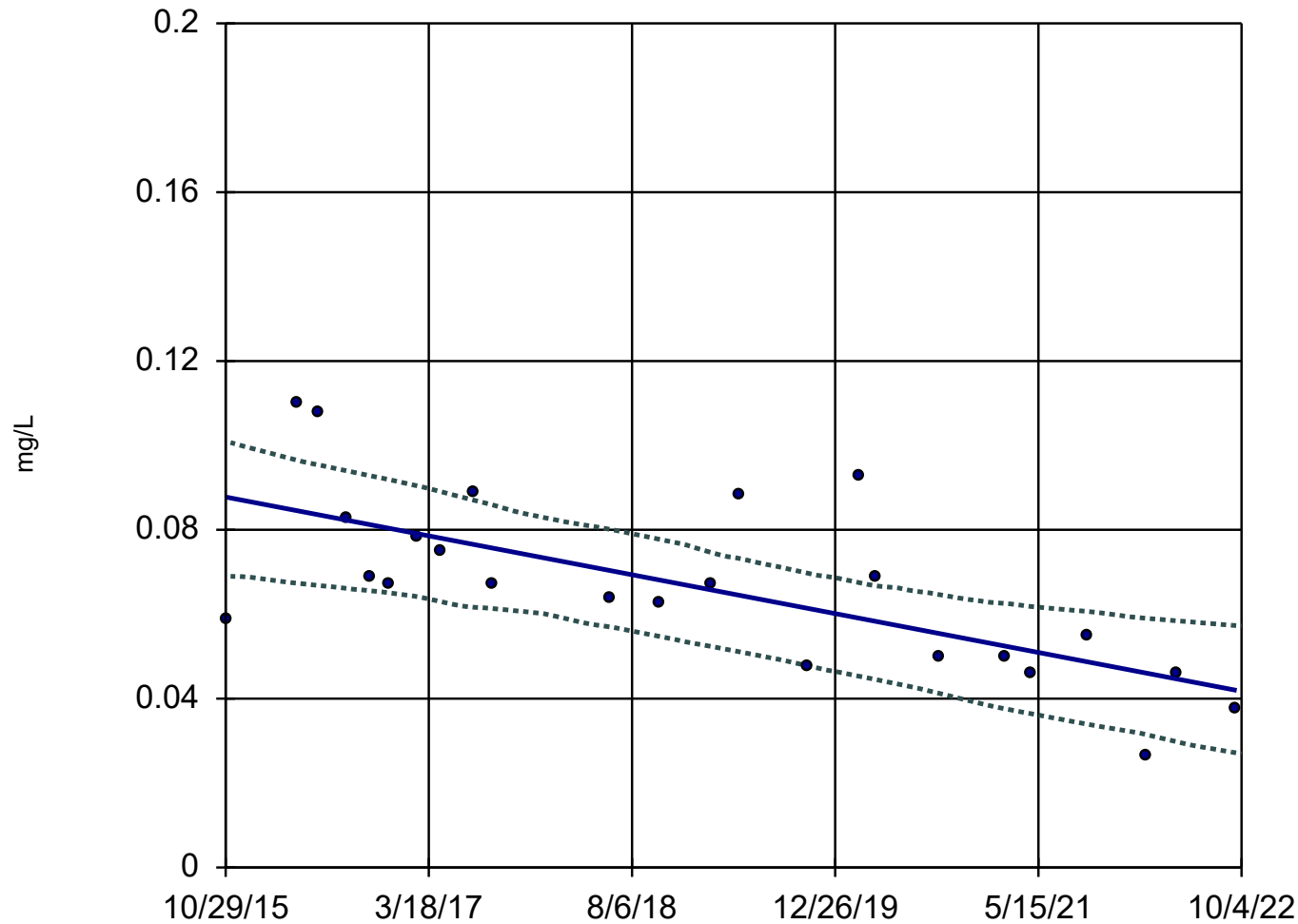
Mann-Kendall
statistic = -210
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Cobalt Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04



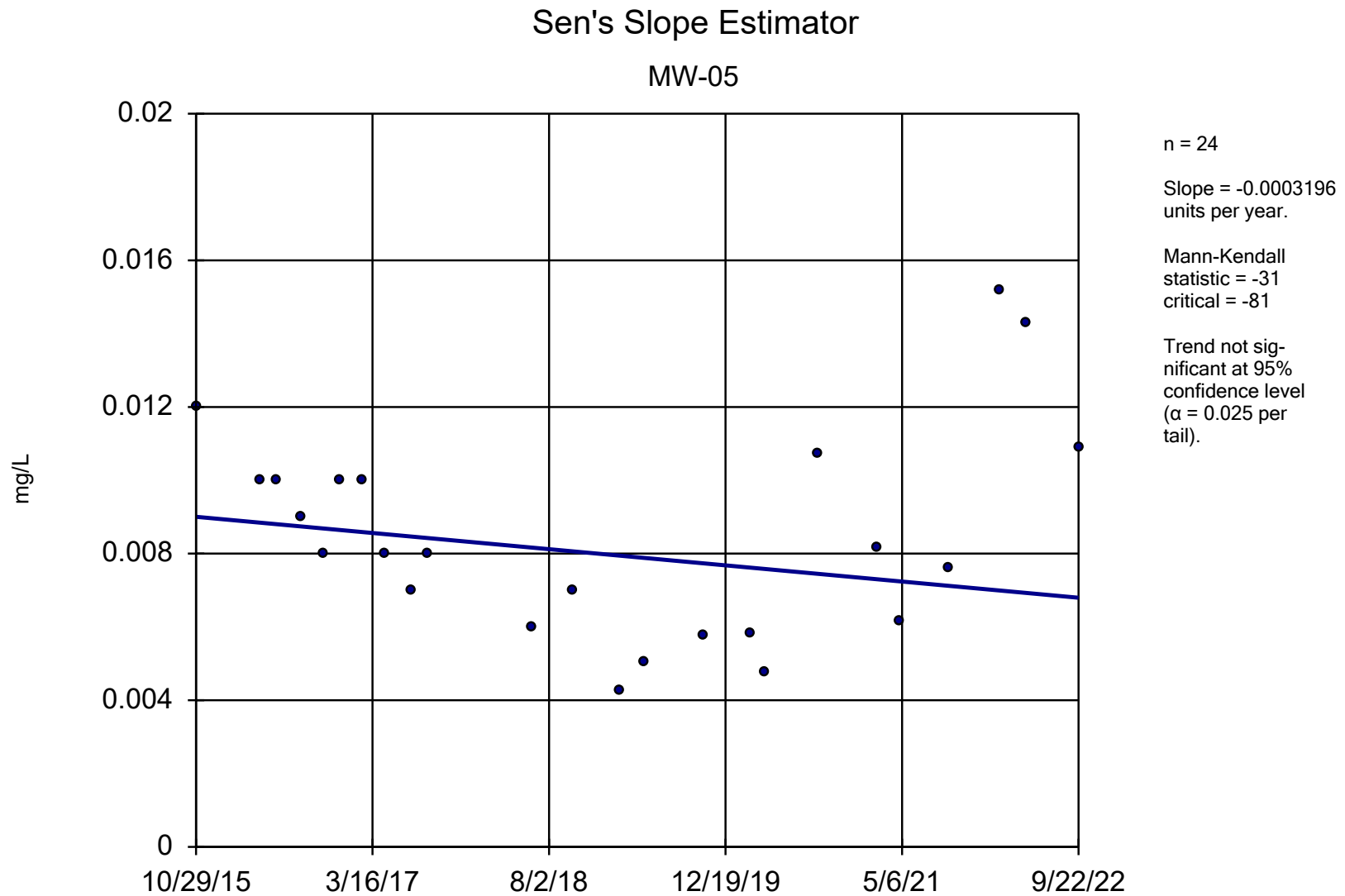
n = 24

Slope = -0.006638
units per year.

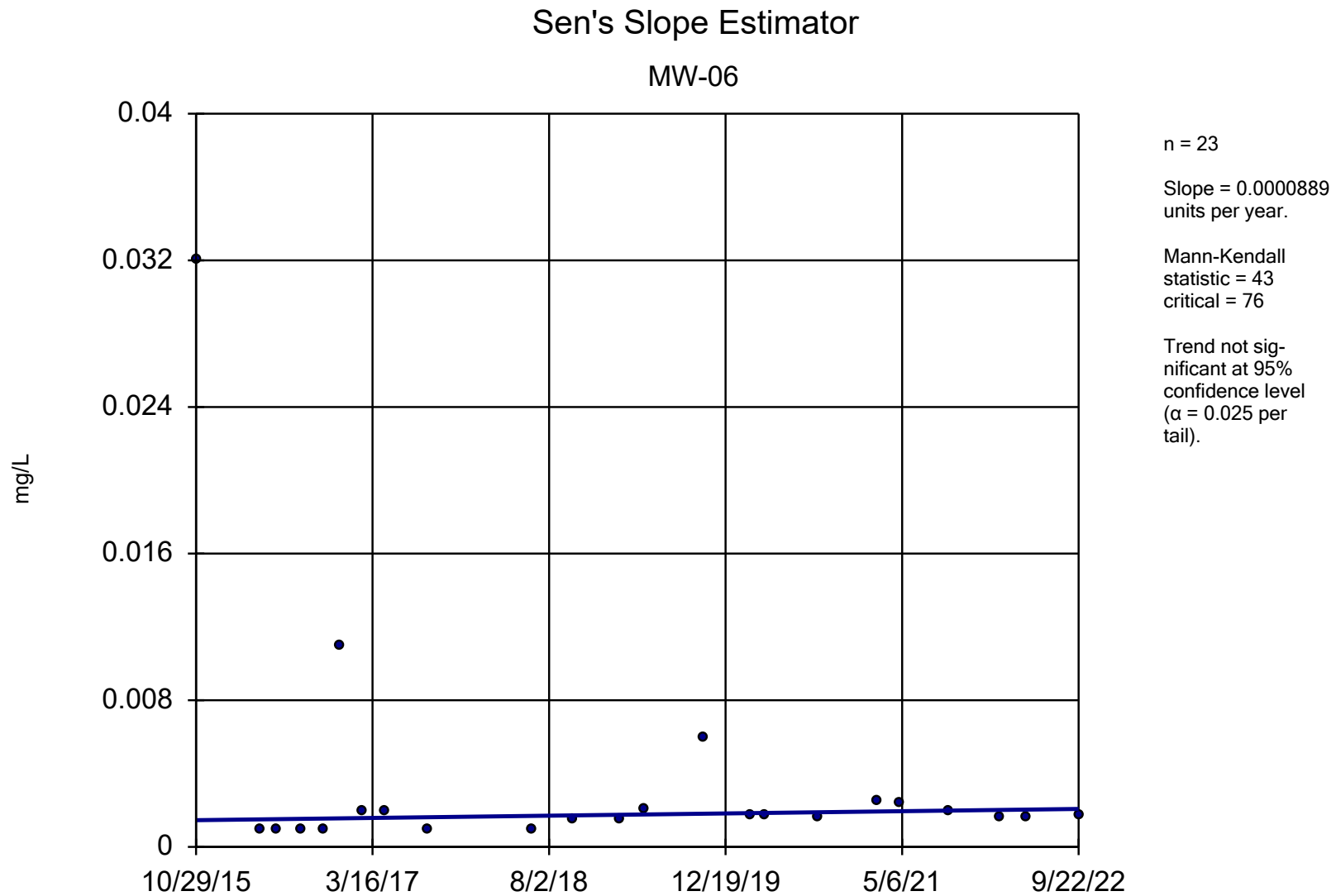
Mann-Kendall
statistic = -151
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

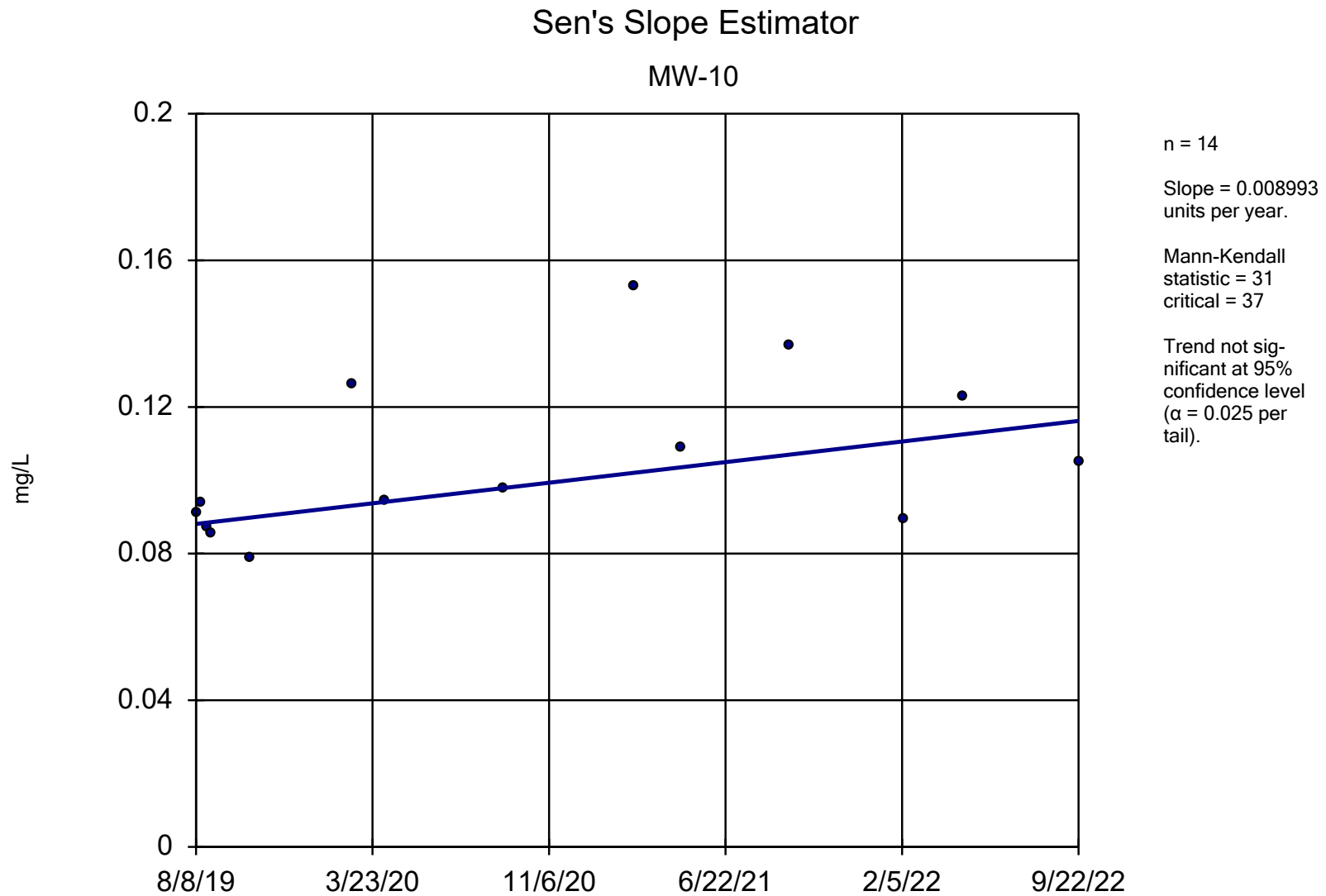
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RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



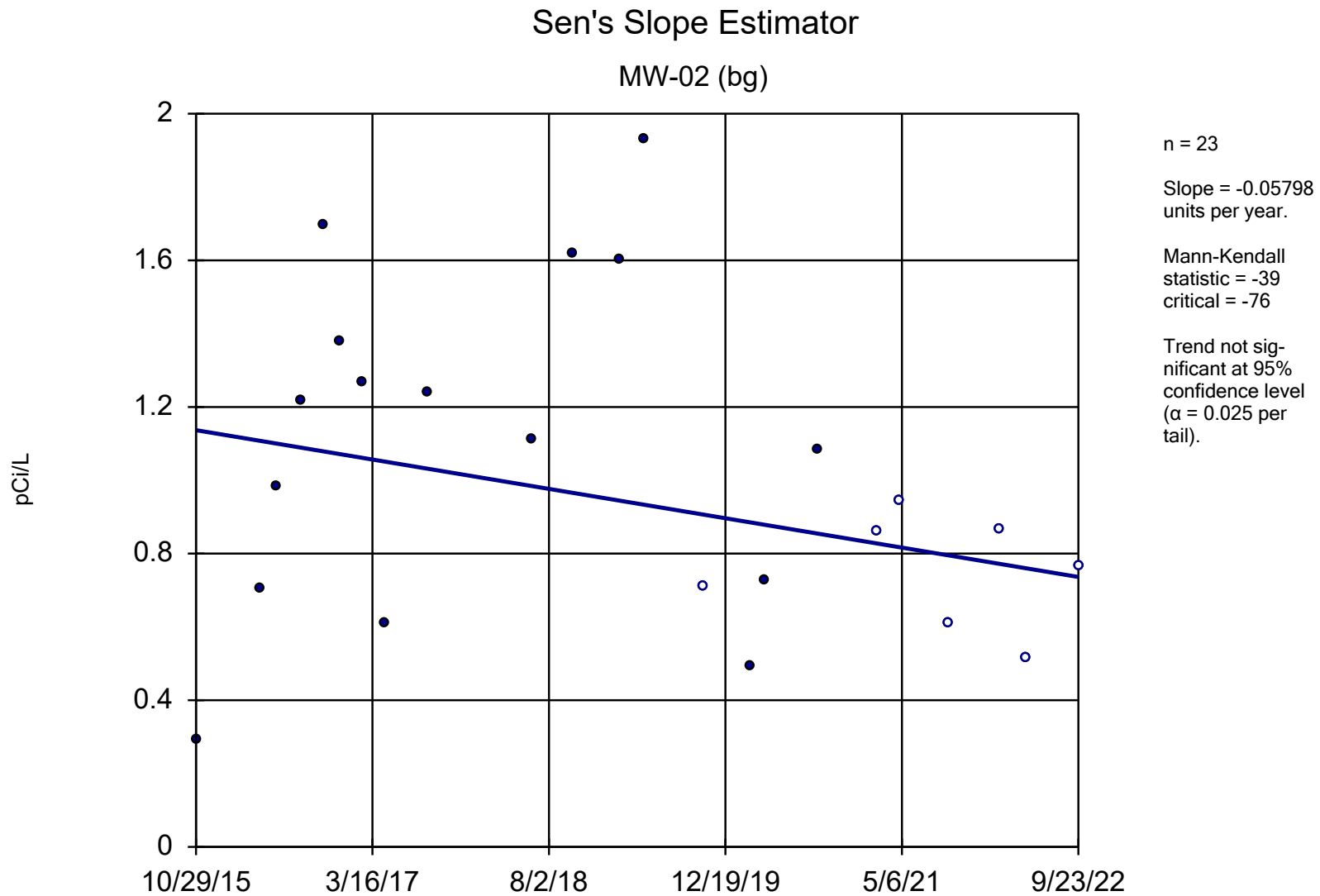
Constituent: Cobalt Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Cobalt Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



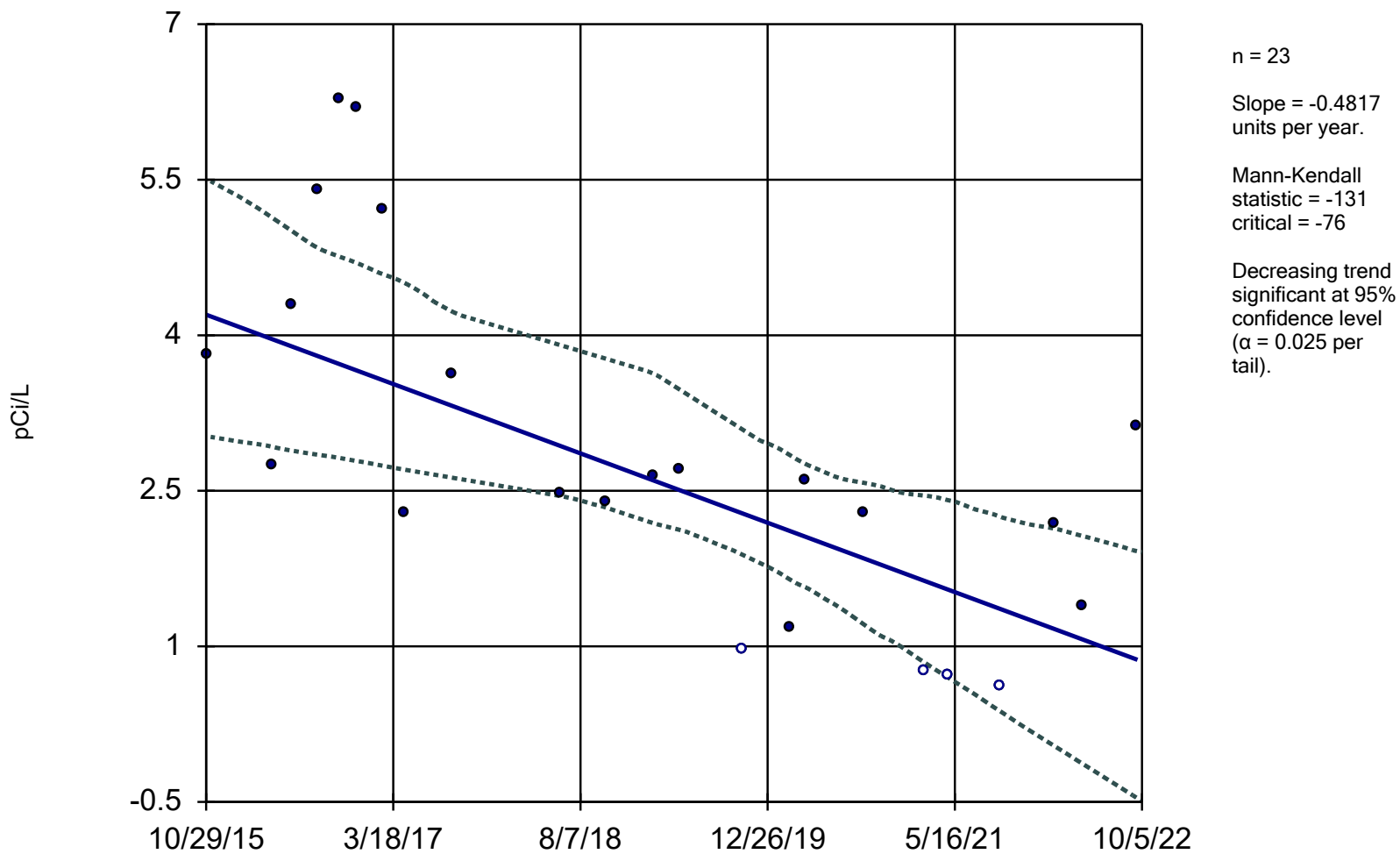
Constituent: Cobalt Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Combined Radium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

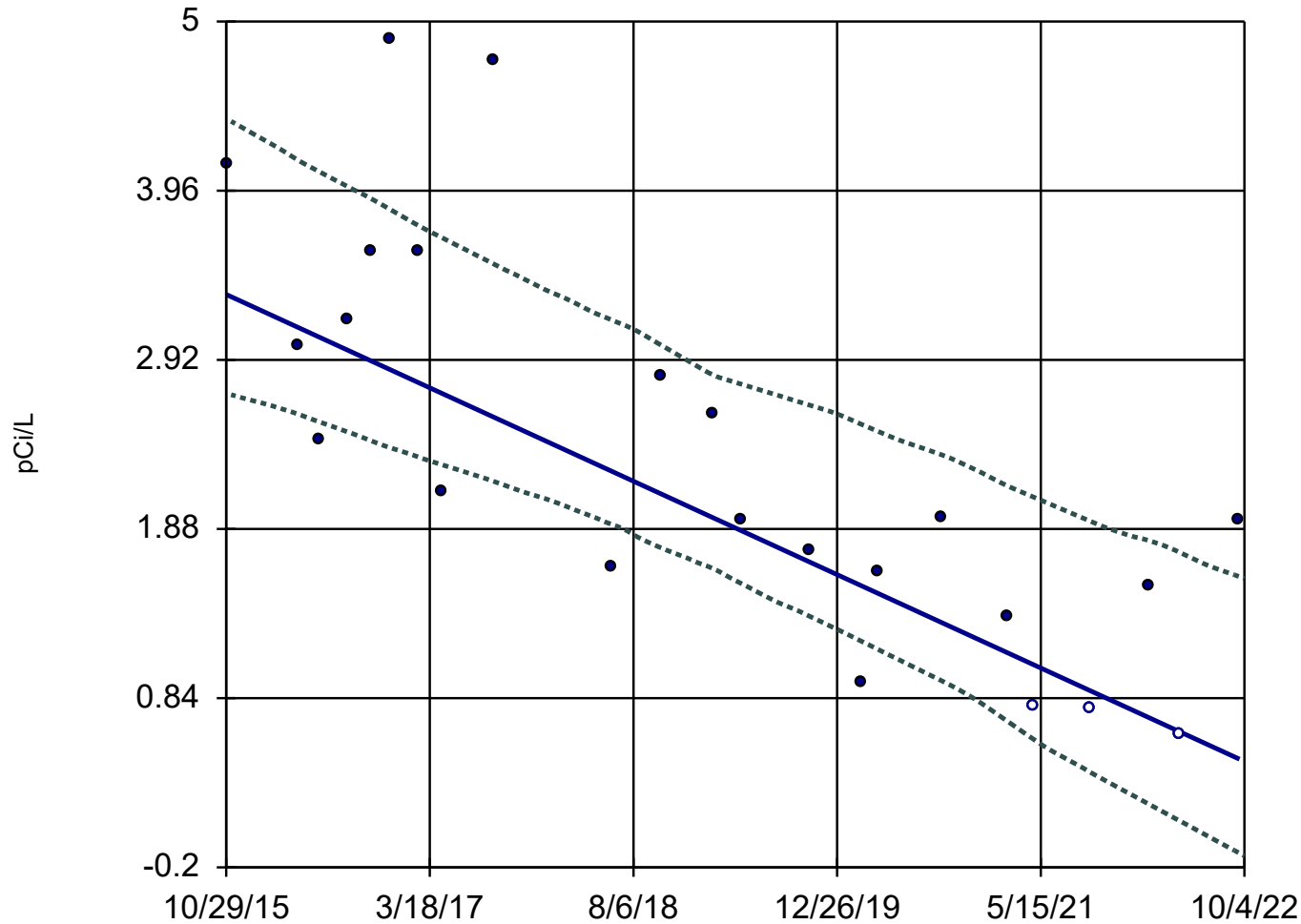
MW-03



Constituent: Combined Radium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04



n = 23

Slope = -0.4139
units per year.

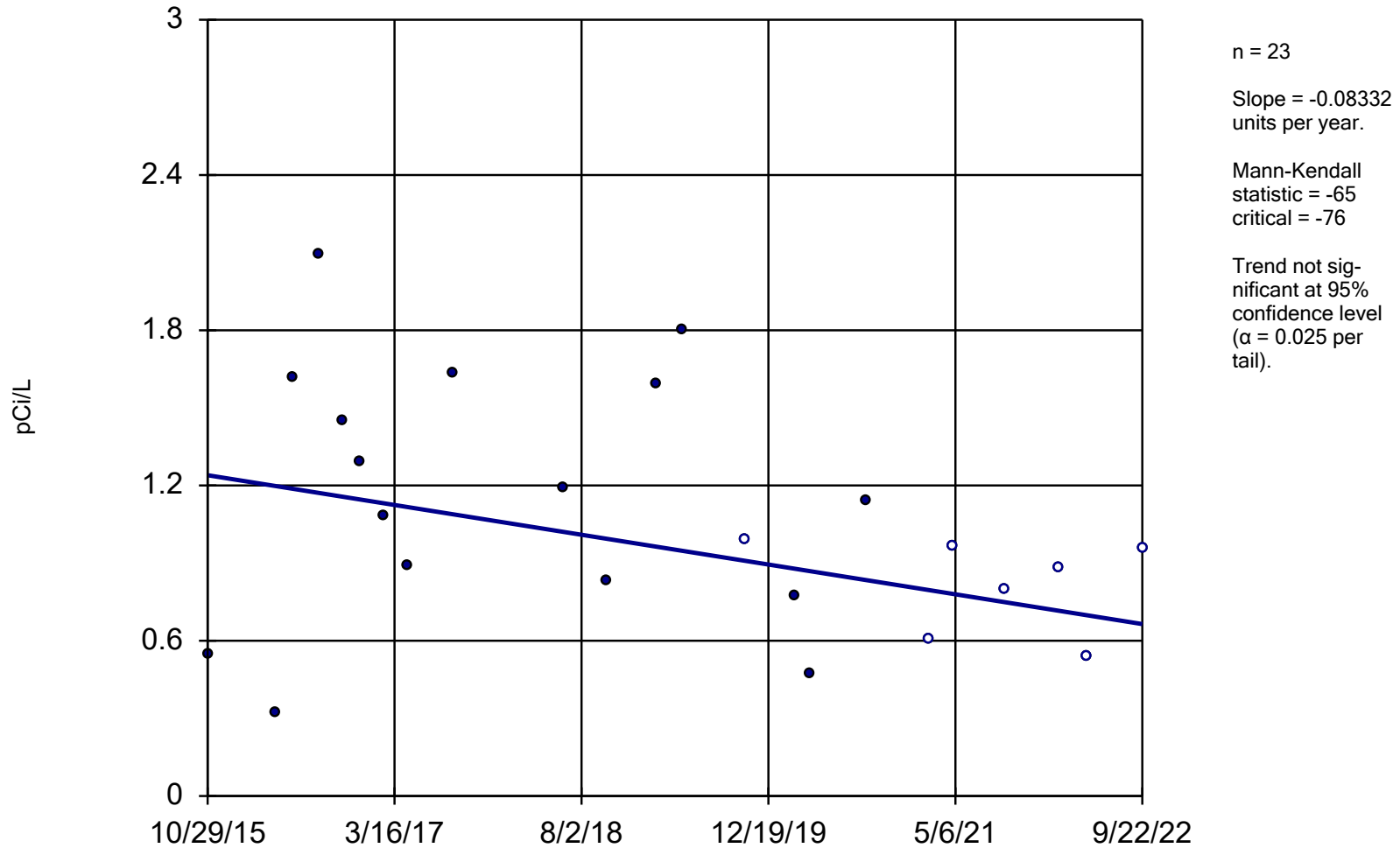
Mann-Kendall
statistic = -157
critical = -76

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

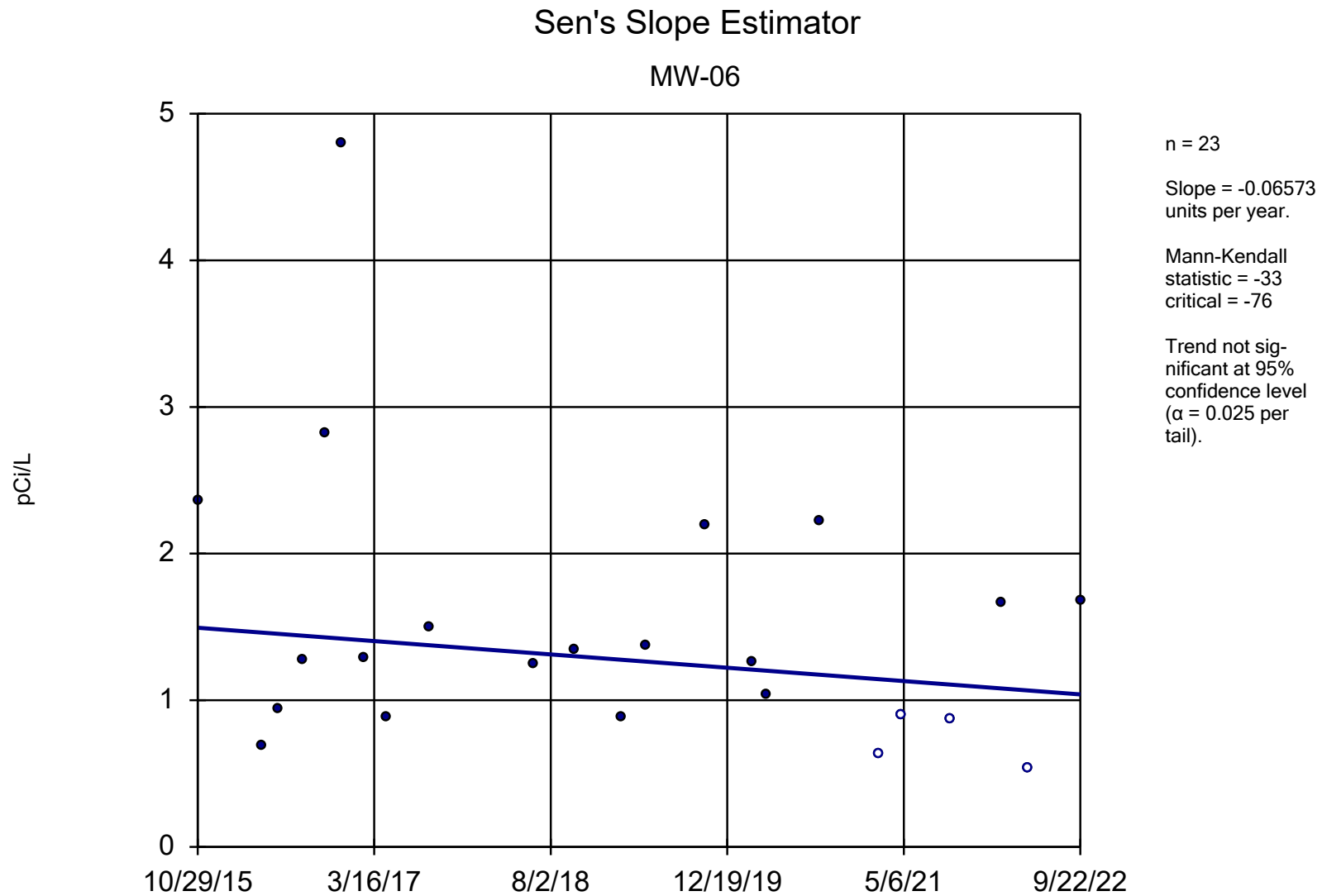
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RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope Estimator

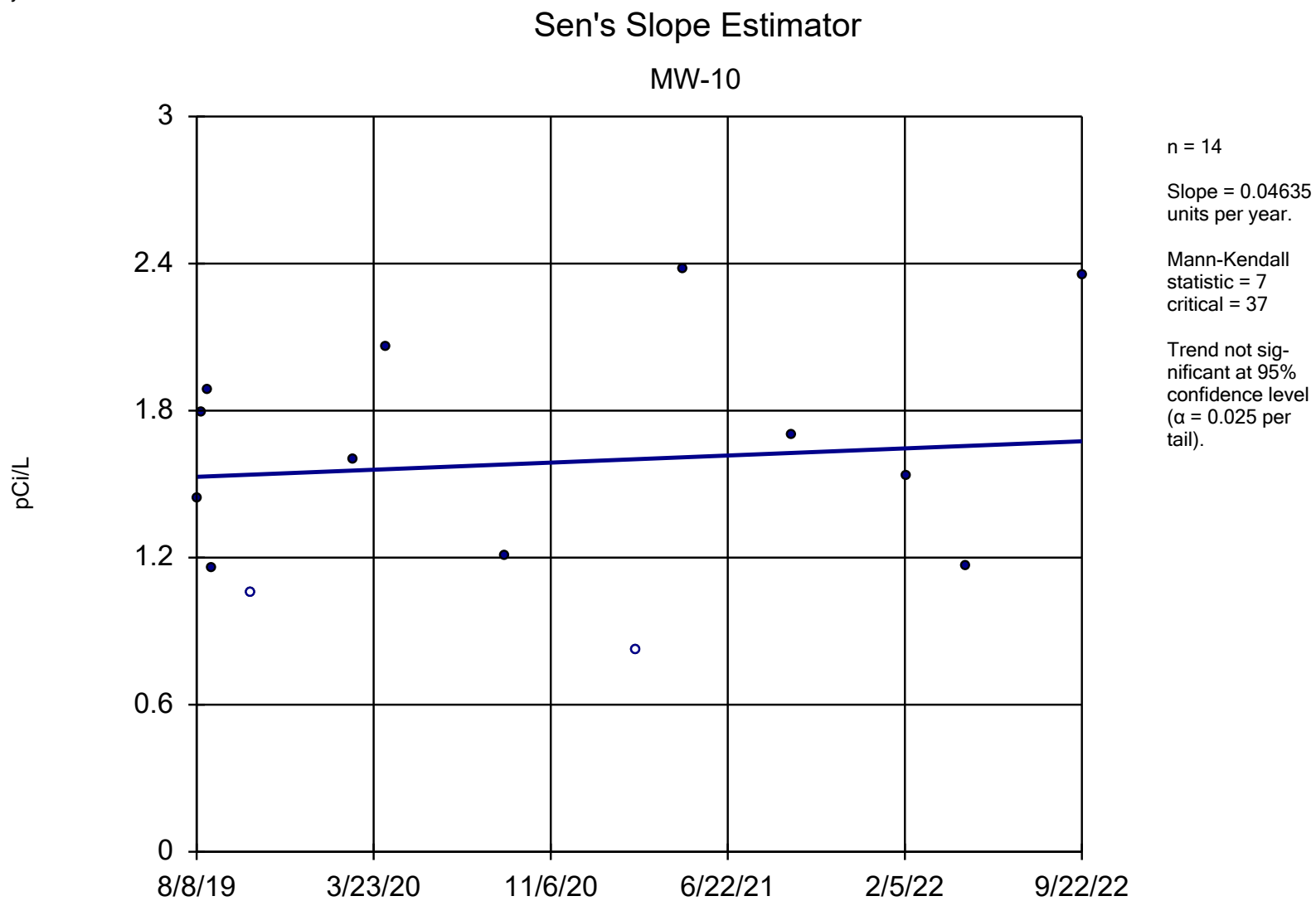
MW-05



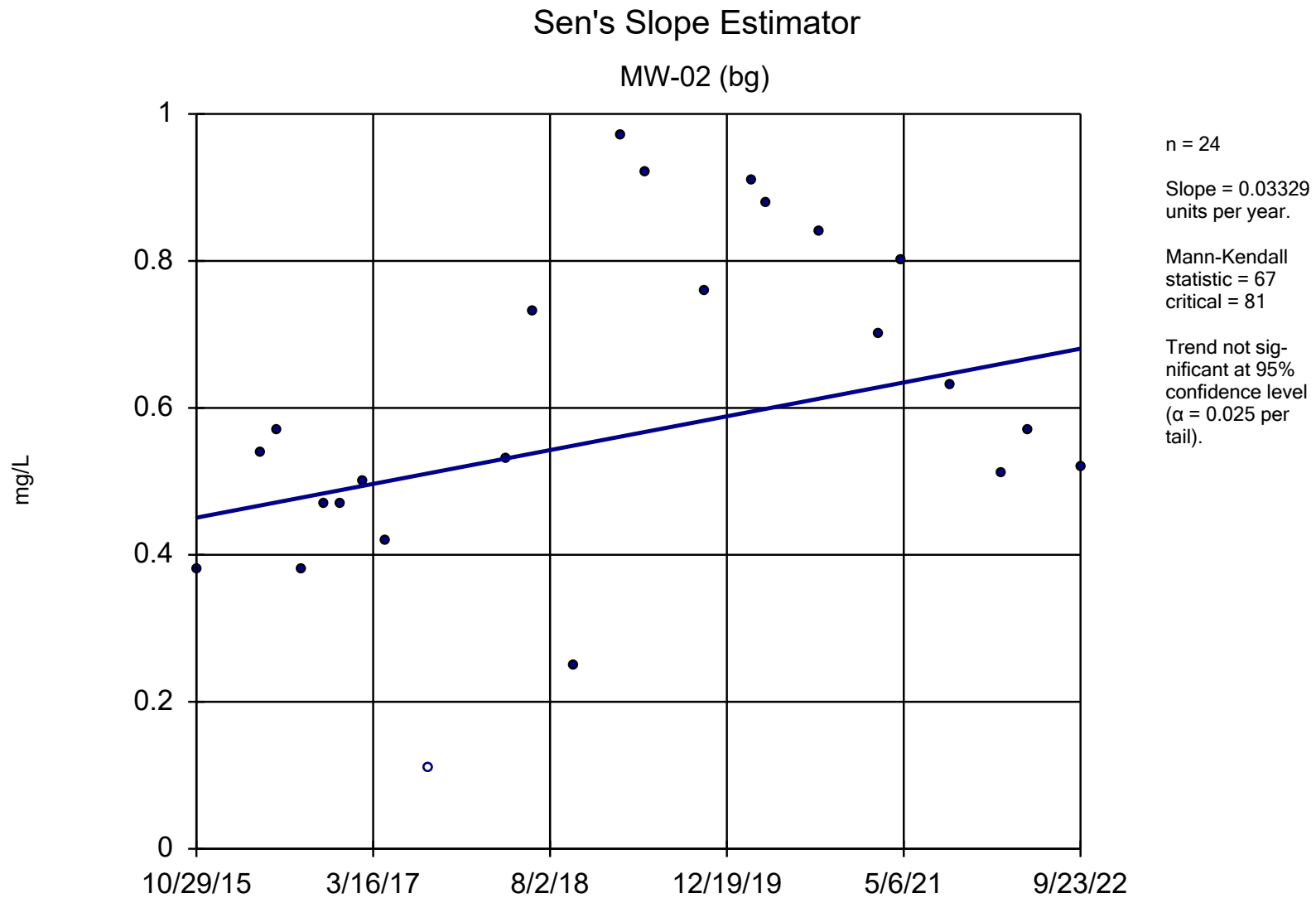
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RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Combined Radium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



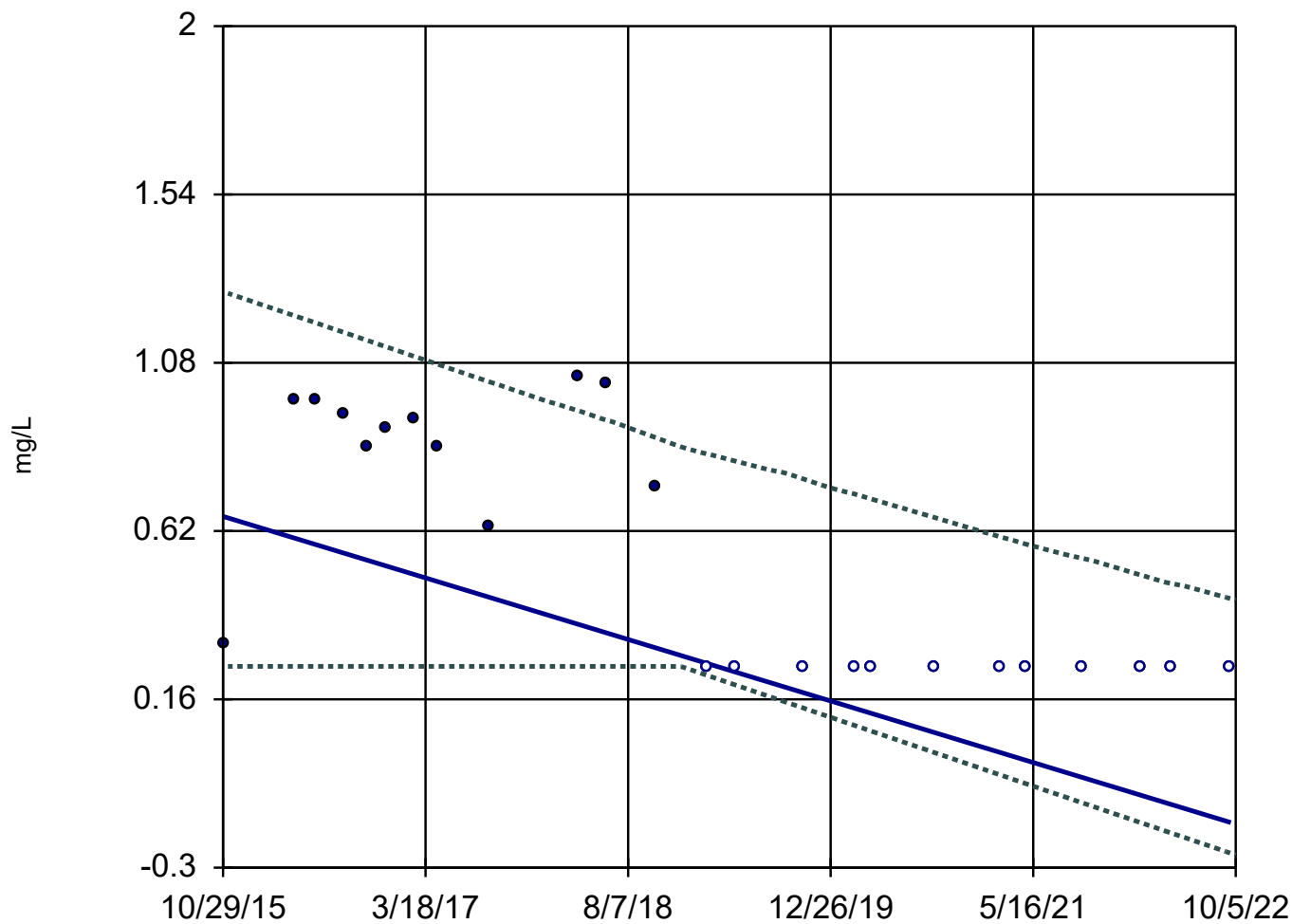
Constituent: Combined Radium Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Fluoride Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-03



n = 24

Slope = -0.1211
units per year.

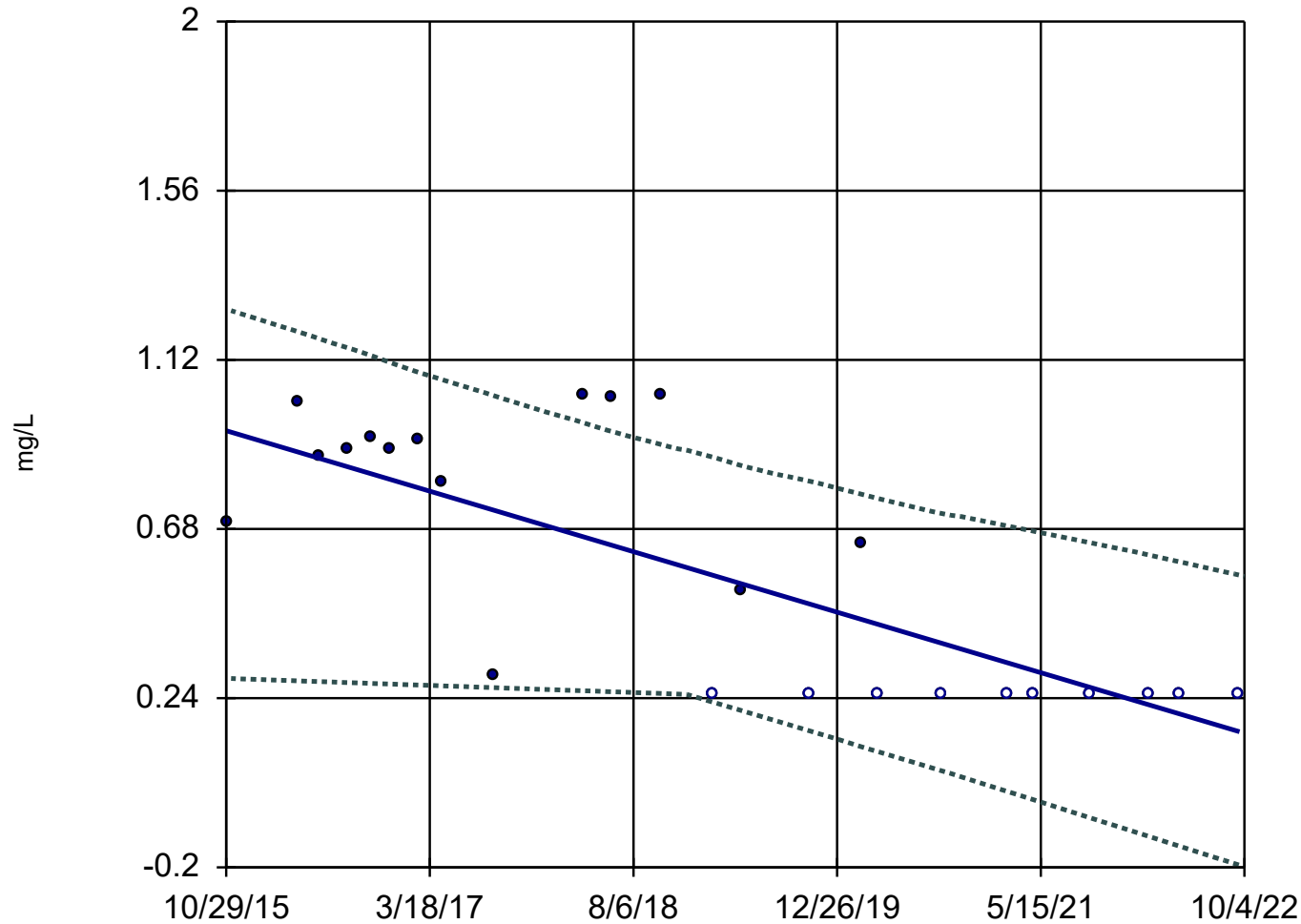
Mann-Kendall
statistic = -146
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Fluoride Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04



n = 24

Slope = -0.1134
units per year.

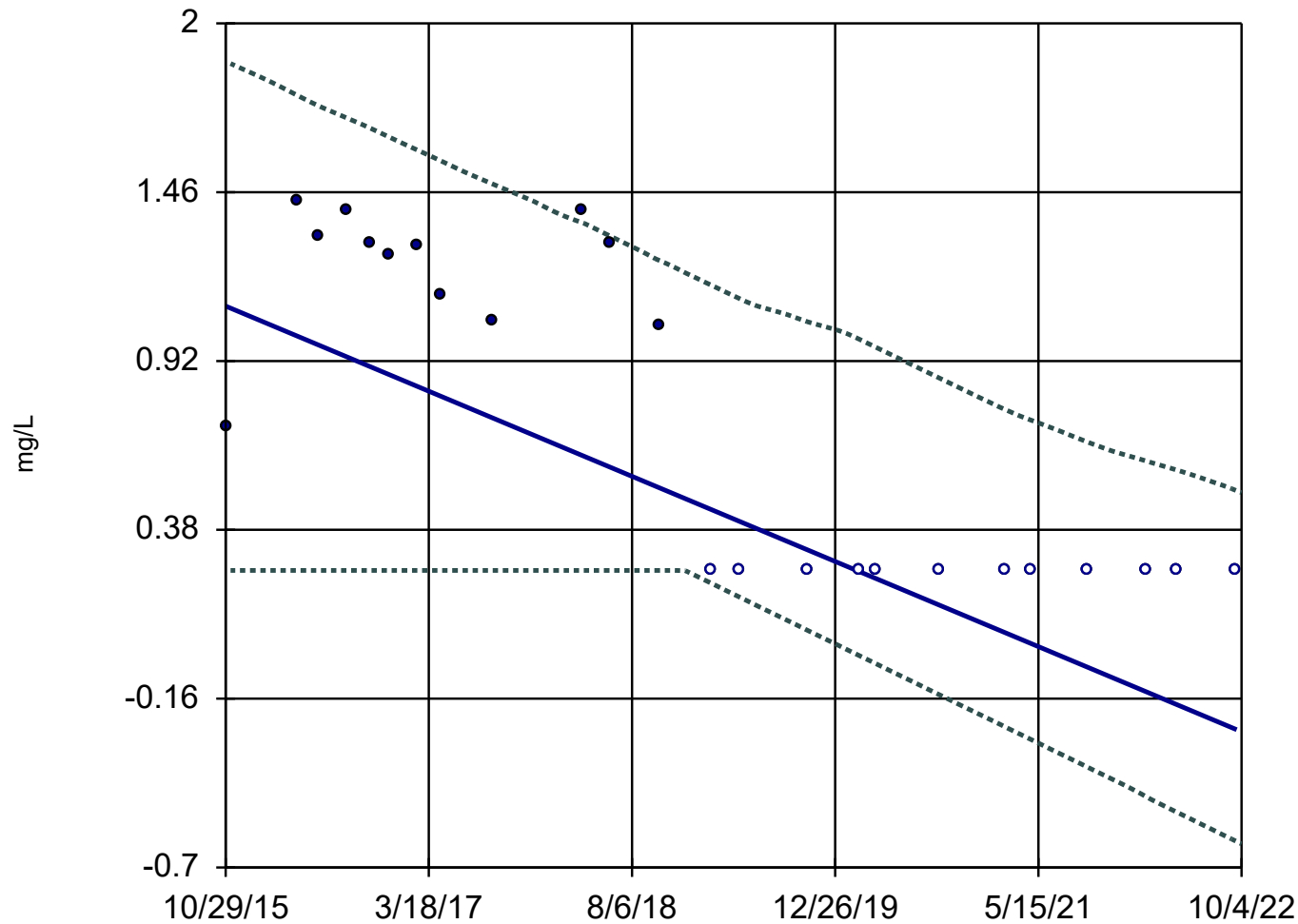
Mann-Kendall
statistic = -133
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Fluoride Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05



n = 24

Slope = -0.1962
units per year.

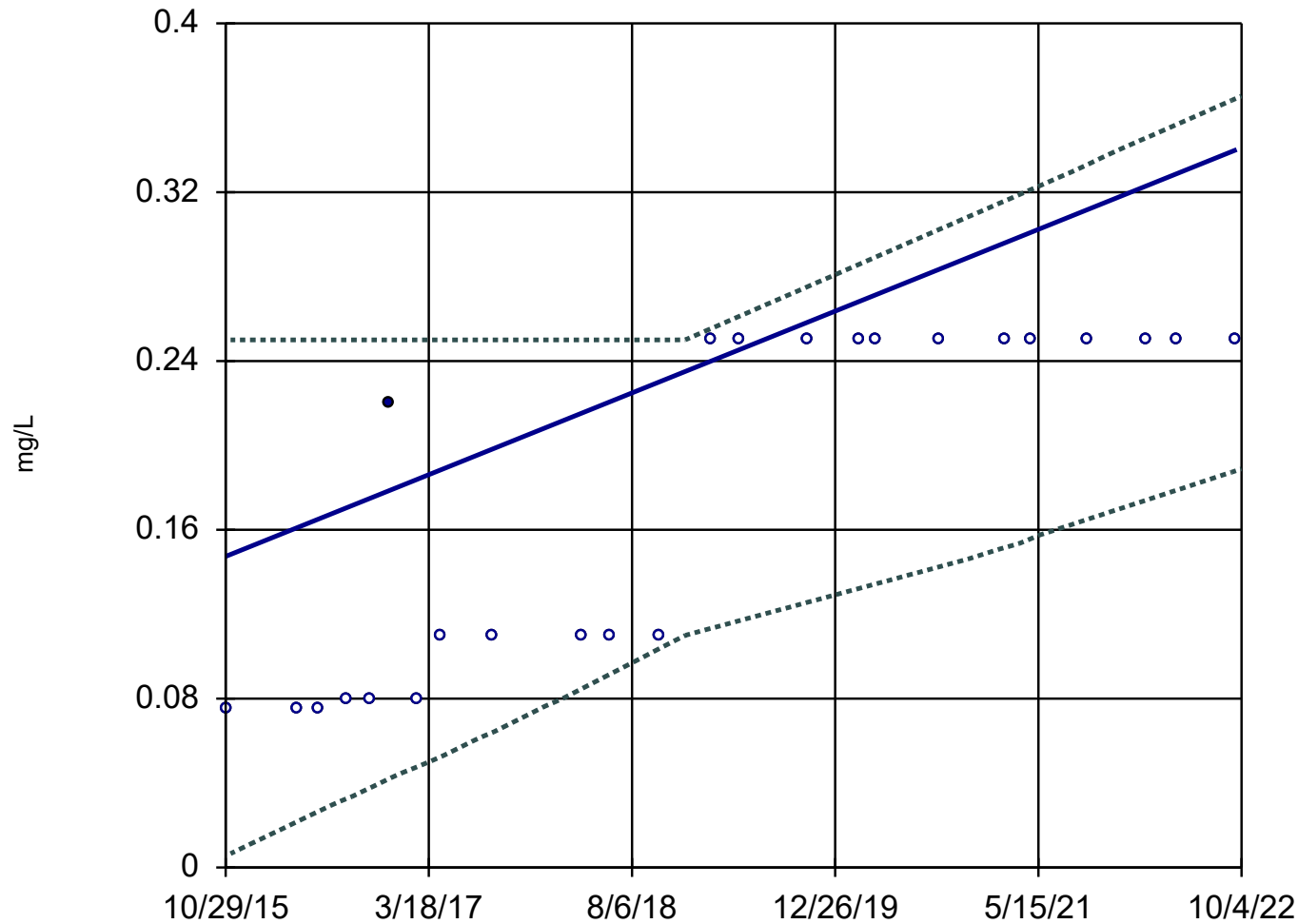
Mann-Kendall
statistic = -162
critical = -81

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Fluoride Analysis Run 11/11/2022 1:33 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-06



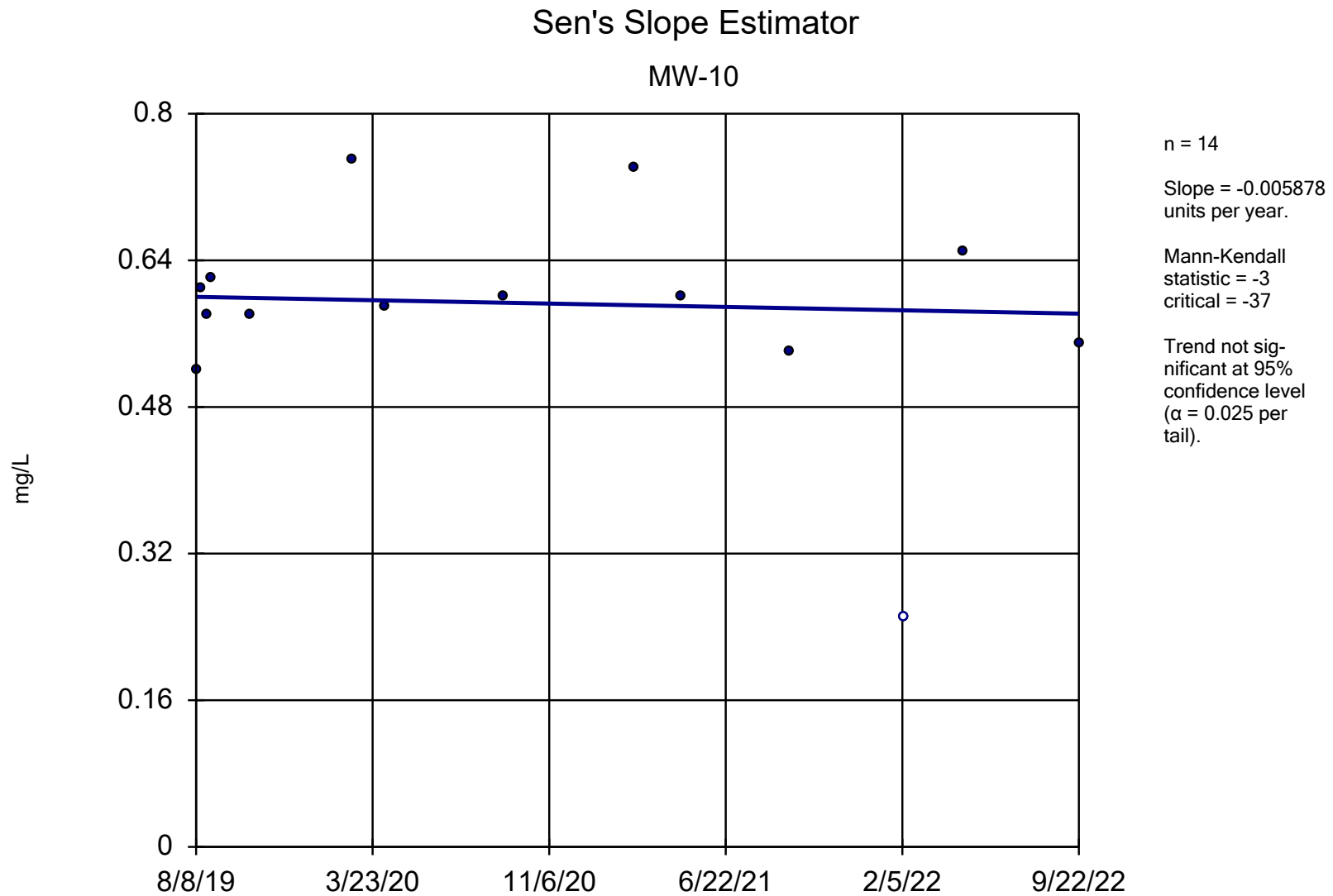
n = 24

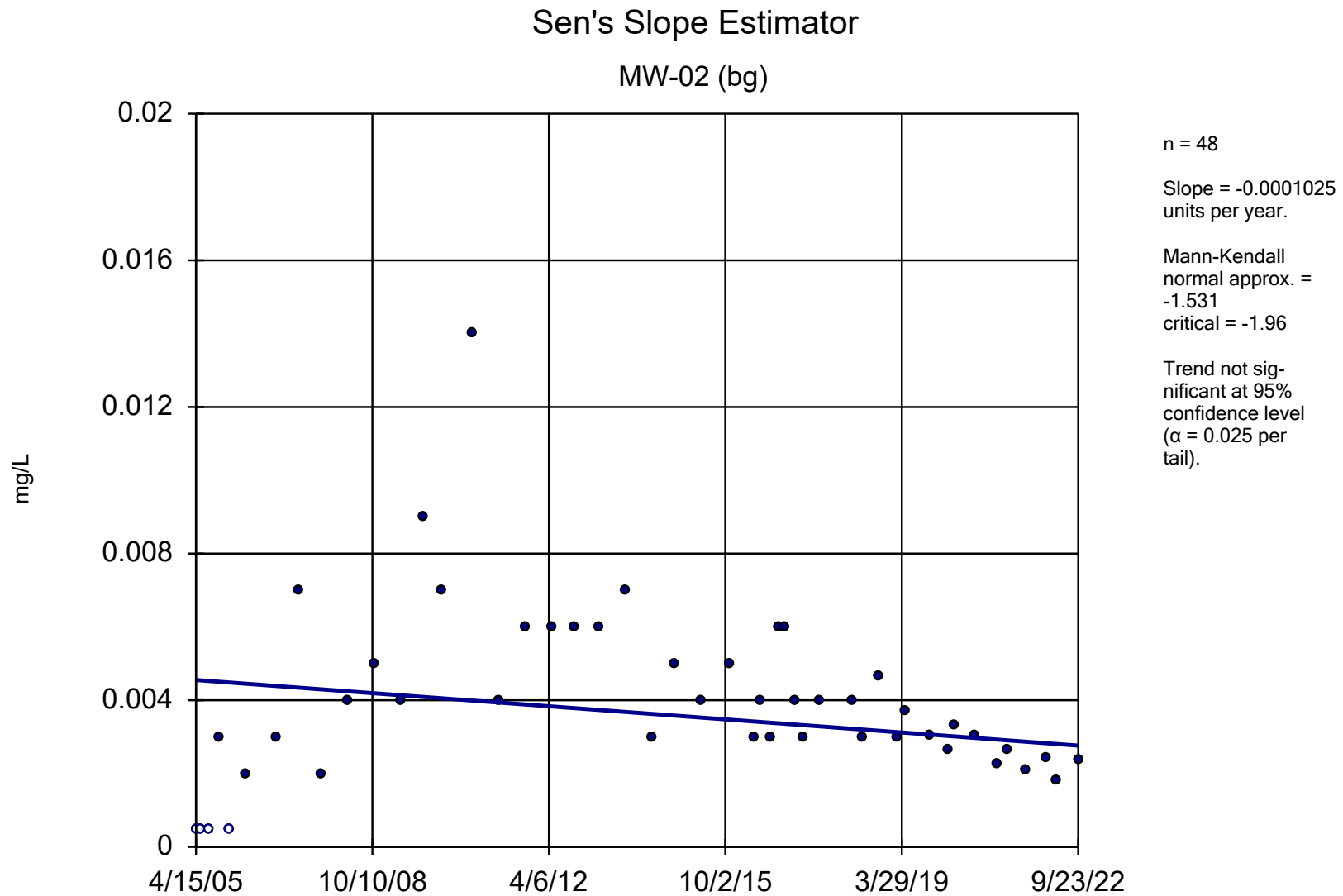
Slope = 0.02792
units per year.

Mann-Kendall
statistic = 182
critical = 81

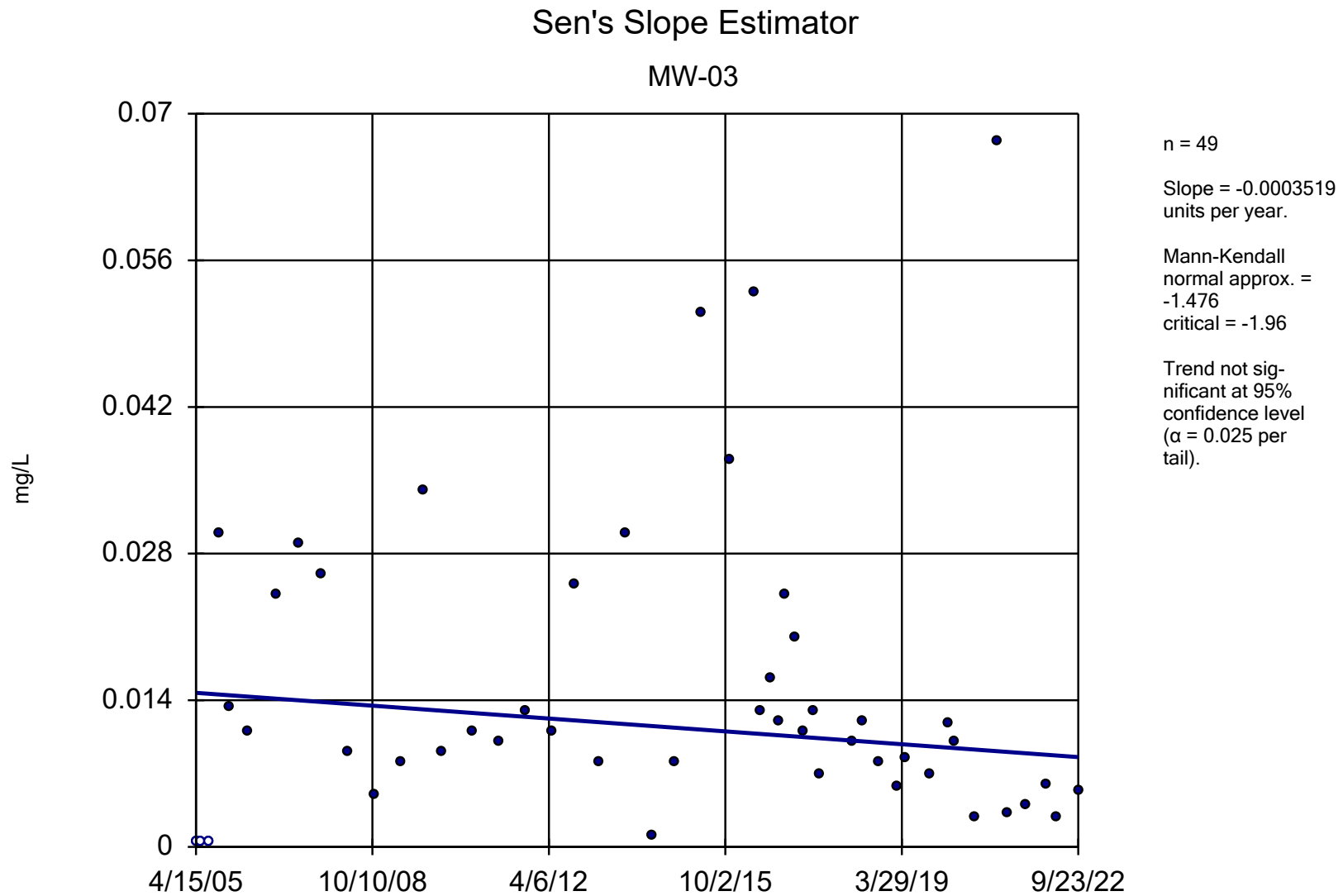
Increasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Fluoride Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen





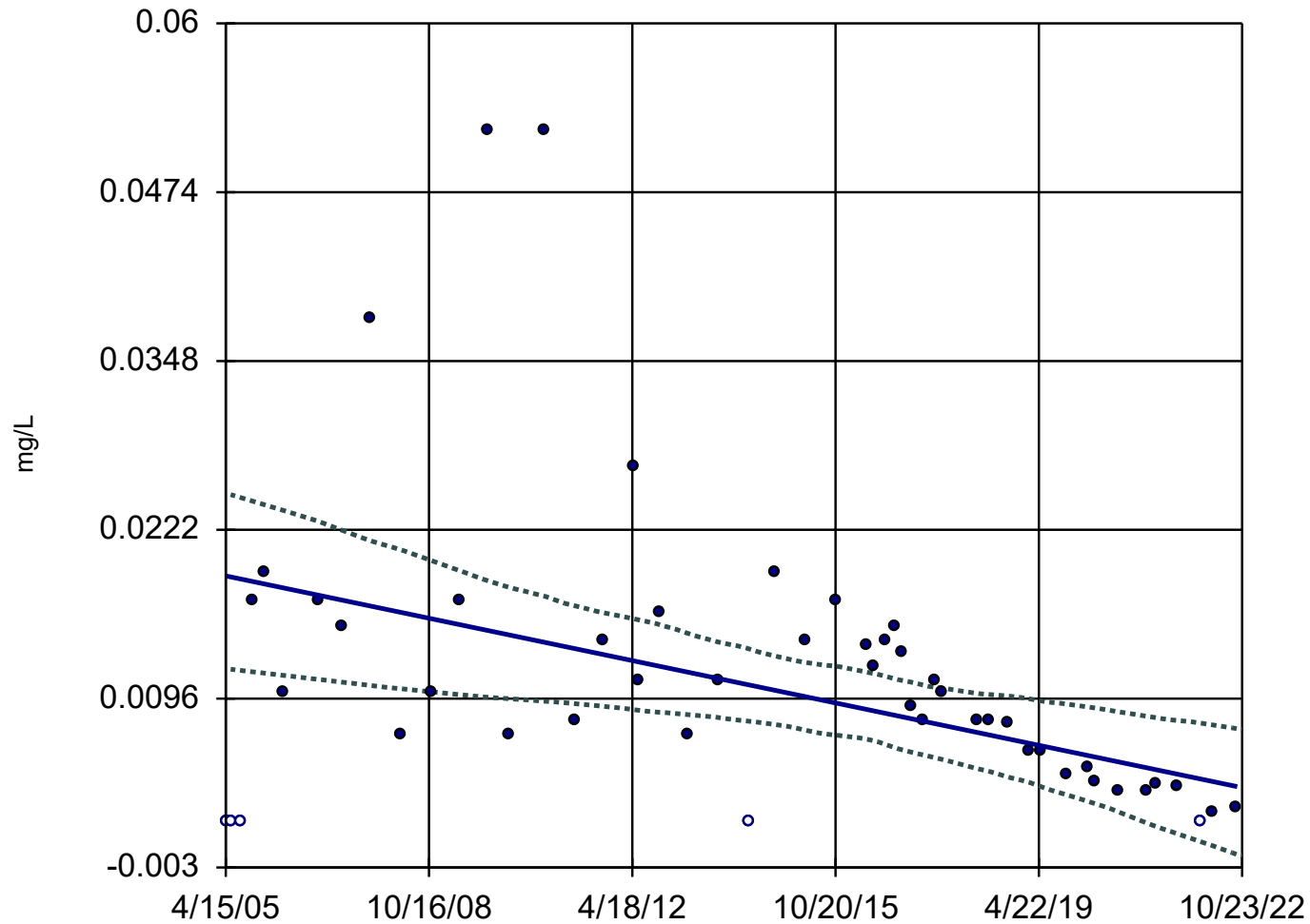
Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04



n = 50

Slope = -0.0009012
units per year.

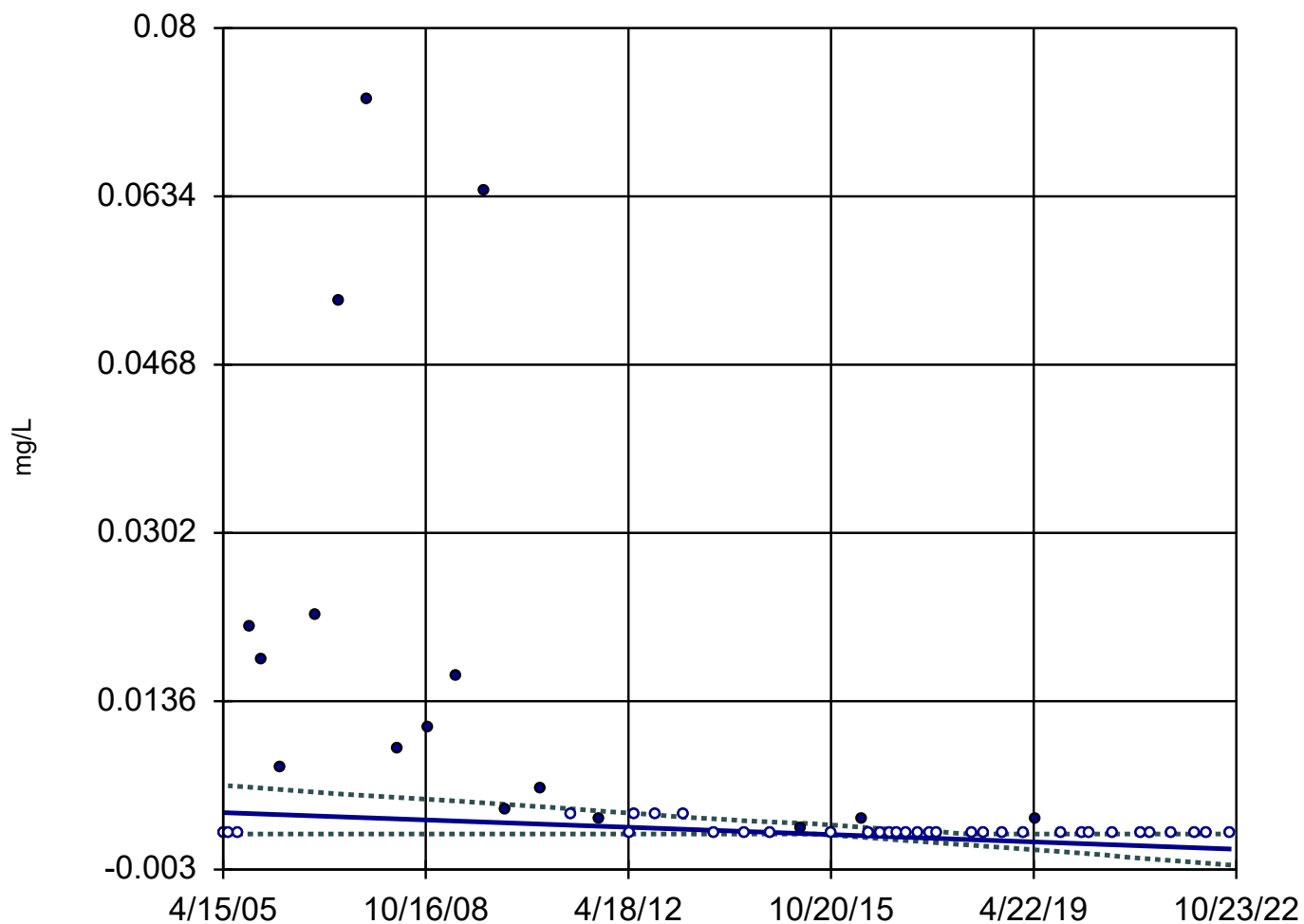
Mann-Kendall
normal approx. =
-4.064
critical = -1.96

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05



$n = 50$

Slope = -0.0002057
units per year.

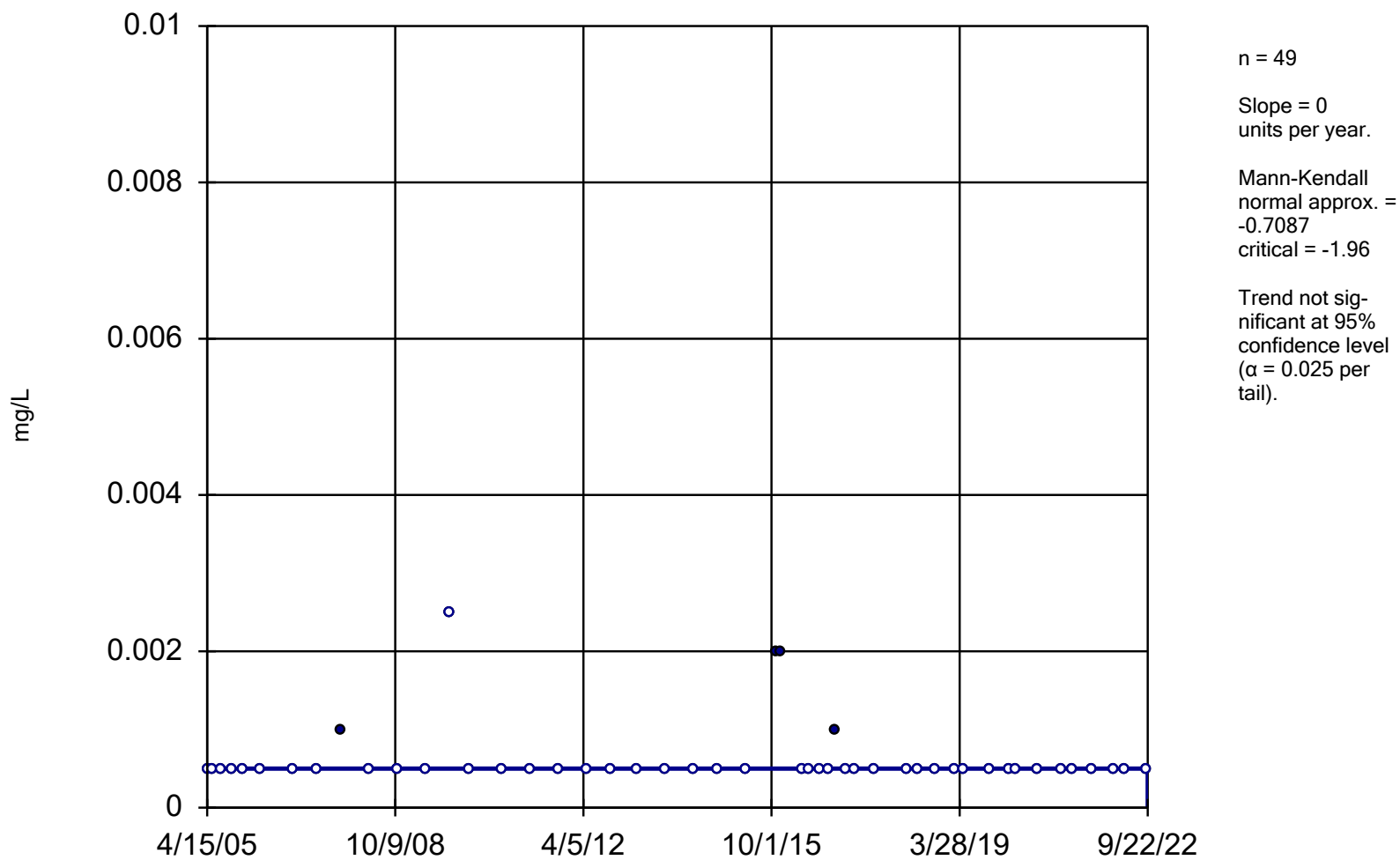
Mann-Kendall
normal approx. =
-5.078
critical = -1.96

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

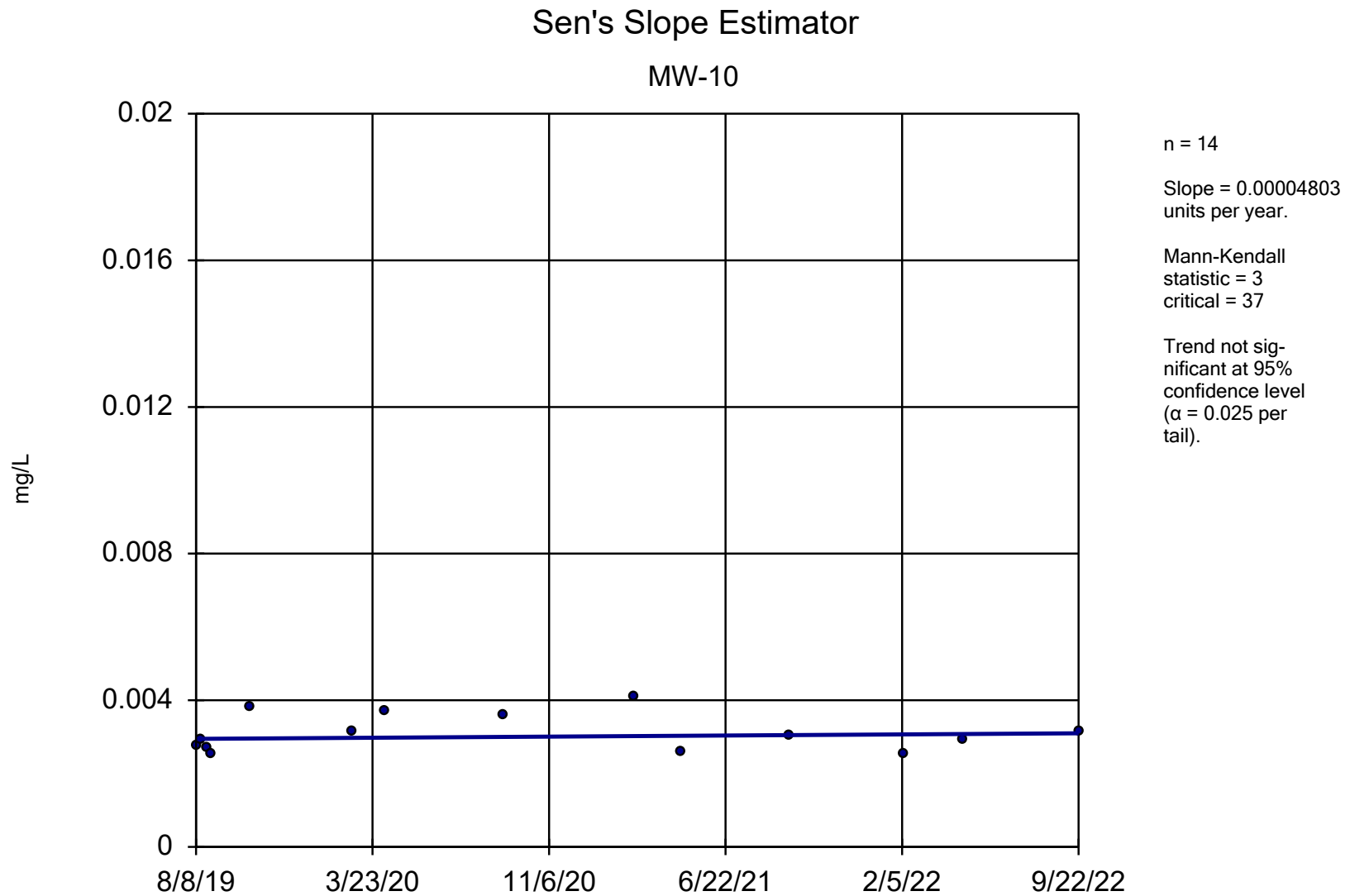
Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope Estimator

MW-06

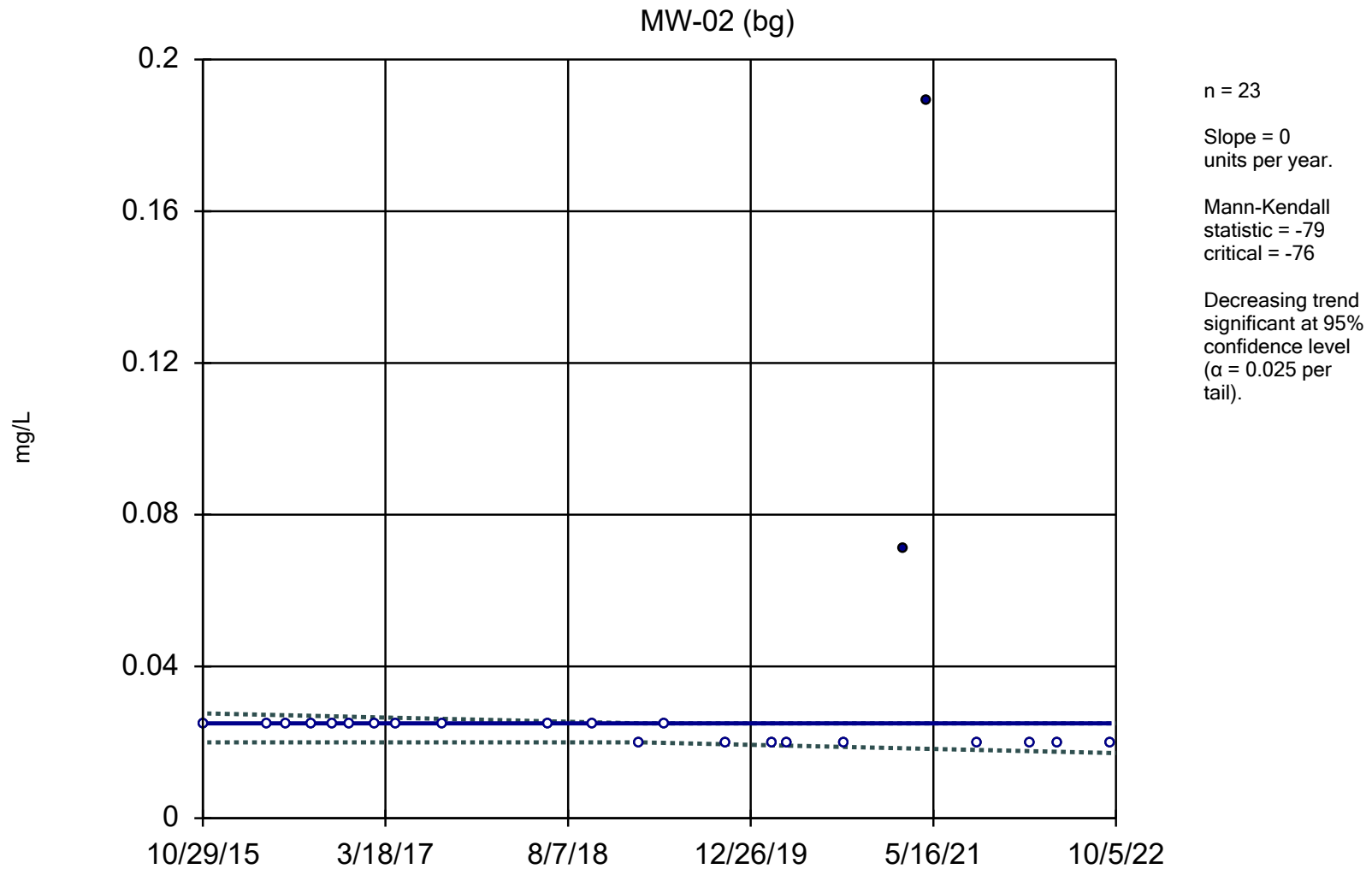


Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



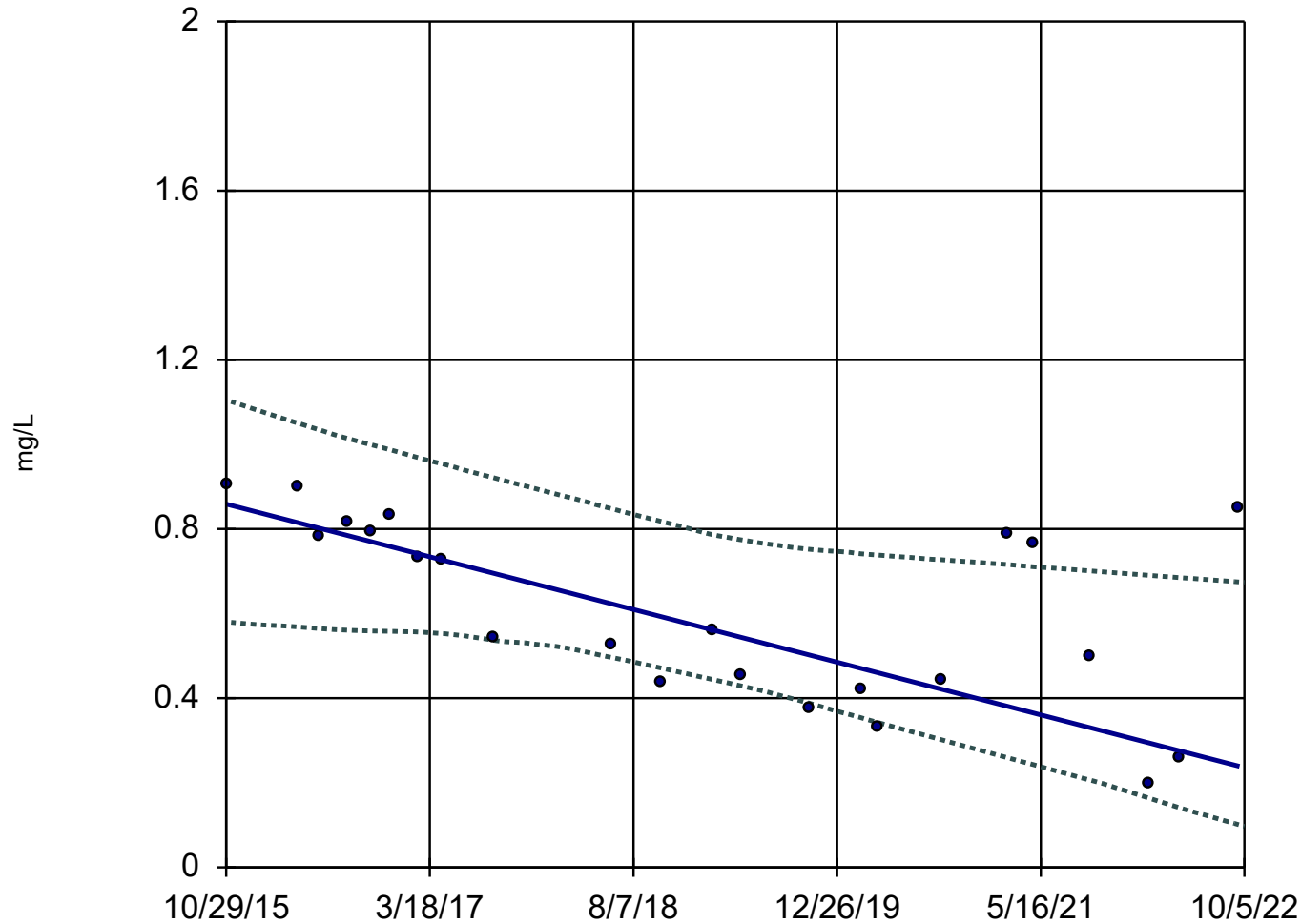
Constituent: Lead Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band



Sen's Slope and 95% Confidence Band

MW-03



n = 23

Slope = -0.08976
units per year.

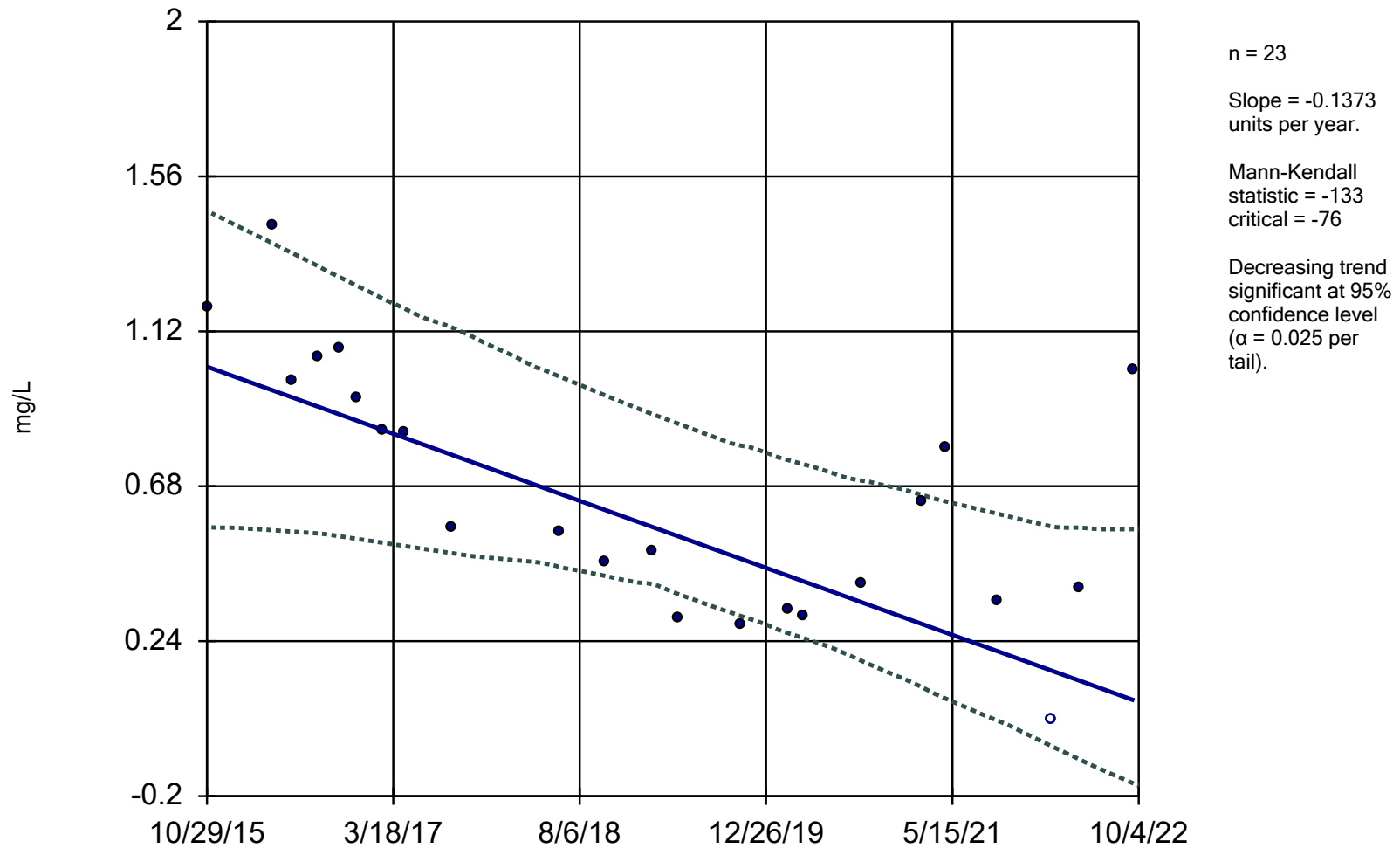
Mann-Kendall
statistic = -125
critical = -76

Decreasing trend
significant at 95%
confidence level
($\alpha = 0.025$ per
tail).

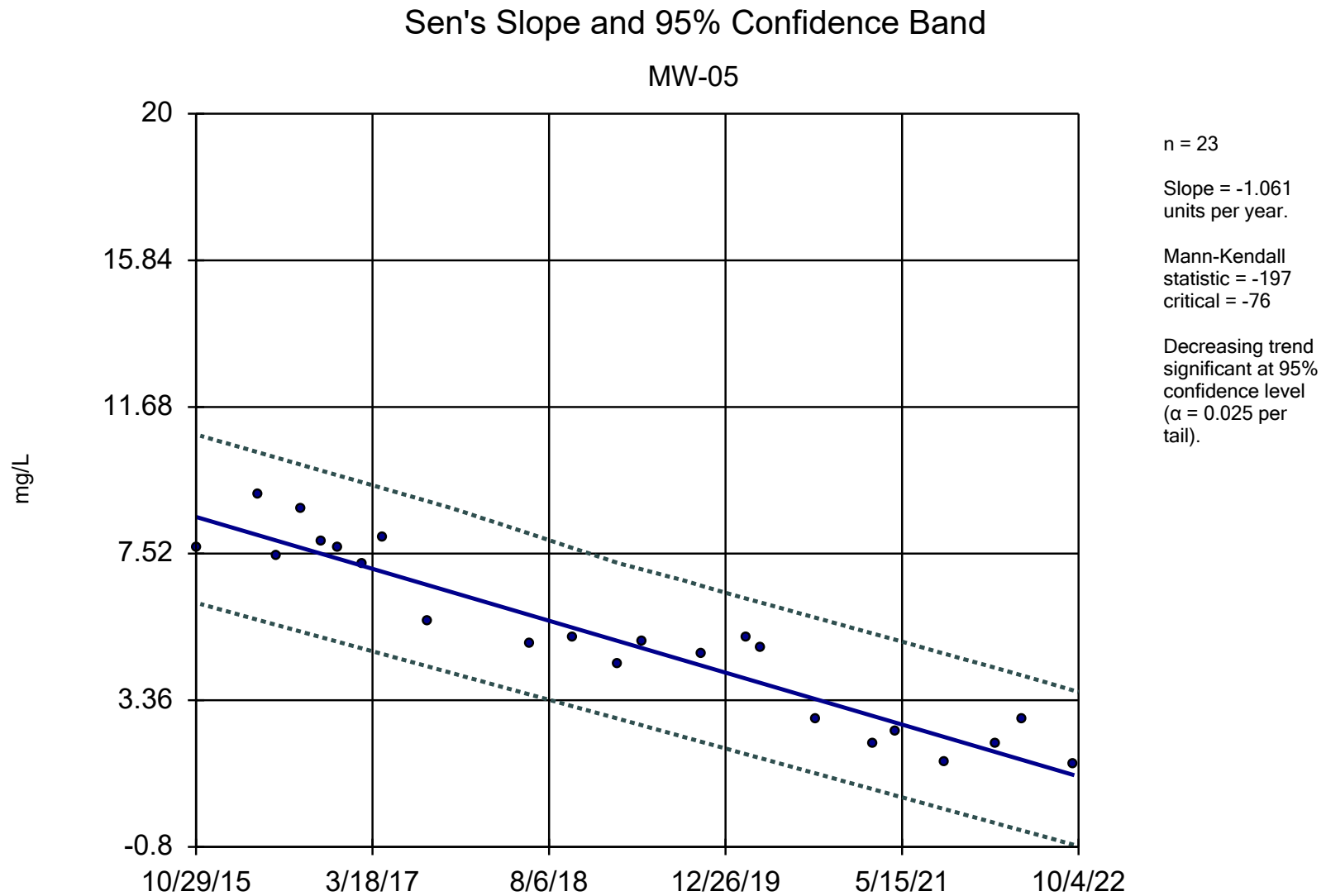
Constituent: Lithium Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-04

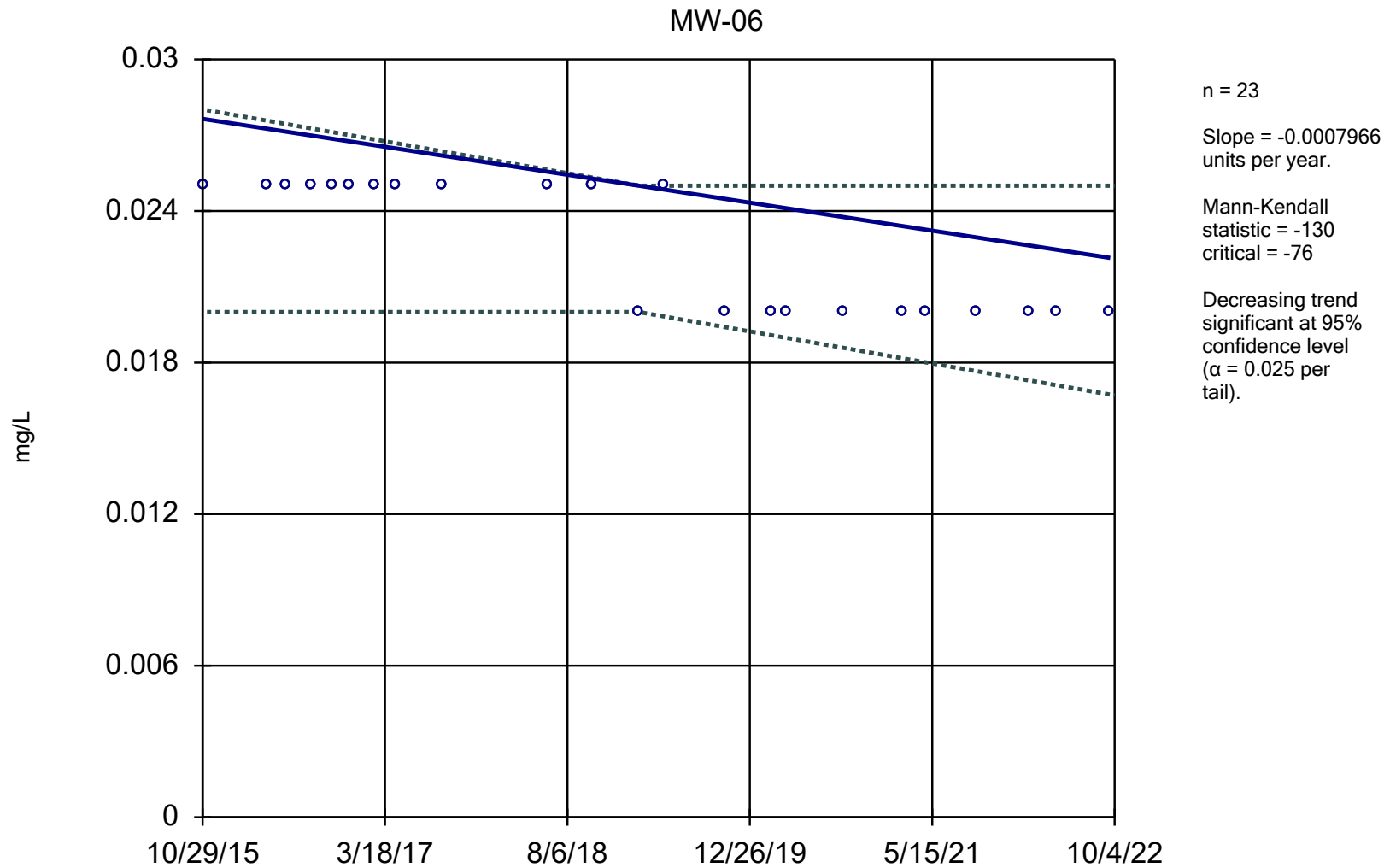


Constituent: Lithium Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

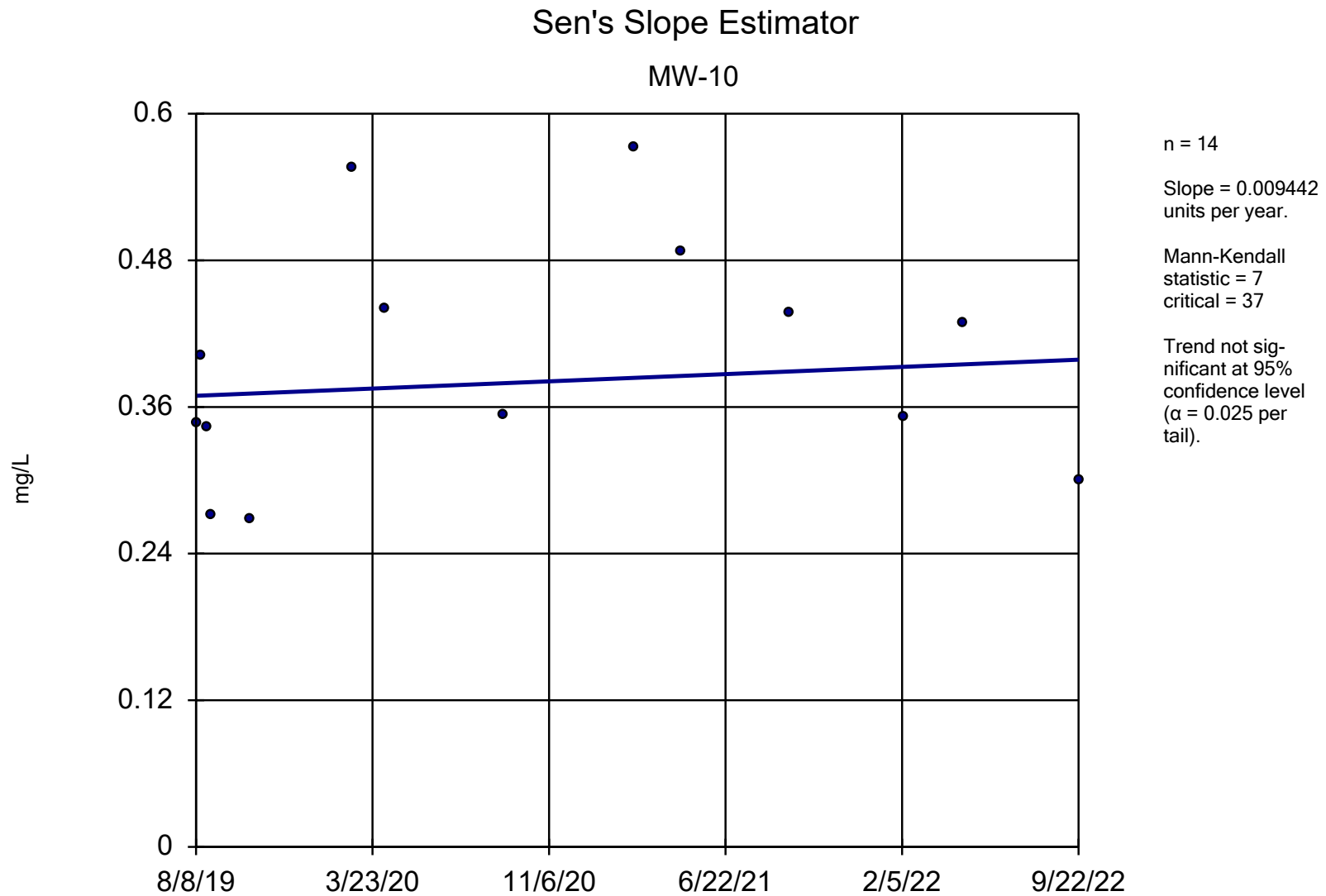


Constituent: Lithium Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

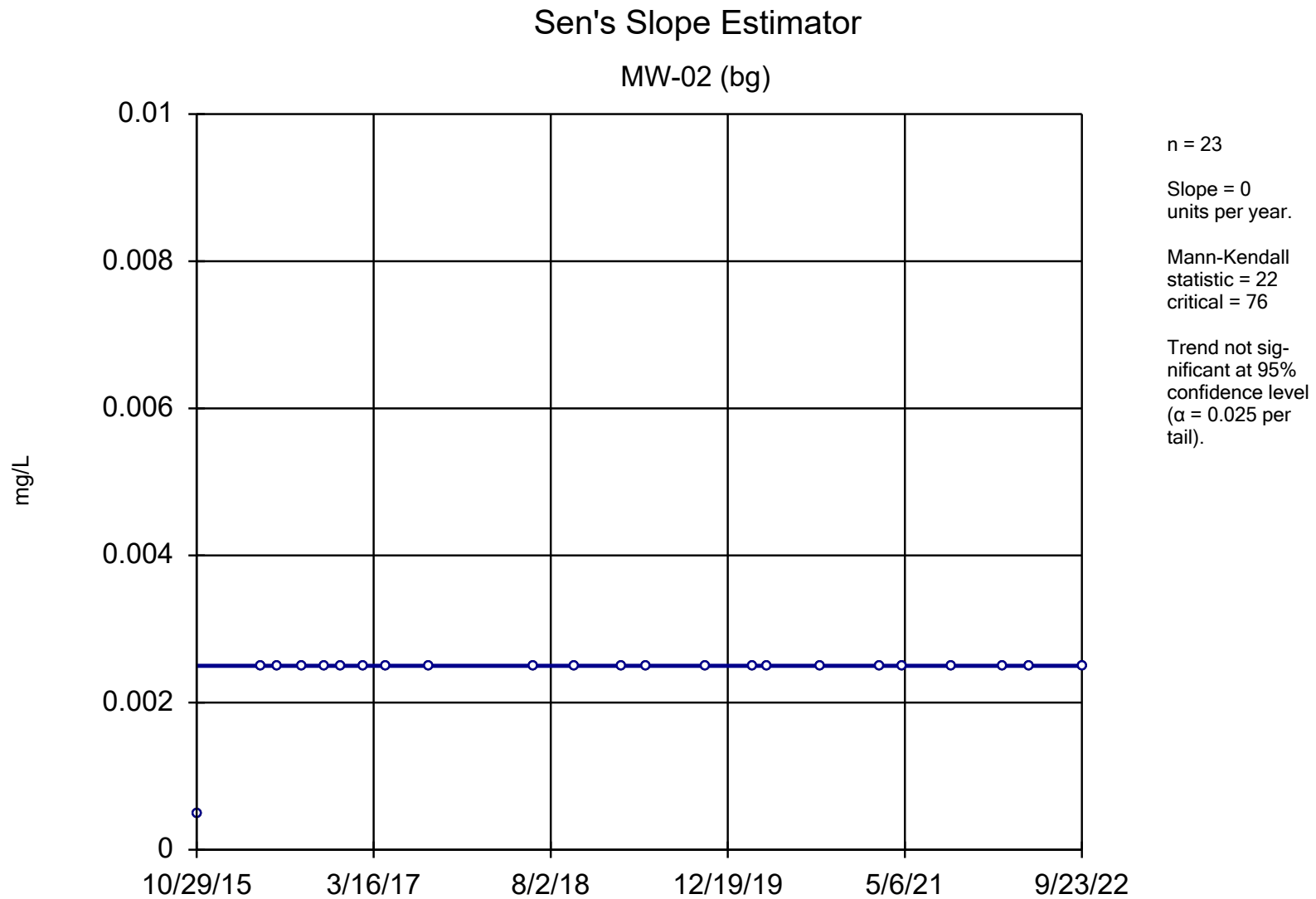
Sen's Slope and 95% Confidence Band



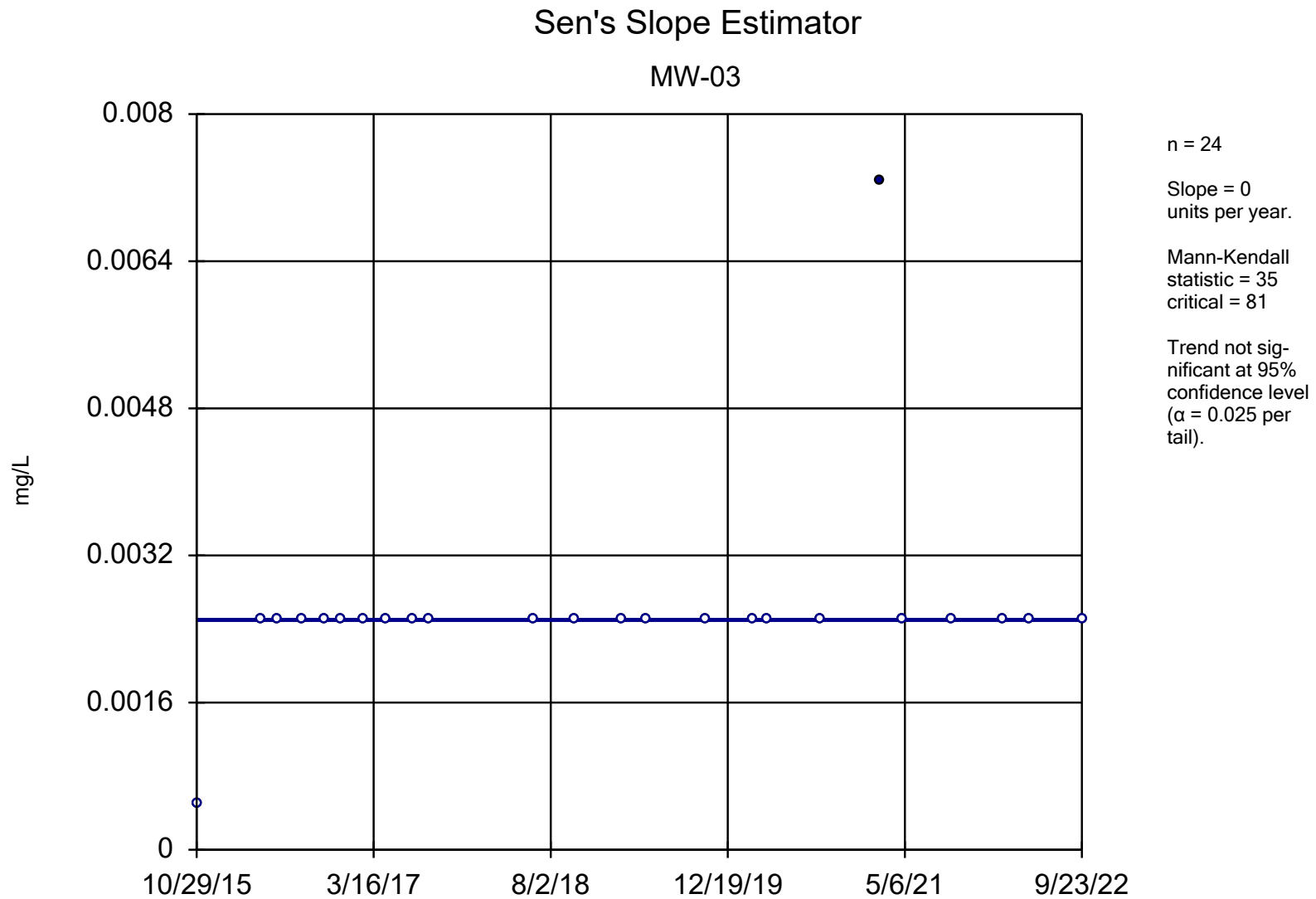
Constituent: Lithium Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



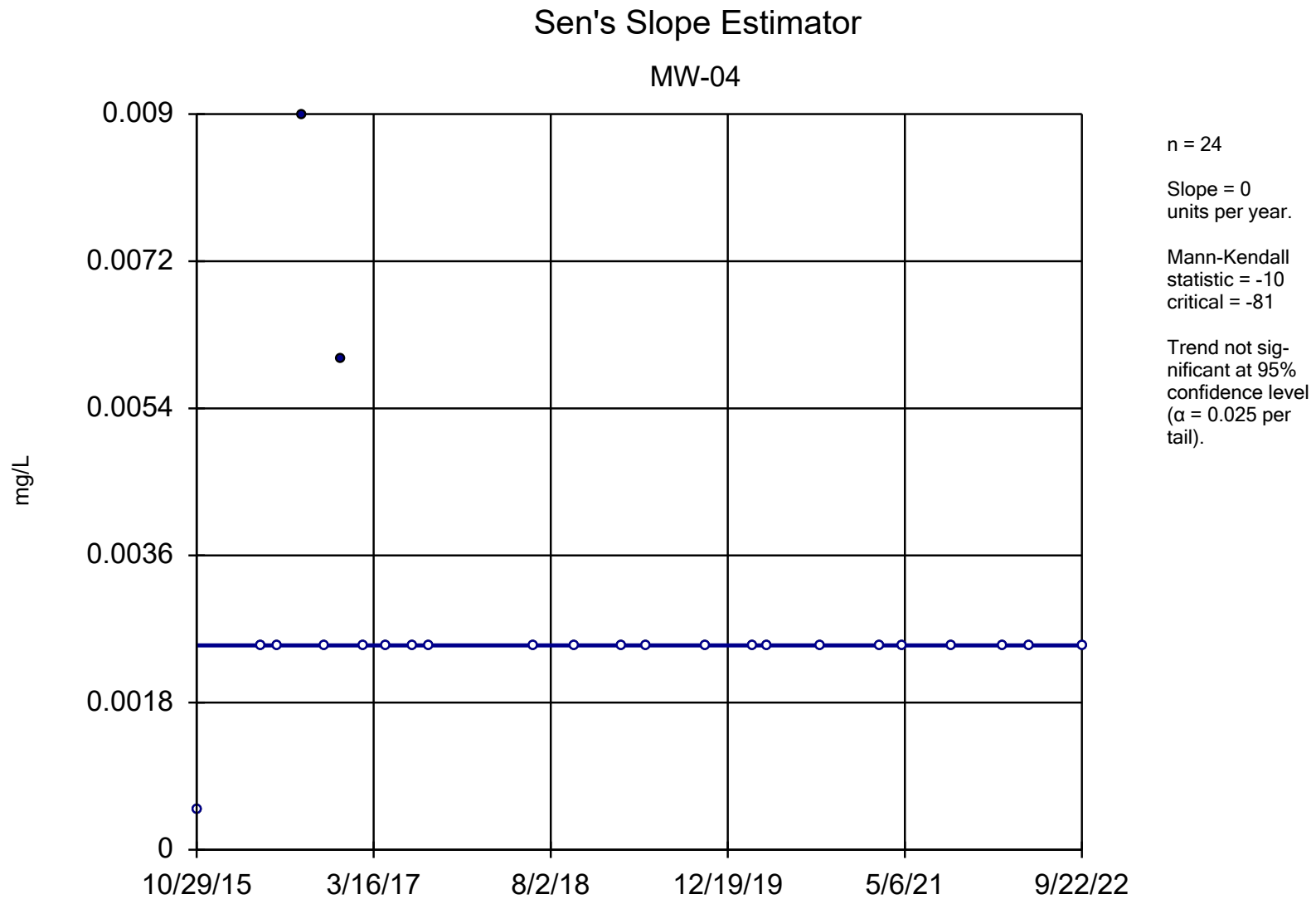
Constituent: Lithium Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



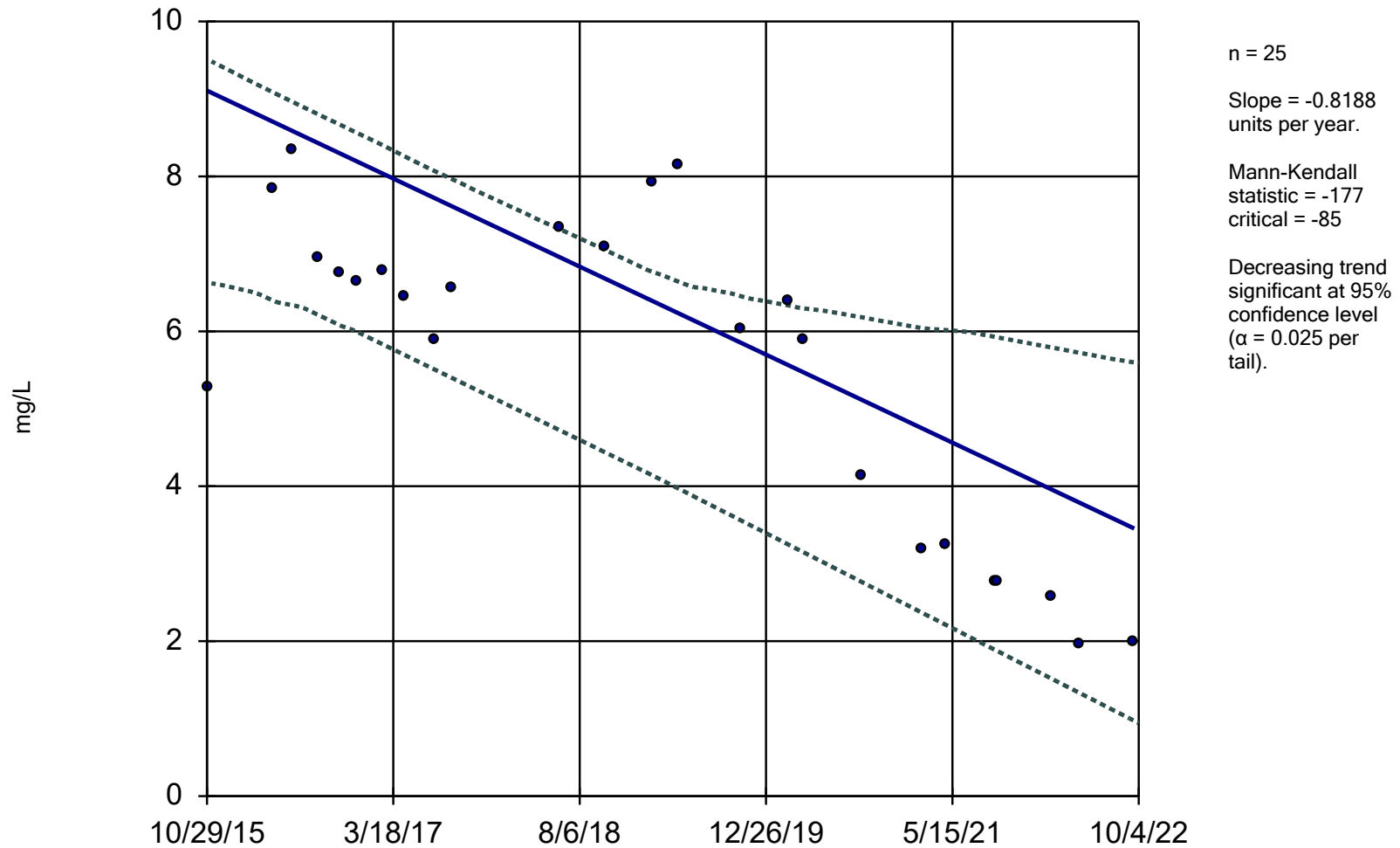
Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



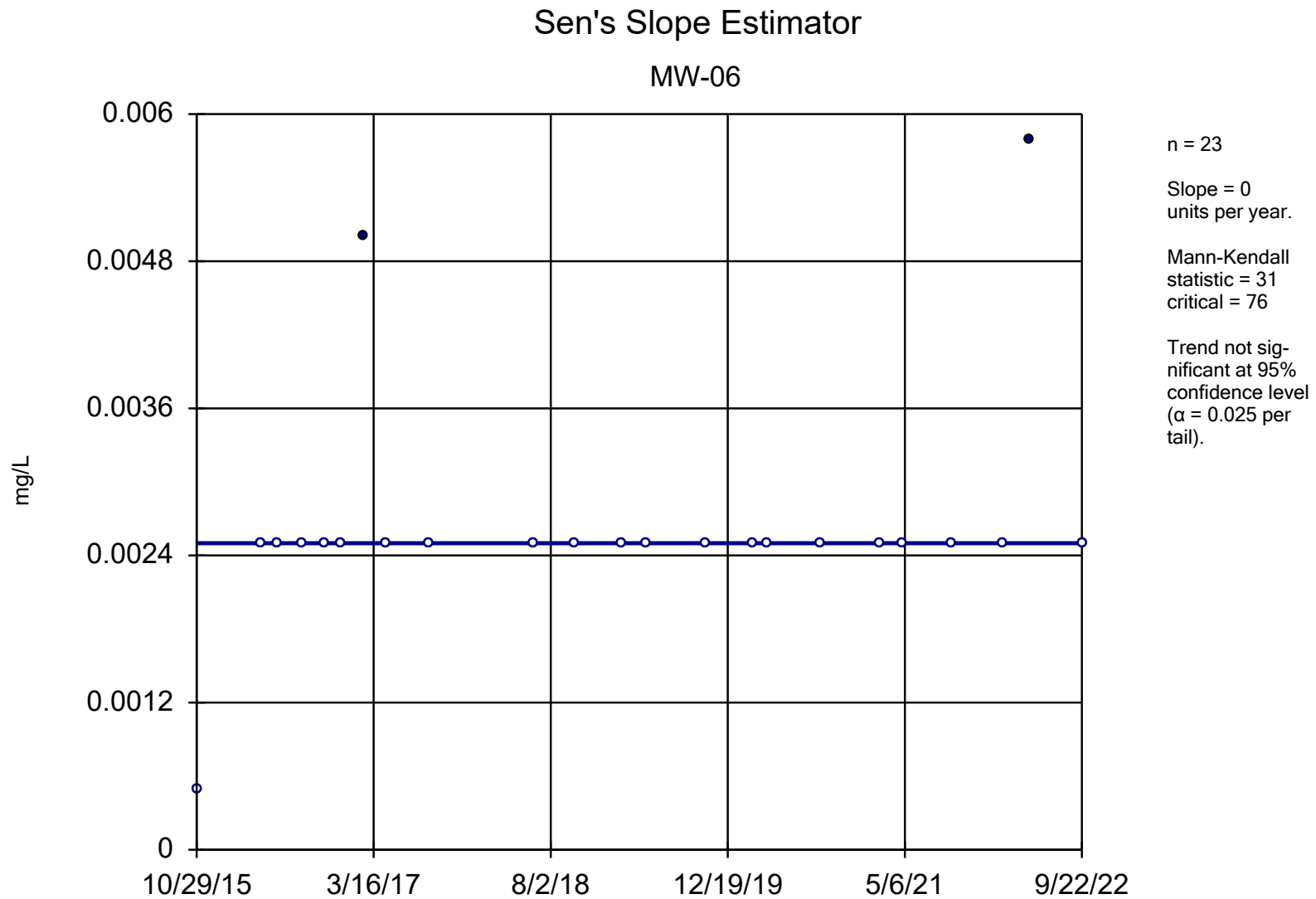
Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band

MW-05

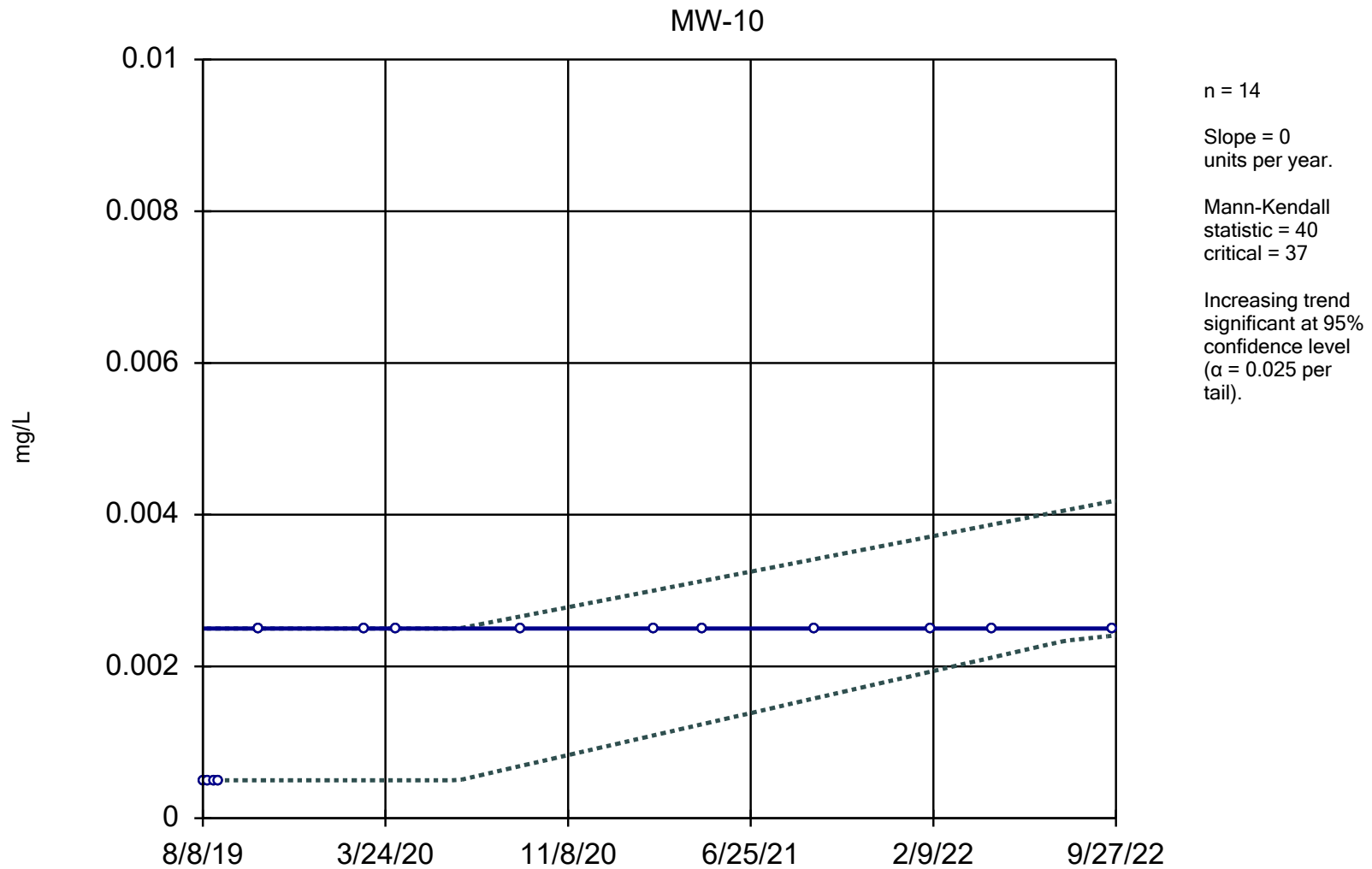


Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen



Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

Sen's Slope and 95% Confidence Band



Constituent: Molybdenum Analysis Run 11/11/2022 1:34 PM View: Landfill App IV
RD Morrow Generating Facility Client: Cooperative Energy Data: RD Morrow Gen

