

2025 Annual Groundwater Monitoring and Corrective Action Report

Columbia Energy Center
Dry Ash Disposal Facility, Modules 1 through 13
Pardeeville, Wisconsin

Prepared for:

Alliant Energy



SCS ENGINEERS

25225067.00 | January 30, 2026

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

OVERVIEW OF CURRENT STATUS

Columbia Energy Center, Dry Ash Disposal Facility, Modules 1 through 13 2025 Annual Report

In accordance with §257.90(e)(6), this section at the beginning of the annual report provides an overview of the current status of groundwater monitoring and corrective action programs for the coal combustion residual (CCR) unit. The groundwater monitoring system for the Columbia Energy Center (COL) Dry Ash Disposal Facility (ADF) is a multiunit monitoring system monitoring the existing and new landfill CCR units that comprise the ADF. Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
Monitoring Status – Start of Year	(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
Monitoring Status – End of Year	(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
Statistically Significant Increases (SSIs)MW	(iii) If it was determined that there was an SSI over background for one or more constituents listed in appendix III to this part pursuant to §257.94(e):	
	(A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and	<u>October 2024 (prior to multiunit system):</u> Boron: MW-33AR, MW-34A, MW-302, MW-309 Calcium: MW-310 Chloride: MW-33AR, MW-310, MW-318, MW-319 Field pH: MW-317 Sulfate: MW-33AR, MW-34A, MW-302, MW-309, MW-310, MW-318, MW-319 TDS: MW-33AR, MW-309, MW-310, MW-318, MW-319 <u>April 2025 (with multiunit system):</u> Boron: MW-309, MW-310
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Alternative Source Demonstrations prepared for October 2024 and April 2025 events during 2025.

Category	Rule Requirement	Site Status
		Assessment monitoring not required.
Statistically Significant Levels (SSL) Above Groundwater Protection Standard (GPS)	(iv) If it was determined that there was an SSL above the GPS for one or more constituents listed in appendix IV to this part pursuant to §257.95(g) include all of the following:	Not applicable – Appendix IV sampling not required
	(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;	
	(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	
	(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	
Selection of Remedy	(v) Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Not applicable – Site is in detection monitoring
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – Site is in detection monitoring

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1.0 INTRODUCTION

This 2025 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the Coal Combustion Residuals (CCR) Rule [40 Code of Federal Regulations (CFR) 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in italics, followed by applicable information relative to the 2025 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units. The site location is shown on **Figure 1**.

This report covers the period of groundwater monitoring from January 1, 2025, through December 31, 2025.

The groundwater monitoring system for the Columbia Energy Center (COL) Dry Ash Disposal Facility is a multiunit system monitoring the following modules and CCR units:

- COL Dry Ash Disposal Facility – Modules 1-3 (existing CCR landfill)
- COL Dry Ash Disposal Facility – Modules 4-6 (new landfill)
- COL Dry Ash Disposal Facility – Modules 10-11 (lateral expansion of new landfill)
- COL Dry Ash Disposal Facility – Modules 12-13 (lateral expansion of new landfill)

The system is designed to detect monitored constituents at the waste boundary of the Ash Disposal Facility (ADF) as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two upgradient and nine downgradient monitoring wells (**Table 1** and **Figure 2**). Prior to 2025, the ADF consisted of multiple CCR units with separate groundwater monitoring systems. These separate groundwater monitoring systems were combined to make a single multiunit monitoring system.

Construction of Modules 12-13 was completed in 2025 and certified on August 14, 2025.

2.0 BACKGROUND

To provide context for the required annual report information, the following background information is provided in this section of the report, prior to the required information:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer. A summary of the regional hydrogeologic stratigraphy is presented in **Appendix A**.

The sand and gravel aquifer is capable of producing sufficient water for industrial or municipal use in some parts of Columbia County and is capable of producing sufficient water for domestic use in many areas, including along the Wisconsin River near the Columbia Energy Center (Harr et al., 1978). A map showing expected well yields within the sand and gravel aquifer in Columbia County is included in **Appendix A**.

Regional groundwater flow in the site vicinity is generally west toward the Wisconsin River. A map showing the regional water table elevations is included with the regional hydrogeologic information in **Appendix A**.

2.1.2 Site Information

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL Ash Disposal Facility were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc., 1978). During drilling of CCR wells (MW-301, MW-302, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319), the unconsolidated materials were identified as consisting primarily of silty sand and sand. Boring logs for previously installed monitoring wells MW-33AR, MW-34A, MW-84A, and M-4R show silty sand and sand as the primary unconsolidated materials at these locations. The boring logs for Ash Disposal Facility are provided in **Appendix B**. All CCR monitoring wells are screened within the unconsolidated sand unit.

In 2025, shallow groundwater on the site flowed predominantly from the south to northwest, with some local variability as discussed below. The water table elevations and groundwater flow directions for the April 2025 monitoring event are shown on **Figure 3**, and for the October 2025 monitoring event are shown on **Figure 4**. The groundwater elevation data for the CCR monitoring wells are provided in **Table 3**. Calculated horizontal gradients and flow velocities for representative flow paths are provided in **Table 4**.

The April 2025 flow map shows groundwater flow generally from south to northwest; however, a low point was observed at MW-33AR, and a high point flowing toward the ADF multiunit at MW-319. The April 2025 event was conducted during a precipitation event and the low groundwater point measured at MW-33AR is likely a result of transient water table conditions caused by rain infiltration. Groundwater also flows west from the west side of the ADF.

The October 2025 flow map shows groundwater flow generally from south to northwest.

The groundwater monitoring system transitioned in 2025 from separate monitoring systems for separate CCR units to a multiunit system for the whole ADF as described in Section 3.2.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and nine downgradient monitoring wells (**Table 1** and **Figure 2**). The background wells include MW-301 and MW-84A. The downgradient wells include MW-302, MW-33AR, and MW-34A, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 29 to 48 feet, measured from the top of the well casing.

3.0 §257.90(e) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has

been established for such CCR unit as required by this subpart, and annually thereafter. For CCR management units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31, 2029, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

3.1 §257.90(e)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A map of the site location is provided on **Figure 1**. A map showing the ADF and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**.

3.2 §257.90(e)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

In 2025, the separate CCR unit monitoring systems were combined to create one multiunit groundwater monitoring system. A Groundwater Monitoring System Update Certification was completed on January 31, 2025. The update included changing to a single multiunit groundwater monitoring system for Modules 1-3, Modules 4-6, Modules 10-11, and Modules 12-13; adding MW-317, MW-318, and MW-319 to the network; and removing MW-313, MW-314, and MW-315. Monitoring wells MW-313, MW-314, and MW-315 were abandoned because they were located within the footprint (disposal area) of Module 12. These wells were properly abandoned in accordance with Wisconsin requirements following the spring 2024 groundwater sampling event and prior to the construction of Module 12. Monitoring wells MW-317, MW-318, and MW-319 were installed in April 2024 to the north (downgradient) of the approved waste limits for Module 13.

The multiunit network now consists of two upgradient and nine downgradient monitoring wells.

3.3 §257.90(e)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Two semiannual groundwater sampling events were completed in 2025 at the COL Dry Ash Disposal Modules 1 through 3 as part of ongoing detection monitoring. Groundwater samples collected during the semiannual events in April and October 2025 were analyzed for Appendix III constituents.

Background sampling events were conducted in January, February, and March 2025 for monitoring wells MW-317, MW-318, and MW-319. These events completed background data collection following installation of these three new wells in 2024.

Supplemental resampling events were conducted in July and December 2025 at selected compliance wells.

A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection or assessment monitoring program is included in **Table 2**.

The validation and evaluation of the October 2024 monitoring event data was completed for separate CCR units prior to combining the CCR units into one CCR multiunit in January 2025.

The validation and evaluation of the April 2025 monitoring event and July 2025 supplemental event for the combined CCR multiunit were documented in a letter dated August 25, 2025.

The validation and evaluation of results for the October 2025 detection monitoring event and the December 2025 supplemental resampling event were in progress at the end of 2025 and will be transmitted to WPL in 2026; therefore, the October and December 2025 monitoring results and analytical report will be included in the 2026 Annual Groundwater Monitoring and Corrective Action Report. The October and December 2025 groundwater elevation data are included in this report.

The sampling results for Appendix III parameters are summarized in the following tables:

- October and November 2024 for Modules 1-3: **Table 5A**;
- October and November 2024 for Modules 4-6: **Table 5B**;
- October 2024 through March 2025 for Modules 10-13: **Table 5C**;
- April and July 2025 for ADF multiunit system: **Table 5D**.

Field parameter results for the October 2024 through July 2025 sampling events are provided in **Table 6**. The analytical laboratory reports for October 2024 through July 2025 are provided in **Appendix C**. Historical results for each monitoring well through July 2025 are summarized in **Appendix D**. Statistical evaluation of the monitoring data, including updating of the upper prediction limits (UPLs) for detection monitoring, is discussed in the following section.

3.4 §257.90(e)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

In 2025, the monitoring system transitioned to a single multiunit monitoring system for the ADF. The COL ADF CCR multiunit system continued in detection monitoring.

Prior to 2025, the groundwater monitoring data were evaluated for statistically significant increases (SSIs) in detection monitoring parameters using a combination of interwell and intrawell statistics for the individual CCR units. Following the January 31, 2025 monitoring network recertification, and as part of the evaluation of the April 2025 data, the evaluation for all compliance wells in the multiunit system was transitioned to an intrawell approach. Intrawell UPLs were updated based on a review of

compliance well monitoring data collected from May 2016 through March 2025. The UPL calculations are provided in **Appendix E**.

The following discussion summarizes the evaluation of the October 2024 and April 2025 detection monitoring events.

Modules 1-3 for October/November 2024 Event

This event evaluation was based on interwell UPLs. The results of the evaluation indicated that there were SSIs above background for boron (MW-33AR, MW-34A, MW-302); chloride (MW-33AR); sulfate (MW-33AR, MW-34A, MW-302); and total dissolved solids (TDS) (MW-33AR).

An Alternative Source Demonstration (ASD) was completed for each constituent with an SSI. The ASD evaluation identified lines of evidence indicating that the SSIs are likely primarily due to sources other than the CCR unit. Boron and sulfate concentrations were elevated prior to disposal of CCR in the landfill and are associated with historical discharges from the ash ponds via the effluent ditch located west of the landfill. Historical specific conductance results indicate the pre-landfill TDS concentrations were also elevated in the area of the effluent ditch. Elevated chloride and TDS concentrations detected at well MW-33AR appear likely to be related to an alternative non-CCR source, such as salt. These findings are consistent with previous ASDs for Modules 1-3.

Modules 4-6 for October/November 2024 Event

The October semiannual event data and November 2024 retest data were evaluated for SSIs in Appendix III parameters using intrawell statistics. The UPLs established for Modules 4-6 were calculated using background data from February 2018 through October 2023, established in the September 2024 UPL update memo. The results of the evaluation indicated SSIs above background for boron (MW-309), calcium (MW-310), chloride (MW-310), sulfate (MW-309, MW-310), and total dissolved solids (TDS) (MW-309, MW-310).

An ASD was completed for each constituent with an SSI. The ASD concluded that the SSIs reported for boron, calcium, chloride, sulfate, and TDS at MW-309 and/or MW-310 are likely due to sources other than the Mod 4-6 CCR Unit.

Modules 10-11 for October/October 2024 Event

The October semiannual event data and results from a retest event later in October were evaluated for SSIs in Appendix III parameters using interwell statistics. The evaluation of the October 2024 data identified SSIs above background, including chloride (MW-318, MW-319); sulfate (MW-318, MW-319); and TDS (MW-318, MW-319). An ASD was completed for each constituent with an SSI, and concluded that it is likely that the SSIs identified are due to sources other than the CCR unit.

ADF for April/July 2025 Event

The April 2025 semiannual event data and July 2025 retest data were evaluated for SSIs using intrawell statistics.

Prior to evaluating the April/July 2025 sampling event, a network certification was completed to combine the individual CCR units into one CCR multiunit and to unite the groundwater monitoring sampling and analysis effort. The statistical method for evaluating groundwater monitoring data for the CCR multiunit was established by using an intrawell method with 1-of-2 resampling approach. An intrawell approach was selected because background data appears to vary spatially. SSIs that were previously identified when the CCR units were treated separately, were attributed to alternative sources other than those CCR units and were documented in ASDs. The site remains in detection monitoring. Under the intrawell approach, detection monitoring results were compared to UPLs

calculated based on monitoring results from the individual compliance wells. The background data from MW-301 and MW-84A were not used in the statistical evaluation. The UPLs established for the CCR multiunit were documented in technical memorandum “Statistical Evaluation of Groundwater Monitoring Results – Columbia Dry Ash Disposal Facility” dated August 15, 2025, which is included in **Appendix E**.

The April 2025 semiannual event and July 2025 resampling were evaluated with respect to the intrawell UPLs established for each compliance well. The SSIs identified above background included boron in MW-309 and MW-310. Sulfate was detected in the April 2025 sample from MW-33AR at a concentration exceeding the UPL, but it did not exceed the UPL in the July resample event, so it was not considered an SSI under the 1-of-2 resampling approach.

An ASD was completed for the April/July 2025 event. This evaluation concludes that the boron SSIs identified in MW-309 and MW-310 are likely due to sources other than the COL ADF CCR Units. Boron concentrations at these two wells likely reflect temporal variability in background concentrations rather than the impacts from the landfill.

The ASD reports completed for the October 2024 and April 2025 semiannual events are provided in **Appendix F**.

3.5 §257.90(e)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in italics, followed by applicable information relative to the 2025 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

3.5.1 § 257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program: The groundwater monitoring and corrective action program was in detection monitoring throughout 2025.

Summary of Key Actions Completed:

- Certification of Groundwater Monitoring System for multiunit monitoring system for the ADF (January 2025).
- Completion of background monitoring for new monitoring wells MW-317, MW-318, and MW-319 (March 2025).
- Statistical evaluation of background data to establish intrawell UPLs for the ADF multiunit monitoring system (August 2025).

- Completion of 2024 Annual Groundwater Monitoring and Corrective Action Reports for COL Modules 1-3, COL Modules 4-6, and COL Modules 10-13 (January 2025).
- Statistical evaluation determination of SSIs, and preparation of results letters for the October/November 2024 and April/July 2025 monitoring events.
- ASD reports for the SSIs identified from the October/November 2024 and April/July 2025 monitoring events.
- Two semiannual groundwater sampling, resampling events, and laboratory analysis (April and October 2025).

Description of Any Problems Encountered: There were no problems encountered in 2025.

Discussion of Actions to Resolve the Problems: No problems encountered.

Projection of Key Activities for the Upcoming Year (2026):

- Complete statistical evaluation and determination of any SSIs for the October/December 2025 and April 2026 monitoring events.
- If an SSI is determined, then within 90 days either:
 - Complete ASD (if applicable), or
 - Establish an assessment monitoring program.
- Two semiannual groundwater sampling and analysis events (April and October 2026).

3.5.2 §257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. No alternative detection monitoring frequency has been proposed.

3.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

The ASD reports prepared to address the SSIs observed for the October/November 2024 and April/July 2025 sampling events are provided in **Appendix F**. The ASD reports are certified by a qualified professional engineer.

3.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has not been initiated.

3.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has not been initiated.

3.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Assessment monitoring has not been initiated.

3.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Corrective measures assessment has not been initiated.

3.6 §257.90(E)(6) OVERVIEW

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.

The specific requirements for the overview under §257.90(e)(6) are listed and the information is provided at the beginning of this report, before the Table of Contents.

4.0 REFERENCES

Harr, C.A., L.C. Trotta, and R.G. Borman, 1978, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.

U.S. Environmental Protection Agency (U.S. EPA), 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

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**Table 1. Groundwater Monitoring Well Network
Columbia Ash Disposal Facility Landfill Modules
SCS Engineers Project #25225067.10**

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-84A	Upgradient	Background
MW-301	Upgradient	Background
MW-302	Downgradient	Compliance
MW-309	Downgradient	Compliance
MW-310	Downgradient	Compliance
MW-311	Downgradient	Compliance
MW-317	Downgradient	Compliance
MW-318	Downgradient	Compliance
MW-319	Downgradient	Compliance
MW-33AR	Downgradient	Compliance
MW-34A	Downgradient	Compliance

Last revision by: NLB
 Checked by: RM

Date: 10/10/2025
 Date: 11/24/2025

Table 2. CCR Rule Groundwater Samples Summary
Columbia Energy Center Dry Ash Disposal Facility - Modules 1-6 & 10-13
SCS Engineers Project #25225067.10

Sample Dates	Compliance Wells									Background Wells	
	MW-302	MW-34A	MW-33AR	MW-309	MW-310	MW-311	MW-317	MW-318	MW-319	MW-84A	MW-301
January 10-17, 2025	--	--	--	--	--	--	B	B	B	--	--
February 25, 2025	--	--	--	--	--	--	B	B	B	--	--
March 27, 2025	--	--	--	--	--	--	B	B	B	--	--
April 21-26, 2025	D	D	D	D	D	D	D	D	D	D	D
July 16-17, 2025	--	--	D-R	D-R	D-R	--	--	--	--	--	--
October 27-28, 2025	D	D	D	D	D	D	D	D	D	D	D
12/22/2025	--	--	D-R	D-R	--	--	--	--	--	--	--
Total Samples	2	2	4	4	3	2	5	5	5	2	2

Abbreviations:

B = Background Monitoring Event

D = Detection Monitoring Event

D-R = Detection Monitoring Retest Sample

-- = Not sampled

Last revision by: NLB

Date: 1/12/2026

Checked by: RM

Date: 1/12/2026

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00

Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
Measurement Date																			
October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
October 8, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 ⁽⁶⁾	NM	NM	NM	NM	NM	NM	NI	NI	NI
February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	784.34	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
July 29, 2024	aband	aband	NM	NM	NM	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
November 5, 2024	aband	aband	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
January 10, 2025	aband	aband	NM	785.35	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 21-23, 2025	aband	aband	787.47	783.71	785.07	783.15	785.86	785.00	785.70	786.33	786.69	786.54	786.84	786.64	787.43	787.00	786.03	786.00	785.65
July 16, 2025	aband	aband	NM	786.07	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
October 27, 2025	aband	aband	786.54	784.51	784.09	784.95	784.84	784.29	784.48	785.47	785.52	785.53	785.93	Damaged	788.45	788.20	784.97	785.03	784.79
December 22, 2025	aband	aband	NM	783.57	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.19	NM	NM	NM	NM	NM

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00

Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR	SG-5 (PP)	SG-6 (SP)
Measurement Date													
October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55	NI	NI
April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02	NI	NI
October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36	NI	NI
October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM	NI	NI
April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87	NI	NI
October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03	NI	NI
April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42	NI	NI
October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26	NI	NI
April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36	NI	NI
October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09	NI	NI
April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09	NI	NI
October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61	NI	NI
April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45	NI	NI
October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52	NI	NI
April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46	NI	NI
October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42	NI	NI
May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89	NI	NI
October 7-8 & 17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49	NI	NI
April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49	NI	NI
October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66	NI	NI
April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83	NI	NI
June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM	NI	NI
October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49	NI	NI
March 27-28, 2023	NM	NM	NM	NI	NI								
April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30	NI	NI
May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03	NI	NI
October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43	NI	NI
April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40	NI	NI
April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48	NI	NI
August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95	NI	NI
October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50	NI	NI
October 4, 2024	NM	783.57	NM	NM	NM	NI	NI						
April 21-23, 2025	779.71	783.61	784.43	784.40	784.70	784.66	782.78	784.67	784.39	782.95	783.61	NI	NI
September 16, 2025	NM	782.80	NM	NM	783.86	784.24	NM	784.18	783.91	NM	NM	784.37	785.15
October 27, 2025	780.28	782.42	783.27	783.12	783.71	783.60	781.59	783.71	783.31	781.56	782.70	783.70	783.00
December 22, 2025	NM	NM	NM	NM	NM								

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319	
Measurement Date																									
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI													
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	NI	NI													
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	NI	NI													
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	NI	NI													
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	NI	NI													
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	NI	NI													
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	NI	NI										
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	NI	NI										
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	NI	NI										
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	NI	NI										
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	NI	NI										
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI							
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI							
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI							
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI							
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI							
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI							
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI							
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI							
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI							
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI							
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI							
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI							
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI							
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI							
December 13, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	787.03	785.68	786.43	NM	NM	NM	NI	NI							
December 23, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	775.22	NM	NI	NI							
January 17, 2020	NM	NM	785.58	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI							
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI							
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI							
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI							
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI							
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI							
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI							
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NI	NI													
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI							
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI							
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI							
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI							
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI							
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI							
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI							
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI							
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI							
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI							
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI							

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI							
January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NI	NI	NI	NI						
January 24, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.73	783.36	783.63	783.77	NI	NI	NI	NI	NI
February 20-23, 2023	785.56	784.98	NM	NM	NI	NM	NM	NM	NM	NM	783.04	782.91	785.32	783.31	783.34	783.40	783.50	783.59	783.82	783.96	NI	NI	NI	NI
March 27-28, 2023	786.83	785.87	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.84	783.98	784.43	NM	784.12	784.41	784.57	NI	NI	NI	NI
April 24-27, 2023	787.57	786.87	784.38	784.03	NI	NM	782.59	785.79	786.22	786.97	784.82	784.25	787.75	785.05	785.18	785.69	NM	785.21	785.43	785.59	NI	NI	NI	NI
May 5, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.55	NM	NM	NM	780.49	NI	NI	NI
May 16, 2023	787.43	787.07	783.88	784.12	NI	dry	781.64	785.64	786.06	786.88	784.65	783.89	786.88	785.15	785.11	785.39	785.97	785.46	785.68	785.88	780.48	NI	NI	NI
May 30-31, 2023	787.04	786.89	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	784.90	784.69	784.97	NM	785.24	785.55	785.77	NM	NI	NI	NI
June 29-30, 2023	786.32	786.39	NM	NM	NI	NM	NM	784.32	785.04	785.92	NM	NM	NM	784.12	783.84	783.97	NM	784.67	784.95	785.17	NM	NI	NI	NI
July 31, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.96	784.26	784.49	NM	NI	NI	NI
August 31, 2023	NM	785.30	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.47	NM	NM	783.55	783.83	783.97	NM	NI	NI	NI
October 9-11, 2023	784.67	784.65	781.21	780.09	NI	779.93	780.54	782.57	783.55	784.39	NM	NM	783.09	782.58	782.32	782.22	783.69	783.10	783.33	783.59	780.30	NI	NI	NI
November 9, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.76	NM	NM	NM	NM	NM	NM	NI	NI	NI
November 20, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	781.97	781.45	782.85	NM	NI	NI	NI							
December 27, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.18	783.36	NM	NI	NI	NI
April 15-17, 2024	785.27	784.49	782.16	aband	782.17	780.80	781.38	783.02	784.14	784.90	782.40	782.24	784.51	782.79	782.68	782.64	783.59	783.16	783.42	783.53	782.09	783.12	783.05	785.27
April 19, 2024	785.51	784.55	782.26	aband	782.23	dry	dry	783.06	784.28	785.05	NM	782.64	784.69	782.90	782.82	782.74	783.68	783.30	783.49	783.62	782.15	NM	NM	NM
May 20, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.25	NM	NM	NM	NM	NM
June 4, 2024	NM	NM	NM	aband	NM	783.03	783.66	NM	NM	NM	NM	NM	NM	784.27	NM									
June 27, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.87	785.97	787.20
July 31, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.95	788.83	789.56
August 8, 2024	NM	NM	787.17	aband	786.34	783.77	784.45	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.24	NM	NM	NM
August 15, 2024	788.75	789.53	786.93	aband	786.03	783.75	784.27	788.77	787.62	788.17	787.66	787.24	788.39	787.90	787.93	788.37	788.31	aband	aband	aband	785.99	787.87	788.63	789.68
August 30, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	787.28	787.78	789.17
October 1-3, 2024	787.92	788.35	785.30	aband	784.91	782.80	783.42	787.33	786.79	787.14	786.04	785.94	786.88	786.46	786.35	786.40	786.90	aband	aband	aband	784.80	786.41	786.71	788.22
October 18, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	785.50	785.08	786.34	NM	NM	NM	NM	aband	aband	aband	NM	NM	NM	NM
October 31, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	785.73	785.92	787.88
November 5, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.45	NM	NM	aband	aband	aband	NM	NM	NM
December 9, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	785.50	785.64	787.41
January 10, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	785.22	NM	787.12
January 17, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	NM	785.35	NM
February 25, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	784.36	784.53	786.59
March 27, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	784.26	784.44	786.25
April 21-23, 2025	787.41	787.05	784.37	aband	784.21	783.18	783.61	783.71	783.15	786.33	784.75	784.83	786.43	785.17	785.09	785.23	785.65	aband	aband	aband	784.27	784.94	785.06	786.31
April 26, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	784.94	785.06	786.30
July 16, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.46	785.45	NM	NM	aband	aband	aband	NM	NM	785.45	787.04
July 30, 2025	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	NM	NM	NM
September 16, 2025	NM	NM	783.87	aband	783.09	782.32	782.80	NM	NM	NM	785.13	784.04	784.70	NM	NM	NM	NM	aband	aband	aband	783.79	NM	NM	NM
October 27, 2025	786.18	786.35	783.32	aband	783.07	781.73	782.42	784.51	784.95	785.47	783.78	783.51	784.86	784.01	783.93	784.21	784.79	aband	aband	aband	783.15	784.23	784.36	786.84
December 22, 2025	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.43	NM	NM	NM	aband	aband	aband	NM	NM	NM	NM

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00

Notes:

NM = not measured

NI = not installed

aband = abandoned

(1) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5, 2017 sampling event. The level was allowed to return to static and was measured on October 10, 2017.

(2) MW-303 was extended in 2022 due to regrading. Prior to October 2022, the TOC elevation was 811.52'. For events in October 2022 and through September 2025, the TOC elevation is 815.72'.

The casing was cut down in September 2025 and resurveyed in November 2025. The new TOC elevation is 808.97'.

(3) MW-91B was damaged in October 2025 and the protective casing was replaced in November 2025. The well was resurveyed 11/17/2025. Prior to November 2025, the TOC elevation was 808.45'.

I:\25225067.00\Deliverables\2025 - COL ADF Annual CCR Report\Tables\Table 3 - COL GW Elevation Summary through Dec 2025_PRINTING VERSION.xls]levels

Created by: MDB
Last revision by: BLJ
Checked by: RM

Date: 5/6/2013
Date: 12/23/2025
Date: 12/24/2025

**Table 4. Horizontal Gradients and Flow Velocity
Columbia Energy Center Dry Ash Disposal Facility - ADF
SCS Engineers Project #25225067.00
January - December 2025**

Flow Path A - North/Northwest					
Sampling Dates	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
April 21-23, 2025	787.43	785.17	2079	0.001	0.005
October 27, 2025	788.45	784.00	1924	0.002	0.011

Flow Path B - South/Southeast					
Sampling Dates	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
April 21-23, 2025	786.00	785.65	333	0.001	0.005
October 27, 2025	786.84	785.00	153	0.012	0.055

Wells	K Values (cm/sec)	K Values (ft/d)
MW-34A	N/A	N/A
MW-302	3.22E-02	91.2
MW-33AR	4.01E-04	1.1
MW-309	2.12E-04	0.6
MW-310	1.91E-04	0.5
MW-311	6.12E-04	1.7
MW-317	7.33E-04	2.1
MW-318	4.54E-04	1.3
MW-319	2.99E-04	0.8
Geometric Mean	6.50E-04	1.8

Assumed Porosity, n
0.40

Groundwater flow velocity equation: $V = [K*(\Delta h/\Delta l)] / n$

ft = feet

ft/d = feet per day

cm/sec = centimeters per second

K = hydraulic conductivity

n = effective porosity

V = groundwater flow velocity

h1, h2 = point interpreted groundwater elevation at locations 1 and 2

Δl = distance between location 1 and 2

Δh = difference in elevation between locations 1 and 2

Δh/Δl = hydraulic gradient

Note:

1. See Figures 3 and 4 for velocity calculation flow path locations.

Last revision by: NLB

Date: 1/21/2026

Checked by: LH

Date: 1/22/2026

**Table 5A. Groundwater Analytical Results Summary - October 2024 (Modules 1-3)
Columbia Ash Disposal Facility / SCS Engineers Project #25225067.10**

Parameter Name	UPL Method	UPL	Background Wells		Compliance Wells			
			MW-84A	MW-301	MW-33AR		MW-34A	MW-302
			10/2/2024	10/2/2024	10/2/2024	11/5/2024	10/2/2024	10/2/2024
Groundwater Elevation, ft amsl			787.14	787.92	787.33	785.98	786.79	788.35
Appendix III								
Boron, µg/L	NP	36.2	10.3	22.1	477	--	219	290
Calcium, µg/L	NP	126,000	73,300	97,000 P6	96,400	--	57,900	63,600
Chloride, mg/L	P	5.76	3.3	1.5 J	52.7	--	5.4 M0	1.9 J
Fluoride, mg/L	DQ	DQ	<0.095	0.13 J	<0.095 M0	--	<0.095	<0.095
Field pH, Std. Units	P	7.71	7.36	6.85	7.52	7.76	7.64	7.32
Sulfate, mg/L	NP	27.5	1.8 J	10.4	224 M0	--	57.5	57.9
Total Dissolved Solids, mg/L	NP	514	318	410	620	558	278	262

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
 DQ = Double Quantitation
 SSI = Statistically Significant Increase
 -- = Not Measured
 µg/L = micrograms per liter

NP = Nonparametric UPL with 1-of-2 retesting
 P = Parametric UPL with 1-of-2 retesting
 LOQ = Limit of Quantitation
 LOD = Limit of Detection
 mg/L = milligrams per liter

ft amsl = feet above mean sea level
 Std. Units = Standard Units
 pCi/L = picocuries per liter

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
 P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
 M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in August 2024 based on background well results through October 2023.

Created by:	NDK	Date:	12/2/2022
Last revision by:	RM	Date:	11/20/2024
Checked by:	KMV	Date:	12/3/2024
Scientist/Proj Mgr QA/QC:	TK	Date:	1/11/2025

**Table 5B. Groundwater Analytical Results Summary - October 2024 (Modules 4-6)
Columbia Dry Ash Disposal Facility / SCS Engineers Project #25225067.10**

Parameter Name	Background Wells		Compliance Wells							
	MW-84A	MW-301	MW-309			MW-310			MW-311	
	10/2/2024	10/2/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024
Groundwater Elevation, ft amsl	787.14	787.92		786.46	785.66		786.35	785.45		786.40
Appendix III										
Boron, µg/L	10.3	22.1	61.9	72.1	72.3	82.4	93.1	78.4	43.1	34.0
Calcium, µg/L	73,300	97,000 P6	137,000	105,000	--	65,700	108,000	99,700	76,300	64,800
Chloride, mg/L	3.3	1.5 J	772	971	743	277	420	435	3.67	2.6
Fluoride, mg/L	<0.095	0.13 J	DQ	<4.8 D3	--	DQ	<0.095	--	DQ	0.10 J
Field pH, Std. Units	7.36	6.85	7.94	7.64	7.77	8.02	7.65	7.70	7.95	7.71
Sulfate, mg/L	1.8 J	10.4	64.6	142	131	107	179	194	124	11.2
Total Dissolved Solids, mg/L	318	410	1,600	2,180	1,630	773	1,210	1,190	380	262

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
DQ = Double Quantification
-- = Not Analyzed

LOQ = Limit of Quantitation
LOD = Limit of Detection

mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
- Intrawell UPLs were calculated from background sampling results for the compliance wells from February 2018 through October 2023.

Created by: RM	Date: 5/24/2024
Last revision by: RM	Date: 11/20/2024
Checked by: KMV	Date: 12/3/2024
Scientist/PM QA/QC: TK	Date: 1/11/2025

**Table 5C. Groundwater Analytical Results Summary - October through March 2024 (Modules 10-11)
Columbia Generating Station - / SCS Engineers Project #25225067.10**

Parameter Name	UPL Method	UPL	GPS	Background Wells		Compliance Wells											
				MW-84A	MW-301	MW-317					MW-318						
				10/2/2024	10/2/2024	10/1/2024	10/31/2024	12/9/2024	1/10/2025	2/25/2025	3/27/2025	10/1/2024	10/31/2024	12/9/2024	1/17/2025	2/25/2025	3/27/2025
Groundwater Elevation, ft amsl				787.14	787.92	786.41	785.73	785.50	785.22	784.36	784.26	786.71	785.92	785.64	785.35	784.53	784.44
Appendix III																	
Boron, ug/L	NP	36.2		10.3	22.1	75.6	39.4	37.9	31.0	30.0	30.6	37.6	12.9	16.7	18.2	18.6	15.9
Calcium, ug/L	NP	126,000		73,300	97,000 P6	46,400	48,100	50,900	50,500	54,200	53,700 P6	103,000	105,000	106,000	102,000 P6	119,000 P6	113,000
Chloride, mg/L	P	5.76		3.3	1.5 J	3.2	4.6	3.6	2.7	3.1	3.0	65.5	74.3	65.9	39.4	37.0	39.3
Fluoride, mg/L	DQ	DQ		<0.095	0.13 J	0.17 J	0.22 J	0.15 J	<0.095	<0.095 M	0.12 J	<0.095	<0.95 D3	<0.95 D3	<0.95 D3	<0.95 D3	<0.48 D3
Field pH, Std. Units	P	7.71		7.36	6.85	7.84	7.56	7.62	7.33	7.83	7.77	7.45	7.29	7.27	7.45	7.47	7.37
Sulfate, mg/L	NP	27.5		1.8 J	10.4	5.2	5.0	3.7	3.8 B	3.8 M	5.4	231	203	215	187	186	207
Total Dissolved Solids, mg/L	NP	514		318	410	248	272	280 R1	128	248	240	674	676	666	628	692	666
Appendix IV																	
Antimony, µg/L	NE	NE	6	NA	NA	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic, µg/L	NE	NE	10	NA	NA	1.3	1.1	1.1	0.87 J	0.80 J	0.77 J	<0.28	<0.28	<0.28	0.31 J	0.34 J	<0.28
Barium, µg/L	NE	NE	2000	NA	NA	51.6	54.5	52.1	48.0	45.5	50.2	22.6	30.9	27.4	29.0	35.7	35.2
Beryllium, µg/L	NE	NE	4	NA	NA	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium, µg/L	NE	NE	5	NA	NA	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium, µg/L	NE	NE	100	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.8 J	1.3 J	1.4 J	2.1 J	2.1 J	1.8 J
Cobalt, µg/L	NE	NE	6	NA	NA	0.20 J	<0.12	<0.12	0.12 J	0.13 J	0.16 J	0.18 J	0.15 J	0.17 J	0.34 J	0.26 J	0.2 J
Fluoride, mg/L	NE	NE	4	NA	NA	0.17 J	0.22 J	0.15 J	<0.095	<0.095 M0	0.12 J	<0.095	<0.95 D3	<0.95 D3	<0.95 D3	<0.95 D3	<0.48 D3
Lead, µg/L	NE	NE	15	NA	NA	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.29 J	0.28 J	0.24 J
Lithium, µg/L	NE	NE	40	NA	NA	5.0	3.2	4.3	4.3	3.6	2.8 B	1.1	1.0	0.93 J	1.3	1.4	1.5 B
Mercury, µg/L	NE	NE	2	NA	NA	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum, µg/L	NE	NE	100	NA	NA	24.6	37.5	23.9	15.3	13.6	18	0.52 J	0.58 J	0.48 J	0.68 J	0.71 J	0.57 J
Selenium, µg/L	NE	NE	50	NA	NA	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.80 J	0.76 J	0.90 J	0.76 J	0.99 J	1.0 J
Thallium, µg/L	NE	NE	2	NA	NA	<0.14	<0.14	<0.14	<0.14	<0.14	0.2 J	<0.14	0.17 J	<0.14	<0.14	0.18 J	<0.14
Radium 226/228 Combined, pCi/L	NE	NE	5	NA	NA	0.634	1.97	0.777	0.436	1.14	1.93	0.397	2.18	1.10	0.900	1.85	1.83

 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ.

 Yellow highlighted cell indicates the compliance well result exceeds the GPS.

Abbreviations:

mg/L = milligrams pe UPL = Upper Prediction Limit SSI = Statistically Significant Increase NE = Not Established
µg/L = micrograms p LOD = Limit of Detection P = Parametric
ft amsl = feet above LOQ = Limit of Quantitation NP = Nonparametric
Std. Units = Standard DQ = Double Quantitation NA = Not Analyzed

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
B = Analyte was detected in the associated method blank.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
R1 = Relative Percent Difference (RPD) was outside control limits.

Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in August 2024 based on background well results through October 2023.

Created by: RM Date: 8/15/2022
Last revision by: LH Date: 11/26/2025
Checked by: RM Date: 12/15/2025

**Table 5C. Groundwater Analytical Results Summary - October through March 2024 (Modules 10-11)
Columbia Generating Station - / SCS Engineers Project #25225067.10**

Parameter Name	UPL Method	UPL	Compliance Wells							
			MW-319							
			10/1/2024	10/31/2024	12/9/2024	1/10/2025	2/25/2025	3/27/2025		
Groundwater Elevation, ft amsl			788.22	787.88	787.41	787.12	786.59	786.25		
Appendix III										
Boron, ug/L	NP	36.2	30.8	18.3	21.7	21.2	19.9	16.4		
Calcium, ug/L	NP	126,000	106,000	48,600	83,300	101,000	91,700	64,600		
Chloride, mg/L	P	5.76	649	237	455	409	355	173		
Fluoride, mg/L	DQ	DQ	<1.9 D3	<0.95 D3	<1.9	<0.95 D3	<1.9 D3	<0.95 D3		
Field pH, Std. Units	P	7.71	7.61	7.70	7.53	7.38	7.60	7.61		
Sulfate, mg/L	NP	27.5	62.9	38.5	50.3	51.2 B	44.4	33.1		
Total Dissolved Solids, mg/L	NP	514	1450	753	1050	647	986	623		
Appendix IV			UPL Method	UPL	GPS					
Antimony, µg/L	NE	NE	6	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	
Arsenic, µg/L	NE	NE	10	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	
Barium, µg/L	NE	NE	2000	41.2	19.2	30	33.5	27.3	17.1	
Beryllium, µg/L	NE	NE	4	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Cadmium, µg/L	NE	NE	5	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	
Chromium, µg/L	NE	NE	100	1.8 J	1.1 J	1.1 J	1.4 J	1.2 J	1.2 J	
Cobalt, µg/L	NE	NE	6	0.42 J	0.20 J	0.20 J	0.28 J	0.22 J	0.16 J	
Fluoride, mg/L	NE	NE	4	<1.9 D3	<0.95 D3	<1.9	<0.95	<1.9 D3	<0.95 D3	
Lead, µg/L	NE	NE	15	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	
Lithium, µg/L	NE	NE	40	0.98 J	0.58 J	0.58 J	0.84 J	0.68 J	0.79 J,B	
Mercury, µg/L	NE	NE	2	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	
Molybdenum, µg/L	NE	NE	100	0.62 J	0.84 J	0.60 J	0.56 J	0.86 J	1.1 J	
Selenium, µg/L	NE	NE	50	1.4	1.0 J	1.1	1.4	1.0 J	0.78 J	
Thallium, µg/L	NE	NE	2	<0.14	<0.14	<0.14	0.28 J	<0.14	<0.14	
Radium 226/228 Combined, pCi/L	NE	NE	5	1.71	1.21	0.837	1.02	1.82	2.08	

Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ.

Yellow highlighted cell indicates the compliance well result exceeds the GPS.

Abbreviations:

mg/L = milligrams pe UPL = Upper Prediction Limit SSI = Statistically Significant Increase NE = Not Established
µg/L = micrograms p LOD = Limit of Detection P = Parametric
ft amsl = feet above LOQ = Limit of Quantitation NP = Nonparametric
Std. Units = Standard DQ = Double Quantitation NA = Not Analyzed

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
B = Analyte was detected in the associated method blank.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
R1 = Relative Percent Difference (RPD) was outside control limits.

Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in August 2024 based on background well results through October 2023.

Created by: RM Date: 8/15/2022
Last revision by: LH Date: 11/26/2025
Checked by: RM Date: 12/15/2025

**Table 5D. Groundwater Analytical Results Summary - April 2025
Columbia Ash Disposal Facility Landfill Modules / SCS Engineers Project #25225067.10**

Parameter Name	Background Wells					Compliance Wells																	
	MW-84A	MW-301	MW-33AR			MW-34A		MW-302		MW-309		MW-310		MW-311		MW-317		MW-318		MW-319			
	4/22/2025	4/22/2025	4/21/2025	7/16/2025	Intrawell UPL	4/21/2025	4/22/2025	Intrawell UPL	4/21/2025	7/17/2025	Intrawell UPL	4/21/2025	7/16/2025	Intrawell UPL	4/21/2025	4/26/2025	Intrawell UPL	4/26/2025	Intrawell UPL	4/26/2025			
Groundwater Elevation, ft amsl	786.33	787.41	Intrawell UPL	783.71	786.07	Intrawell UPL	783.15	Intrawell UPL	787.05	Intrawell UPL	785.17	785.46	Intrawell UPL	785.09	785.45	Intrawell UPL	785.23	Intrawell UPL	784.94 ⁽³⁾	Intrawell UPL	785.06 ⁽³⁾	Intrawell UPL	786.31 ⁽³⁾
Appendix III																							
Boron, ug/L	10.0	25.5	927	468	--	265	224	841	379	69.4	102	93.6	85.2	86.4	97.9	44.4	24.8	63.3	29.1	30	18.3	49.9	18.8
Calcium, ug/L	70,000	108,000	130,000	85,300	--	82,500	59,400	106,000	66,700	164,000	35,900	--	84,000	45,900	--	77,800	51,300	60,100	57,900	131,000	99,900	181,000	76,000
Chloride, mg/L	3.0	1.4 J	255	47.7	--	35.5	8.7	15.0	0.83 J	887	386 M0	--	373	110	--	3.92	2.1	8.7	4.5	98.8	23.7	1090	242
Fluoride, mg/L	<0.095	<0.095	DQ	<0.48 D3	--	DQ	<0.095	0.2	<0.095	DQ	<0.95 D3	--	DQ	<0.48 D3	--	0.1	<0.095	0.394	<0.095	DQ	<0.48 D3	DQ	<0.48 D3
Field pH, Std. Units	7.07	6.59	8.62	7.81	7.45	8.23	7.80	8.23	7.18	8.00	7.55	7.75	8.06	7.69	7.71	8.00	7.54	8.21	7.67	7.71	7.46	7.99	7.56
Sulfate, mg/L	1.7 J	8.2	231	236	231	186	78.7	99.7	30	145	75.7	--	190	170	--	153	10.5	74.2	5.2	345	156	87.3	31.6
Total Dissolved Solids, mg/L	324	468	726	542	--	446	300	531	338	1810	1160	--	1050	692	--	424	254	449	288	832	544	2240	700

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ.

Abbreviations:

UPL = Upper Prediction Limit	NP = Nonparametric UPL with 1-of-2 retesting	Std. Units = Standard Units
DQ = Double Quantitation	P = Parametric UPL with 1-of-2 retesting	ft amsl = feet above mean sea level
SSI = Statistically Significant Increase	LOQ = Limit of Quantitation	mg/L = milligrams per liter
-- = Not Analyzed	LOD = Limit of Detection	µg/L = micrograms per liter

J = Estimated concentration at or above the LOD and below the LOQ.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Intrawell UPLs calculated based on results from compliance wells UPLs calculated in July 2025 based on compliance well results through March 2025.
3. Groundwater elevations displayed for wells MW-317, MW-318, and MW-319 were collected April 22, 2025.

Created by: RM	Date: 5/7/2025
Last revision by: SCC	Date: 8/8/2025
Checked by: RM	Date: 8/11/2025

Table 6. Groundwater Field Data Summary
Columbia Energy Center Dry Ash Disposal Facility / SCS Engineers Project #25225067.10

Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-84A	10/2/2024	787.14	12.4	7.36	8.73	503	65.1	2.55
	4/22/2025	786.33	10.8	7.07	7.42	588	93.8	0.00
MW-301	10/2/2024	787.92	11.7	6.85	2.77	602	68.1	1.84
	4/22/2025	787.41	8.0	6.59	3.11	827	106.7	8.64
MW-302	10/2/2024	788.35	13.3	7.32	7.91	423	53.0	3.81
	4/22/2025	787.05	10.6	7.18	7.35	555	103.6	17.15
MW-33AR	10/2/2024	787.33	14.4	7.52	7.77	900	158.3	0.00
	11/5/2024	785.98	13.9	7.76	8.46	770	45.1	0.41
	4/21/2025	783.71	10.2	7.81	86.6	856	49.6	3.74
MW-34A	7/16/2025	786.07	13.6	7.45	9.66	890	44.4	4.12
	10/2/2024	786.79	12.9	7.64	9.10	476	156.1	0.86
	4/2/2025	783.15	11.3	7.80	94.2	523	50.3	1.09
MW-309	10/1/2024	786.46	13.5	7.64	7.84	3454	131.6	2.24
	11/5/2024	785.66	13.9	7.77	8.02	2634	-138.7	2.55
	4/21/2025	785.17	10.2	7.55	10.07	2021	105.7	0.01
	7/17/2025	785.46	13.6	7.75	8.85	2708	74.9	3.33
MW-310	10/1/2024	786.35	14.0	7.65	8.56	1927	90.5	2.49
	11/5/2024	785.45	13.9	7.70	8.78	1797	-122.4	1.40
	4/21/2025	785.09	10.6	7.69	11.46	1097	92.1	0.00
	7/16/2025	785.45	14.2	7.71	9.75	906	29.6	21.03
MW-311	10/1/2024	786.4	13.7	7.71	8.78	443	61.0	2.81
	4/21/2025	785.23	9.4	7.54	10.06	453	115.5	0.00
MW-317	10/1/2024	786.41	11.4	7.84	2.26	423	-103.8	2.31
	10/31/2024	785.73	12.3	7.56	0.13	471	-93.2	1.80
	12/9/2024	785.50	10.9	7.62	1.19	441	-87.4	0.00
	1/10/2025	785.22	10.5	7.33	2.73	426	-13.1	0.00
	2/25/2025	784.36	11.1	7.83	3.65	418	-63.8	0.00
	3/27/2025	784.26	11.3	7.77	2.07	459	-74.7	3.94
	4/26/2025	784.94	11.1	7.67	2.80	516	-30.5	1.76
MW-318	10/1/2024	786.71	11.6	7.45	6.84	942	59.80	7.62
	10/31/2024	785.92	12.3	7.29	7.62	924	36.0	1.07
	12/9/2024	785.64	11.3	7.27	8.38	919	32.9	4.33
	1/17/2025	785.35	11.2	7.45	6.66	829	105.1	20.70
	2/25/2025	784.53	11.4	7.47	6.69	897	80.7	22.79
	3/27/2025	784.44	11.6	7.37	7.33	955	173.5	5.54
	4/25/2025	785.06	11.3	7.46	6.65	863	66.9	4.26
MW-319	10/1/2024	788.22	11.4	7.61	7.52	2344	78.0	7.40
	10/31/2024	787.88	13.1	7.70	8.16	1088	52.3	2.74
	12/9/2024	787.41	11.3	7.53	9.41	1108	58.8	0.00
	1/10/2025	787.12	10.4	7.38	8.23	1732	15.4	0.00
	2/25/2025	786.59	11.2	7.60	8.87	1560	40.8	0.00
	3/27/2025	786.25	11.2	7.61	9.16	1054	169.7	0.00
	4/25/2025	786.30	11.3	7.56	7.63	994	84.9	1.98

Notes/Abbreviations:

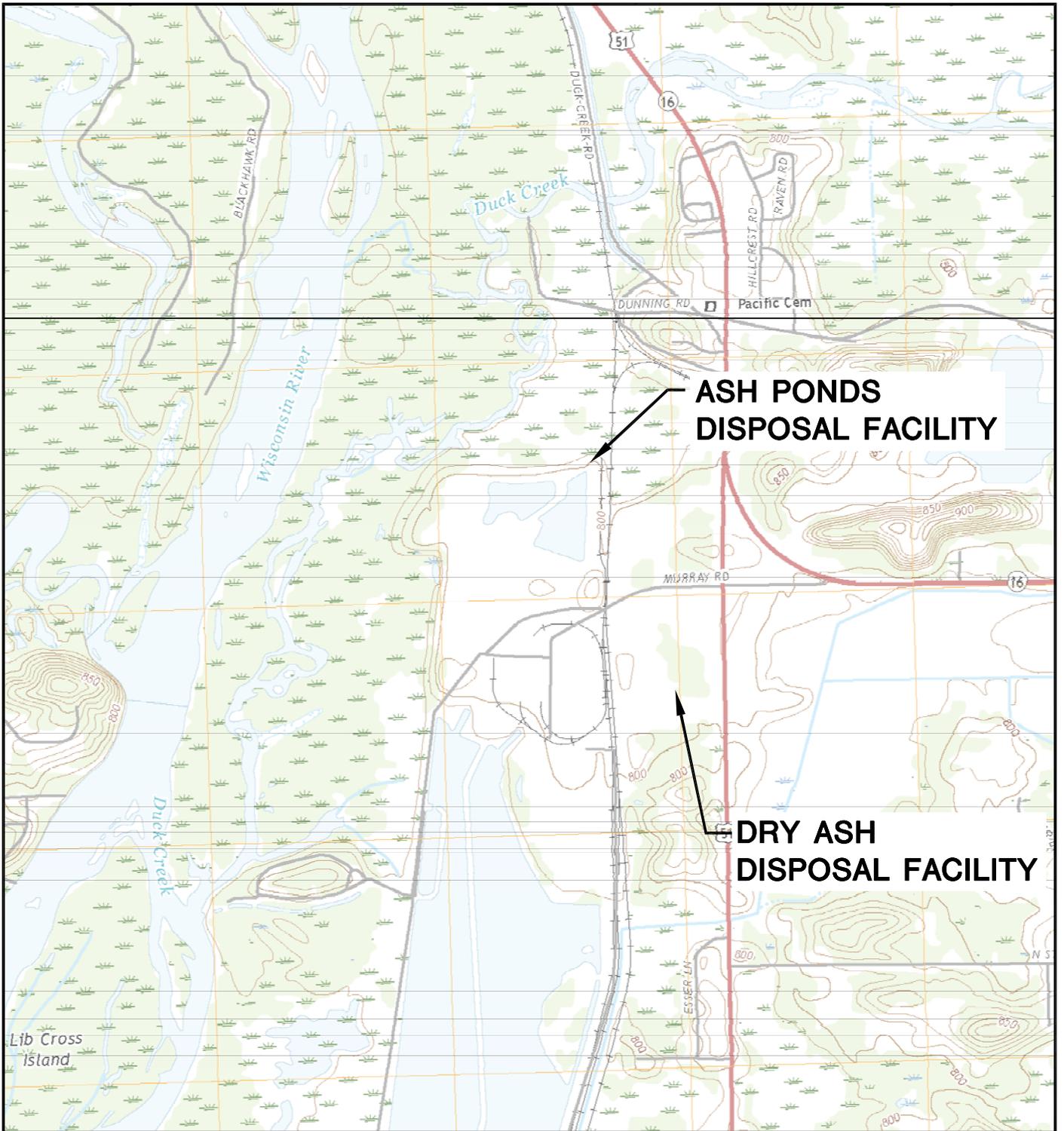
- deg C = degrees Celsius
- Std. Units = standard units
- mg/L = milligram per liter
- umhos/cm = micromhos per centimeter
- mV = millivolts
- NTU - nephelometric turbidity unit

Created by: RM
 Last revision by: NLB
 Checked by: LH

Date: 12/11/2023
 Date: 10/14/2025
 Date: 11/19/2025

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Contour Map – April 2025
- 4 Water Table Contour Map – October 2025

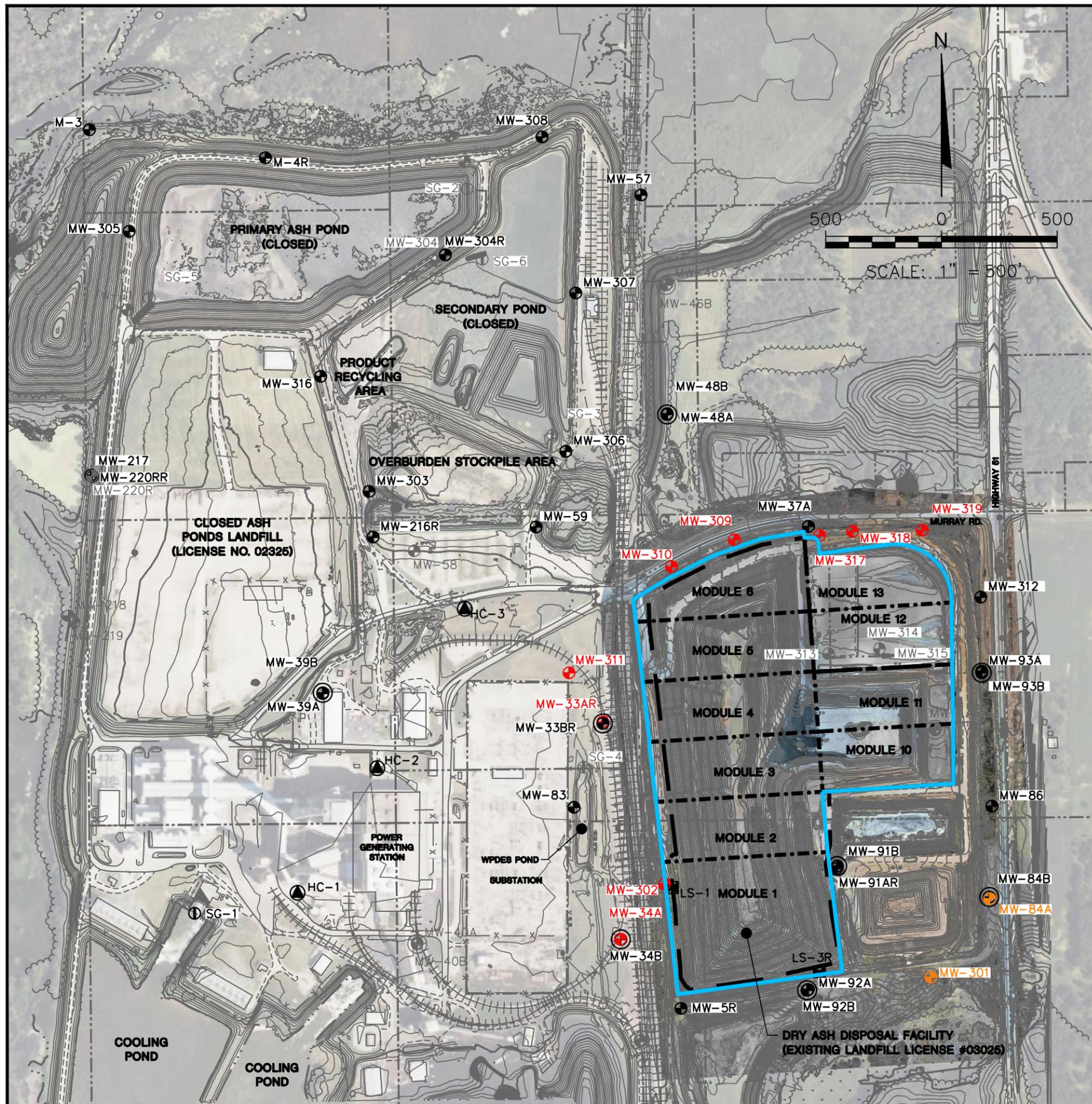


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER WB375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220067.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
	DRAWN:	12/02/2019		CHECKED BY:	MDB			1
REVISED:	01/10/2020	APPROVED BY:	TK 04/10/2020					

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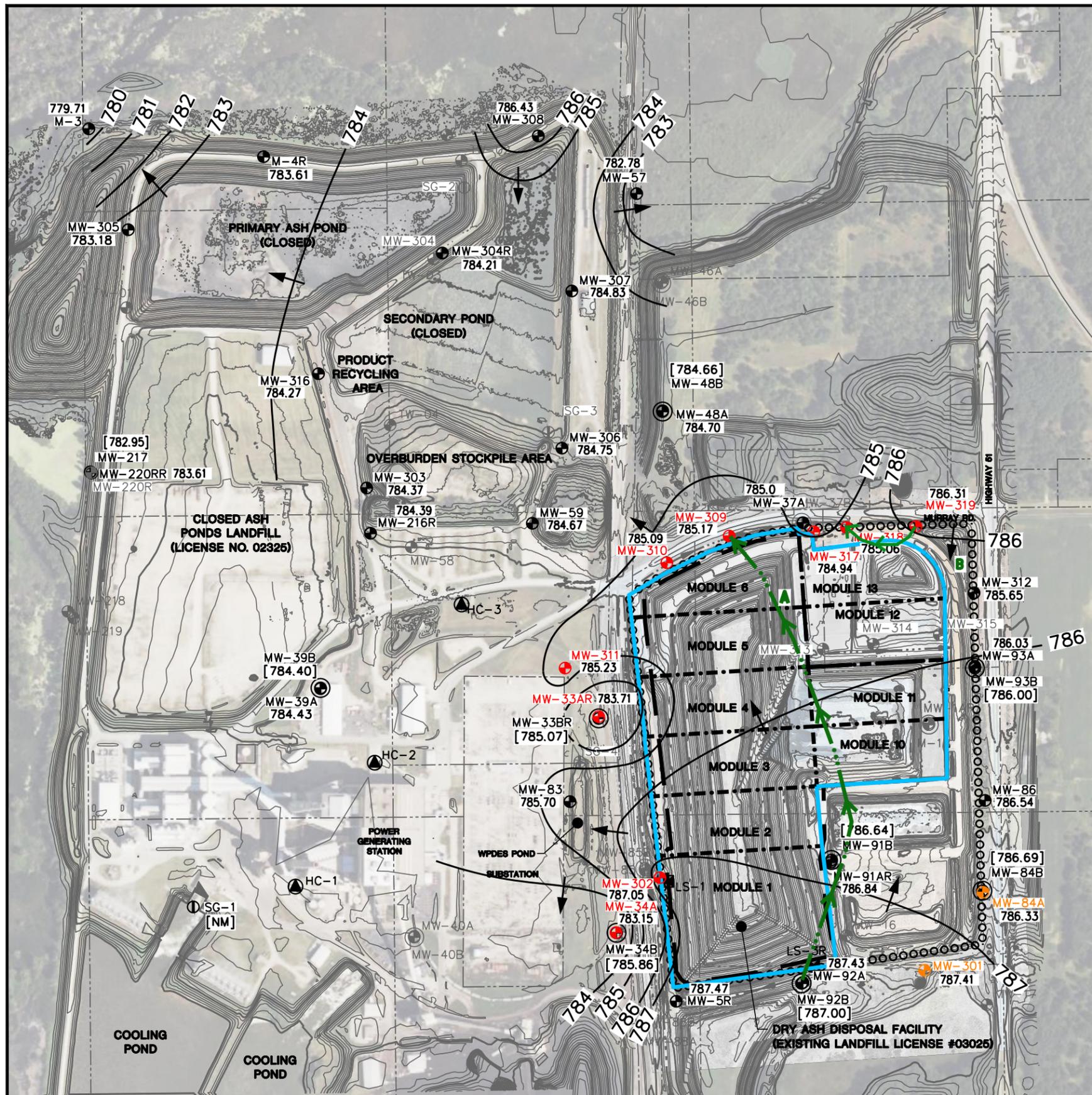


LEGEND			
	MAJOR TOPOGRAPHIC CONTOUR (10-FOOT INTERVAL)		WATER SUPPLY WELL
	MINOR TOPOGRAPHIC CONTOUR (2-FOOT INTERVAL)		STAFF GAUGE
	RAILROAD TRACKS		WATER TABLE WELL
	EXISTING FENCELINE		PIEZOMETER
	EXISTING PAVED ROAD		LYSIMETER
	EXISTING UNPAVED ROAD		ABANDONED STAFF GAUGE
	LINER/PHASE MODULE LIMITS		ABANDONED WATER TABLE WELL
	APPROXIMATE PROPERTY LINE		ABANDONED PIEZOMETER
	APPROXIMATE LIMITS OF ASH DISPOSAL		CCR MONITORING WELL
	CCR UNITS		ADF CCR MONITORING WELL
			CCR BACKGROUND MONITORING WELL

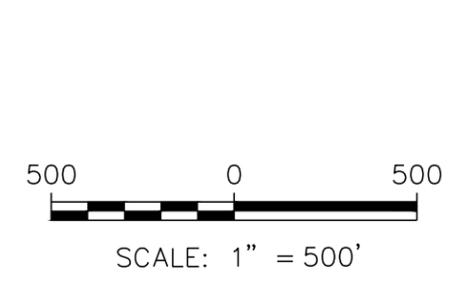
- NOTES:
- MONITORING WELL AND OTHER SAMPLE LOCATIONS ARE APPROXIMATE.
 - BACKGROUND AERIAL IMAGE IS A COMPOSITE OF AN AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL AND DRONE PHOTO BY SCS ENGINEERS DATED JANUARY 20th, 2025.
 - BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014. PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC. AND DECEMBER 2023 DRONE SURVEYS BY AMES.
 - PROPERTY LINE INFORMATION IS APPROXIMATE AND WAS OBTAINED FROM THE WISCONSIN STATEWIDE PARCEL MAP INITIAIVE-DATA BY COUNTY, COLUMBIA COUNTY, WISCONSIN.
 - COORDINATE SYSTEM IS NAD83 WISCONSIN STATE PLANE, SOUTH ZONE, US SURVEY FEET.
 - BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, DECEMBER 2023 DRONE SURVEY BY AMES, AND JANUARY 20TH 2025 DRONE SURVEY BY SCS ENGINEERS.
 - MONITORING WELL INSTALLATION SUMMARY:
 - MONITORING WELLS MW-301, MW-302, MW-303, MW-304 AND MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 - MONITORING WELLS MW-306, MW-307 AND MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 - MONITORING WELLS MW-309, MW-310 AND MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 - MONITORING WELLS MW-93A, MW-93B AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 23-28, 2022, AND WERE SURVEYED ON APRIL 21, 2022, BY SCS ENGINEERS.
 - MONITORING WELLS MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023, AND WAS SURVEYED BY SCS ENGINEERS ON MAY 31, 2023.
 - MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9-11, 2024, AND WERE SURVEYED ON APRIL 19, 2024, AND RE-SURVEYED ON SEPTEMBER 15, 2024.
 - MONITORING WELLS MW-313, MW-314 AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22, 2024.
 - MW-304 WAS ABANDONED AND MW-304R WAS INSTALLED ON MARCH 18, 2024, BY HORIZON CONSTRUCTION OF FREDONIA, WI. MONITORING WELL MW-304R WAS SURVEYED BY SCS ENGINEERS ON APRIL 25, 2024.
 - MONITORING WELL LOCATIONS AND ELEVATIONS FOR VARIOUS WELLS INSTALLED PRIOR TO 2019 WERE SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018, AND NOVEMBER 2025.
 - SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASE ON JANUARY 2013 DRAWINGS BY TRC.
 - SURFACE WATER GAUGES SG-5 AND SG-6.

PROJECT NO. 25225067.00	DRAWN BY: SB/RVG	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEVILLE, WI	FIGURE SITE PLAN AND MONITORING WELL LOCATIONS COLUMBIA DRY ASH DISPOSAL FACILITY 2
DRAWN: 06/16/2025	CHECKED BY: NLB 01/12/2026				
REVISED: 01/12/2026	APPROVED BY: TK 01/12/2026				

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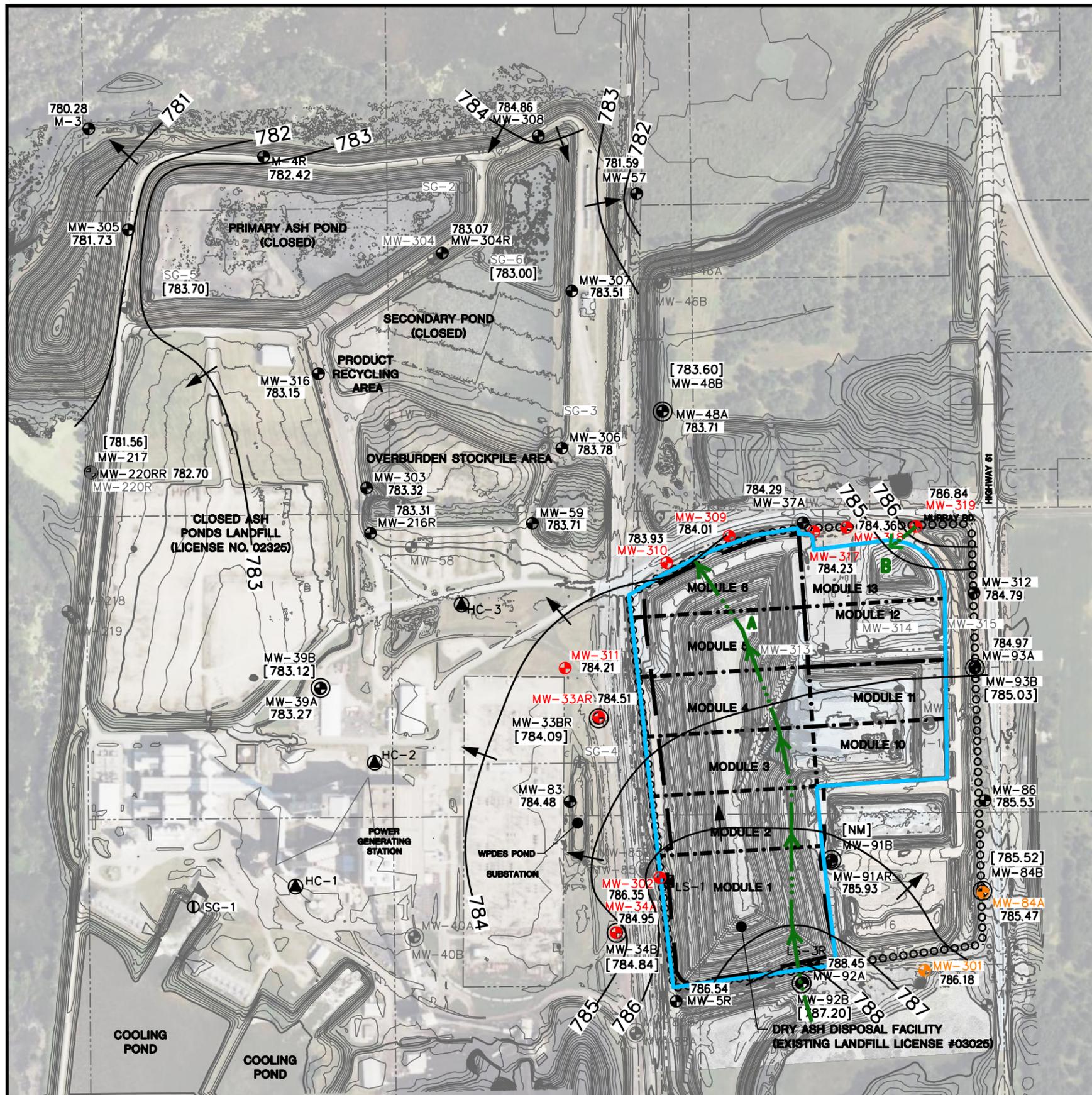
LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	NON-CCR WATER TABLE WELL
	NON-CCR PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	ADF CCR MONITORING WELL
	788.75 WATER TABLE ELEVATION
	[781.47] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
	[NM] NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	CCR UNITS
	APPROXIMATE PROPERTY LINE
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)



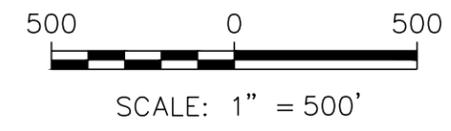
- NOTES:
1. WATER LEVELS WERE MEASURED ON APRIL 21-23, 2025.
 2. WELL INSTALLATION AND SURVEY INFORMATION, SEE SITE PLAN FIGURE 2 NOTES.
 3. STATE MONITORING WELLS M-3, M-4R, MW-5R, MW-33AR, MW-33BR, MW-34A, MW-34B, MW-37A, MW-39A, MW-39B, MW-48A, MW-48B, MW-57, MW-59, MW-83, MW-84A, MW-84B, MW-91AR, MW-91B, MW-92A, MW-92B, MW-93A, MW-93B, MW-86, MW-216R, MW-217 and MW-220RR.
 4. CCR BACKGROUND MONITORING WELLS: MW-301 & MW-84A.
 5. CCR MONITORING WELLS: MW-33AR, MW-34A, MW-302, MW-302A, MW-303, MW-304R, MW-305, MW-306, MW-307, MW-308, MW-309, MW-310, MW-311, MW-312, MW-316, MW-317, MW-318, MW-31 and MW-319.
 6. SURFACE WATER MONITORING POINTS: STAFF GAUGE SG-1.
 7. OTHER MONITORING POINTS: SUPPLY WELLS HC-1, HC-2 AND HC-3. LYSIMETERS L-1 AND LS-3R.
 8. THERE WERE NO DRY MONITORING WELLS OR LEACHATE HEADWELLS IN APRIL 2025.
 9. VERTICAL DATUM IS REFERENCED TO THE USGS MEAN SEA LEVEL (MSL).
 10. BACKGROUND AERIAL IMAGE IS A COMPOSITE OF AN AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL AND DRONE PHOTO BY SCS ENGINEERS DATED JANUARY 20th, 2025.

PROJECT NO. 25225067.00	DRAWN BY: RVG/SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP APRIL 2025	FIGURE
DRAWN: 05/15/2025	CHECKED BY: NLB 01/12/2026					3
REVISED: 01/16/2026	APPROVED BY: TK 1/23/2026					

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LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	MONITORING WELL
	ADF CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	788.75 WATER TABLE ELEVATION
	[781.47] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
	[NM] NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	CCR UNITS
	APPROXIMATE PROPERTY LINE
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)



- NOTES:
1. WATER LEVELS WERE MEASURED OCTOBER 27, 2025.
 2. WELL INSTALLATION AND SURVEY INFORMATION, SEE SITE PLAN FIGURE 2 NOTES.
 3. STATE MONITORING WELLS M-3, M-4R, MW-5R, MW-33AR, MW-33BR, MW-34A, MW-34B, MW-37A, MW-39A, MW-39B, MW-48A, MW-48B, MW-57, MW-59, MW-83, MW-84A, MW-84B, MW-91AR, MW-91B, MW-92A, MW-92B, MW-93A, MW-93B, MW-86, MW-216R, MW-217 and MW-220RR.
 4. CCR BACKGROUND MONITORING WELLS: MW-301 & MW-84A.
 5. CCR MONITORING WELLS: MW-33AR, MW-34A, MW-302, MW-302A, MW-303, MW-304R, MW-305, MW-306, MW-307, MW-308, MW-309, MW-310, MW-311, MW-312, MW-316, MW-317, MW-318, MW-31 and MW-319.
 6. SURFACE WATER MONITORING POINTS: STAFF GAUGE SG-1.
 7. OTHER MONITORING POINTS: SUPPLY WELLS HC-1, HC-2 AND HC-3. LYSIMETERS L-1 AND LS-3R.
 8. THERE WERE NO DRY MONITORING WELLS OR LEACHATE HEADWELLS IN APRIL 2025.
 9. VERTICAL DATUM IS REFERENCED TO THE USGS MEAN SEA LEVEL (MSL).
 10. BACKGROUND AERIAL IMAGE FROM GOOGLE EARTH DATED MARCH 26, 2025.

PROJECT NO. 25225067.10	DRAWN BY: RVG	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP OCTOBER 27, 2025	FIGURE 4
DRAWN: 11/12/2025	CHECKED BY: NLB 01/19/2026					
REVISED: 01/21/2026	APPROVED BY: TK 1/23/2026					

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Appendix A
Regional Hydrogeologic Information

**Table COL-3. Regional Hydrogeologic Stratigraphy
Columbia Energy Center / SCS Engineers Project #25215053**

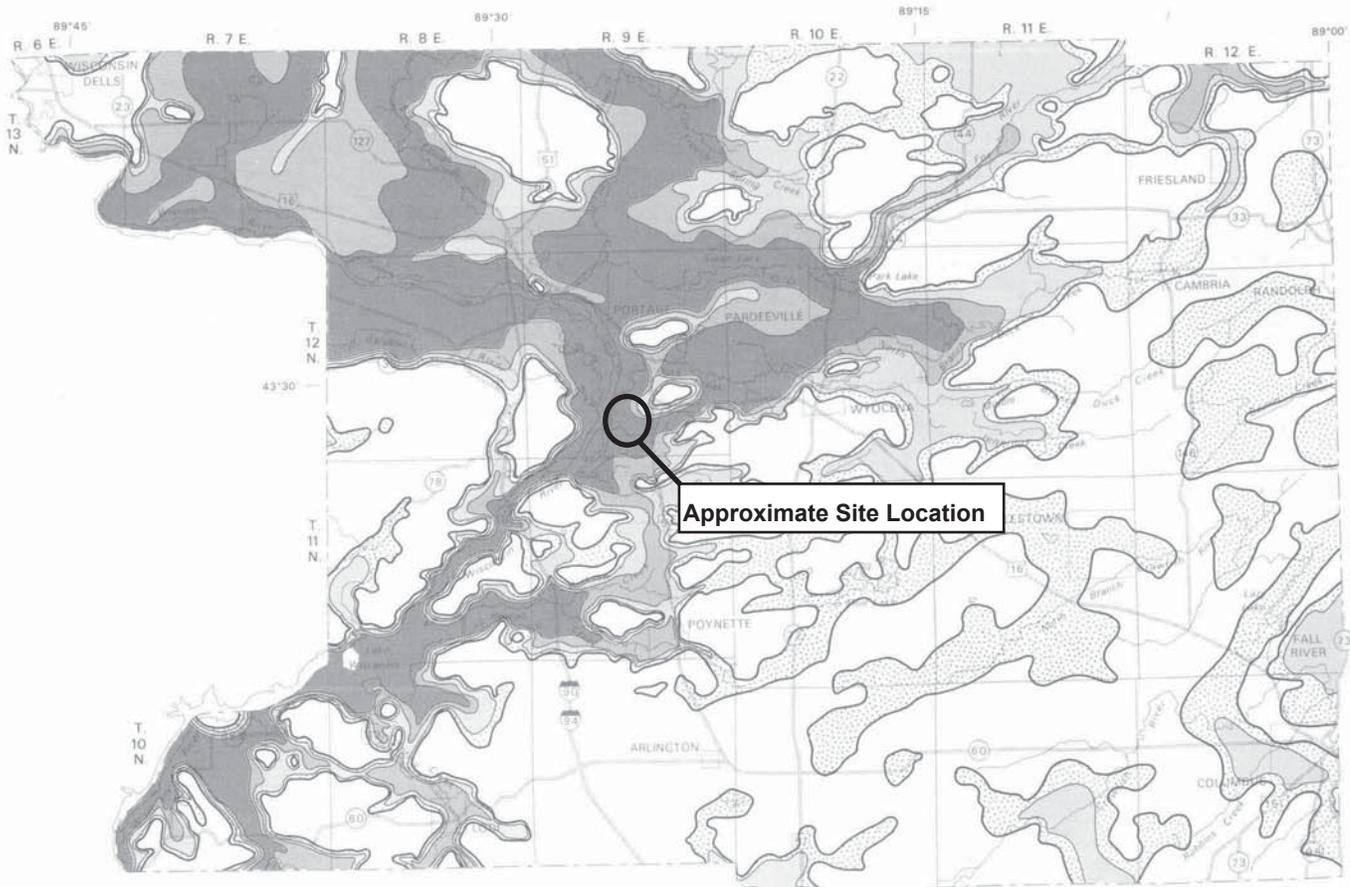
Approximate Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary (0-1 million years old)	Surficial Aquifer	0 to 300+	Holocene & Pleistocene Deposits	<ul style="list-style-type: none"> • Unconsolidated clay, silt, sand, gravel, cobbles, boulders, and organic matter
Ordovician (460 to 490 million years old)	Sandstone Aquifer	0 to 800+	Galena Decorah Platteville St. Peter Prairie du Chien	<ul style="list-style-type: none"> • Dolomite and shaley dolomite • Sandstone
Cambrian (490 to 500 million years old)			Trempeleau Franconia Galesville Eau Claire Mt. Simon	<ul style="list-style-type: none"> • Sandstone
Precambrian (more than 1 billion years old)	Used for domestic supply in some areas	--	Precambrian	<ul style="list-style-type: none"> • Igneous and metamorphic rocks

*This nomenclature and classification of rock units in this report are those of the Wisconsin Geological and Natural History Survey and do not necessarily coincide with those accepted by the U.S. Geological Survey.

Sources:

Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.
Wisconsin Geological and Natural History Survey, Bedrock Stratigraphic Units in Wisconsin, UW Extension Educational Series 51, ISSN: 1052-2115, 2011.

I:\25215053\Reports\Report 3 - Columbia\Tables\Table_2_Regional_Hydrogeologic_Stratigraphy.doc



EXPLANATION

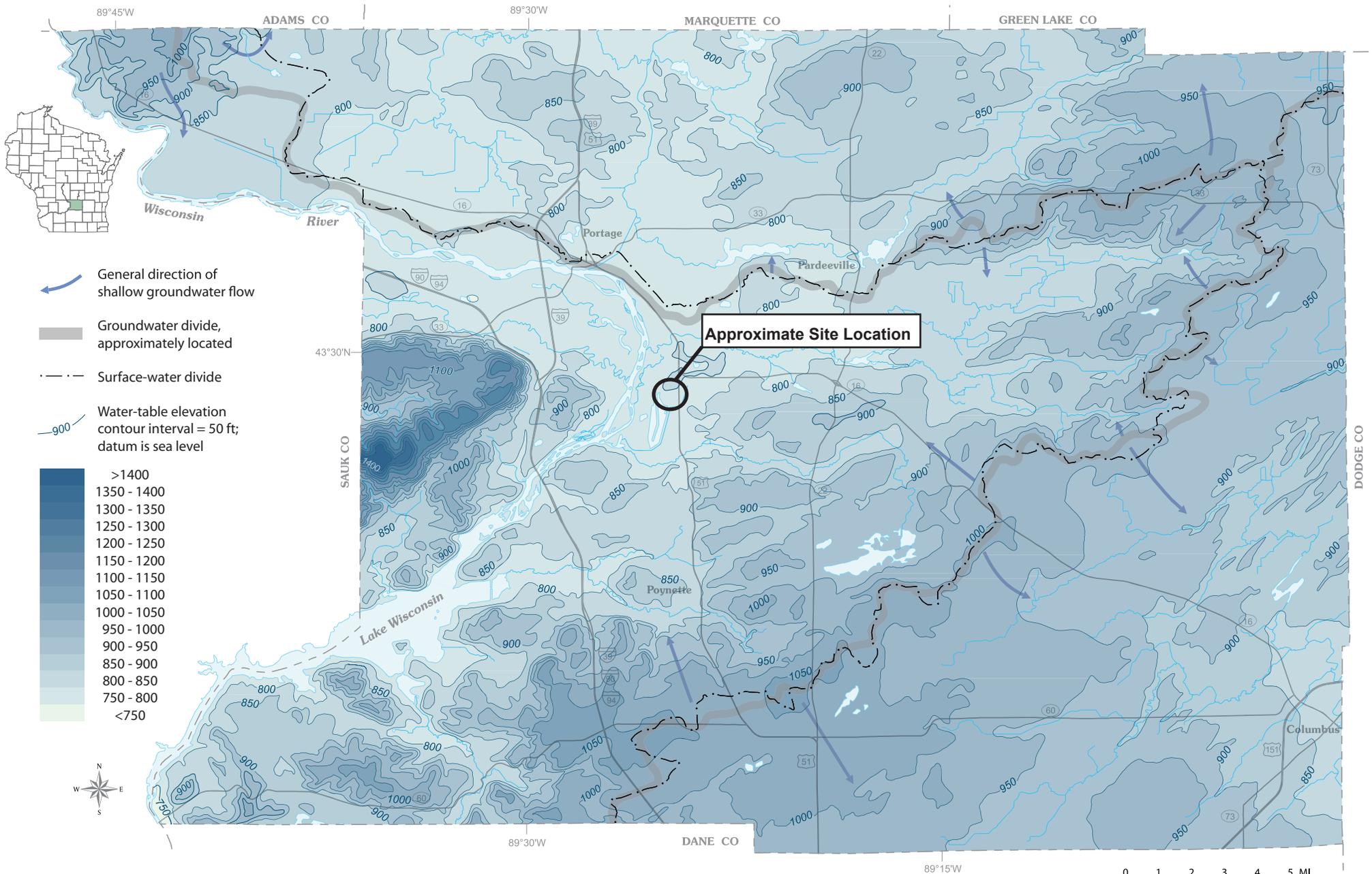
Probable well yields



Boundary of saturated sand-and-gravel aquifer

Figure 9. Probably well yields from the sand-and-gravel aquifer.

Generalized water-table elevation in Columbia County, Wisconsin



UW Extension Wisconsin Geological and Natural History Survey

Appendix B

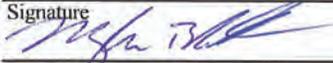
Boring Logs and Well Construction Documentation

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Columbia		SCS#: 25215135.00		License/Permit/Monitoring Number		Boring Number MW-301	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling				Date Drilling Started 11/11/2015		Date Drilling Completed 11/11/2015	
Drilling Method hollow stem auger		WI Unique Well No. VY701		DNR Well ID No.		Common Well Name	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		State Plane 541562.2 N, 2025001.0 E		S/C/N		Local Grid Location	
1/4 of		1/4 of Section 27		T 12 N, R 9 E		Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Final Static Water Level Feet		Surface Elevation 803.69 Feet		Borehole Diameter 8.5 in.		Facility ID	
County Columbia		County Code 11		Civil Town/City/ or Village Portage			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments			
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200				
S1	21	7 6 9 10	1 2	SILTY SAND, yellowish brown (10YR 5/6), fine to medium grained.													
S2	20	6 7 9 10	4 5	Same as above except, 10YR 5/4 (top section), 10YR 3/6 (bottom section), trace gravel.													
S3	22	7 6 9 6	7 8	Same as above except, 10YR 3/4 (bottom), 10YR 5/4 (top), trace little roots and sticks, trace gravel.	SM												
S4	21	4 5 6 5	9 10	Same as above except, 10YR (top), 10YR 4/6 (bottom), trace clay at bottom.													
S5	18	2 2 4 5	12 13	Same as above except, fine to coarse grained sand, little gravel, trace clay in top half, 10YR 3/6.													
S6	20	2 3 3 3	14 15	Same as above except, 10YR 6/8.													

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
--	--	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-301**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S7	20	5 4 4 3	16 17	SILTY SAND, yellowish brown (10YR 5/6), fine to medium grained.						M				
S8	20	2 4 4 5	18 19 20											
S9	23	4 4 3 6	21 22											SM
S10	21	3 2 4 10	23 24 25											W
			24	Same as above except, 10YR 6/4.						W				
			28	End of boring at 28 ft bgs.										

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Columbia	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-301
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location Lat. _____ " Long. _____ " or	Wis. Unique Well No. <u>VY701</u> DNR Well ID No. _____
Facility ID	St. Plane <u>541562.2</u> ft. N, <u>2125001</u> ft. E. S/C/N	Date Well Installed <u>11</u> / <u>11</u> / <u>2015</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source SW <u>1/4</u> of SE <u>1/4</u> of Sec. <u>27</u> , T. <u>12</u> N, R. <u>9</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <u>Kevin Duerst</u> <u>Badger State Drilling</u>
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____

A. Protective pipe, top elevation <u>807</u> <u>16</u> ft. MSL	1. Cap and lock? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
B. Well casing, top elevation <u>806</u> <u>89</u> ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>6</u> in. b. Length: <u>5</u> ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation <u>803</u> <u>69</u> ft. MSL	d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <u>bumper posts</u>
D. Surface seal, bottom <u>791</u> <u>69</u> ft. MSL or <u>12</u> ft.	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Bentonite to grade, sand above Other <input type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft ³ volume added for any of the above
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input type="checkbox"/> 08
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. <u>4</u> ft ³ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh size a. <u>RW Sidley Inc. #7</u> <input type="checkbox"/> b. Volume added <u>0.5</u> ft ³
Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. <u>RW Sidley #5</u> <input type="checkbox"/> b. Volume added <u>2</u> ft ³
17. Source of water (attach analysis, if required):	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
E. Bentonite seal, top <u>803.69</u> ft. MSL or <u>0</u> ft.	10. Screen material: <u>PVC</u> a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
F. Fine sand, top <u>791.69</u> ft. MSL or <u>12</u> ft.	b. Manufacturer <u>Johnson</u> c. Slot size: <u>0.01</u> in. d. Slotted length: <u>10</u> ft.
G. Filter pack, top <u>789.69</u> ft. MSL or <u>14</u> ft.	11. Backfill material (below filter pack): None <input type="checkbox"/> 14 Other <input checked="" type="checkbox"/>
H. Screen joint, top <u>787.69</u> ft. MSL or <u>16</u> ft.	
I. Well bottom <u>777.69</u> ft. MSL or <u>26</u> ft.	
J. Filter pack, bottom <u>776.69</u> ft. MSL or <u>27</u> ft.	
K. Borehole, bottom <u>775.69</u> ft. MSL or <u>28</u> ft.	
L. Borehole, diameter <u>8.5</u> in.	
M. O.D. well casing <u>2.4</u> in.	
N. I.D. well casing <u>2.0</u> in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [Signature] Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant-Columbia	County Name Columbia	Well Name MW-301	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY701	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input type="checkbox"/> 4 1
surged with bailer and pumped	<input checked="" type="checkbox"/> 6 1
surged with block and bailed	<input type="checkbox"/> 4 2
surged with block and pumped	<input type="checkbox"/> 6 2
surged with block, bailed and pumped	<input type="checkbox"/> 7 0
compressed air	<input type="checkbox"/> 2 0
bailed only	<input type="checkbox"/> 1 0
pumped only	<input type="checkbox"/> 5 1
pumped slowly	<input type="checkbox"/> 5 0
Other _____	<input type="checkbox"/>

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 29 . 4 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 7 . 6 gal.

7. Volume of water removed from well _____ 84 . 0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

	<u>Before Development</u>	<u>After Development</u>
11. Depth to Water (from top of well casing)	a. _____ 21 . _____ 72 ft.	_____ 21 . _____ 77 ft.
Date	b. _____ 12 / _____ 02 / _____ 2015	_____ 12 / _____ 02 / _____ 2015
	m m d d y y y y	m m d d y y y y
Time	c. _____ 08 : 30 <input checked="" type="checkbox"/> a.m. _____ 10 : 30 <input checked="" type="checkbox"/> a.m.	_____ 10 : 30 <input type="checkbox"/> p.m. _____ 10 : 30 <input type="checkbox"/> p.m.
	p.m.	p.m.
12. Sediment in well bottom	_____ 0 . _____ inches	_____ 0 . _____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l
16. Well developed by: Name (first, last) and Firm		
First Name: Gary	Last Name: Sterkel	
Firm: SCS ENGINEERS		

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

Street: W8375 Murray Rd.

City/State/Zip: Pardeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: *[Handwritten Signature]* for Gary Sterkel

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

NOTE: See instructions for more information including a list of county codes and well type codes.



LOG OF TEST BORING

Project Wisconsin Power & Light
 Location Columbia Generating Station

Boring No. MW-84A
 Surface Elevation 813.4
 Job No. C 7134
 Sheet 1 of 1

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Type	Recovery ↓	Moisture ↓	N	Depth		q _c	W	LL	PL	D
						Dark Brown Silty SAND (SM)					
					5	Brown Fine to Medium SAND, Little Silt, Trace to Little Gravel and Boulders (SM)					
					10						
					15						
					20						
					25						
					30						
					35						
					40						
							End Boring at 37'				
							Well Installed at 37'				

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling _____
 Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave In _____

Start 10/5/83 Complete 10/5/83
 Crew Chief JVS Rig B-40
 Drilling Method ED 0-37'

WELL DETAIL INFORMATION SHEET

JOB NO. C 7134

BORING NO. MW-84A

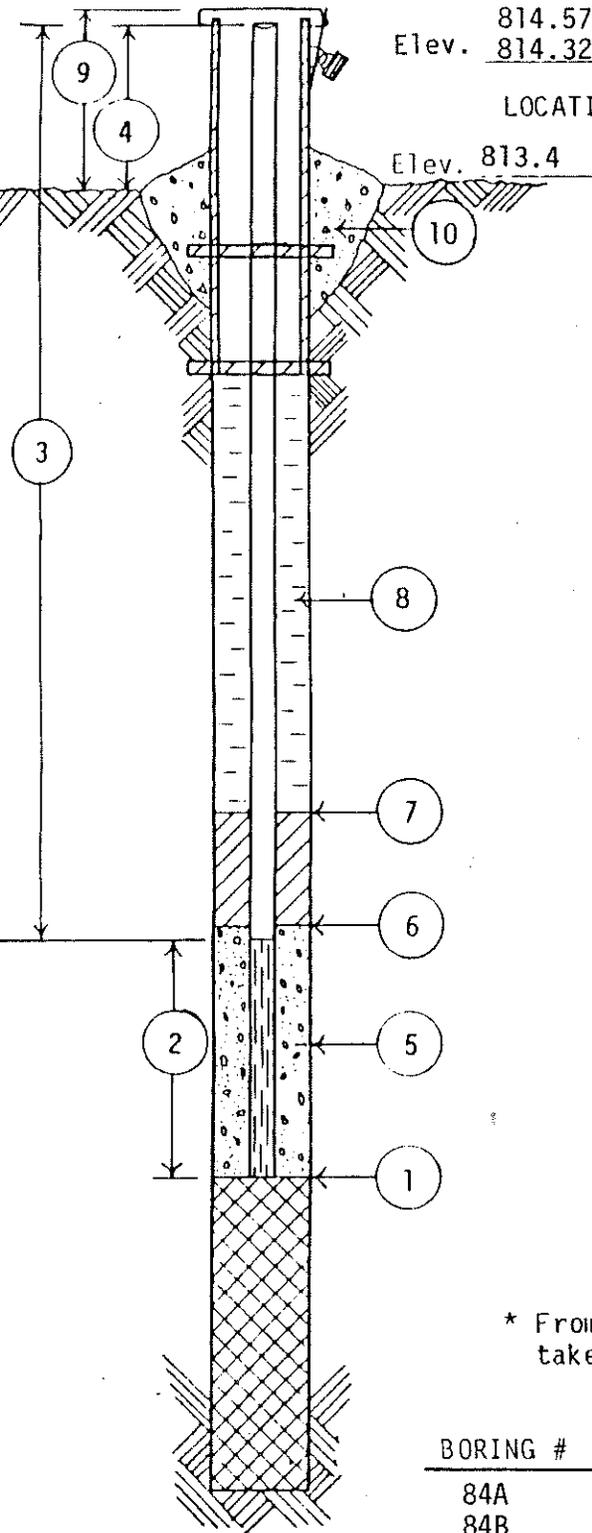
DATE 10/5/83

Elev. 814.57 Steel
Elev. 814.32 PVC CHIEF JS

LOCATION WP&L-Columbia Generating Station

Elev. 813.4

All depth measurements of well detail assumed to be from ground surface unless otherwise indicated.



- ① DEPTH TO BOTTOM OF BOREHOLE
37 FEET
- ② LENGTH OF WELL POINT, WELL SCREEN,
OR SLOTTED PIPE 10 FEET
- ③ TOTAL LENGTH OF SOLID PIPE 29
FEET @ 2 IN. DIAMETER
- ④ HEIGHT OF WELL CASING ABOVE GROUND
2 FEET
- ⑤ TYPE OF FILTER MATERIAL AROUND WELL
POINT OR SLOTTED PIPE Flint Sand
- ⑥ DEPTH OF LOWER OR BOTTOM SEAL
3 FEET
- ⑦ DEPTH OF UPPER OR TOP SEAL
0 FEET
- ⑧ TYPE OF BACKFILL Spoils (Sand)
- ⑨ PROTECTIVE CASING YES NO
HEIGHT ABOVE GROUND 2'
LOCKING CAP YES NO
- ⑩ CONCRETE CAP YES NO

WATER LEVEL CHECKS

* From top of casing, if protective casing higher take measurement from top of protective casing.

BORING #	DATE	TIME	DEPTH TO WATER	REMARKS
84A	10/7/83	3 days	21'	
84B	10/7/83	3 days	19'6"	



Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL-Columbia		SCS#: 25215135.00		License/Permit/Monitoring Number	Boring Number MW-302
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling			Date Drilling Started 11/11/2015	Date Drilling Completed 11/12/2015	Drilling Method hollow stem auger
WI Unique Well No. VY702	DNR Well ID No.	Common Well Name	Final Static Water Level Feet	Surface Elevation 809.93 Feet	Borehole Diameter 8.5 in.
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Pla 541964.7 N, 2123849 E S/C/N			Lat _____ "	Local Grid Location	
1/4 of _____ 1/4 of Section 27, T 12 N, R 9 E			Long _____ "	Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID	County Columbia	County Code 11	Civil Town/City/ or Village Portage		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments		
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200			
S1	12	10 13 17 16	1 2	SILTY SAND, fine to medium grained, trace gravel, 10YR 5/6.												
S2	12	10 12 8 6	4 5	Same as above except, large gravel at bottom, trace to little gravel.												
S3	20	2 4 4 5	7	Same as above except, 10YR 4/6.	SM											
S4	23	3 3 4 5	9	Same as above except, 10YR 5/8.												
S5	20	3 3 3 4	12	Same as above except, 10YR 6/6.												
S6	20	3 4 4 7	14	POORLY GRADED SAND, 10YR 6/6.	SP											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>[Signature]</i> for Zach Watson	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
---	--	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-302**

Use only as an attachment to Form 4400-122.

Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments							
Number and Type	Length Att. & Recovered (in)								Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200								
S7	20	6 8 10 12	16 17	POORLY GRADED SAND, light tan 10YR 8/3.																	
S8	20	5 6 8 8	19 20		SP																
S9	19	3 3 3 2	22																		
S10	20	3 3 8 8	24 25	SILTY SAND, 10YR 5/6.	SM																
			25	POORLY GRADED SAND, 10YR 8/3.																	
S11	23	5 9 12 12	26 27	Same as above except, light tan 10YR 6/6.																	
			30		SP																
			35	End of boring at 35 ft bgs.																	

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Columbia	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-302
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location Lat. _____ " Long. _____ or _____	Wis. Unique Well No. <input type="checkbox"/> DNR Well ID No. <input type="checkbox"/>
Facility ID	St. Plane: 541964.7 ft. N, 2123849 ft. E. S/C/N	Date Well Installed 11 / 12 / 2015 m m d d y y y y
Type of Well Well Code 11 / MW	Section Location of Waste/Source SE 1/4 of SW 1/4 of Sec. 27, T. 12 N, R. 9 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Kevin Duerst
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____
Enf. Stds. Apply <input type="checkbox"/>		Badger State Drilling

A. Protective pipe, top elevation	813.19 ft. MSL	1. Cap and lock?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
B. Well casing, top elevation	813.00 ft. MSL	2. Protective cover pipe:	
C. Land surface elevation	809.93 ft. MSL	a. Inside diameter:	6 in.
D. Surface seal, bottom	793.53 ft. MSL or 16.4 ft.	b. Length:	5 ft.
12. USCS classification of soil near screen:		c. Material:	Steel <input type="checkbox"/> 04 Other <input type="checkbox"/>
GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input checked="" type="checkbox"/>		d. Additional protection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>		If yes, describe: <u>yes bumper posts</u>	
Bedrock <input type="checkbox"/>		3. Surface seal:	Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
13. Sieve analysis performed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Material between well casing and protective pipe:	Bentonite <input checked="" type="checkbox"/> 30 Bentonite to grade, sand above Other <input type="checkbox"/>
14. Drilling method used:	Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	5. Annular space seal:	a. Granular/Chipped Bentonite <input type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft ³ volume added for any of the above
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99		f. How installed:	Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input type="checkbox"/> 08
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		6. Bentonite seal:	a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. 4.7 ft ³ Other <input type="checkbox"/>
Describe _____		7. Fine sand material: Manufacturer, product name & mesh size	a. RW Sidley Inc. #7 <input type="checkbox"/>
17. Source of water (attach analysis, if required):		b. Volume added	1 ft ³
		8. Filter pack material: Manufacturer, product name & mesh size	a. RW Sidley #5 <input type="checkbox"/>
		b. Volume added	2.5 ft ³
E. Bentonite seal, top	809.93 ft. MSL or 0 ft.	9. Well casing:	Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
F. Fine sand, top	793.53 ft. MSL or 16.4 ft.	10. Screen material: PVC	a. Screen type:
G. Filter pack, top	791.53 ft. MSL or 18.4 ft.		Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
H. Screen joint, top	789.53 ft. MSL or 20.4 ft.		b. Manufacturer <u>Johnson</u>
I. Well bottom	779.53 ft. MSL or 30.4 ft.		c. Slot size: 0.01 in.
J. Filter pack, bottom	776.93 ft. MSL or 33 ft.		d. Slotted length: 10 ft.
K. Borehole, bottom	776.93 ft. MSL or 33 ft.		11. Backfill material (below filter pack):
L. Borehole, diameter	8.5 in.		Native <input type="checkbox"/> 14 Other <input checked="" type="checkbox"/>
M. O.D. well casing	2 3/8 in.		
N. I.D. well casing	2 in.		

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [Signature] Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant - Columbia	County Name Columbia	Well Name MW-302	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY702	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input type="checkbox"/>	4 1
surged with bailer and pumped	<input checked="" type="checkbox"/>	6 1
surged with block and bailed	<input type="checkbox"/>	4 2
surged with block and pumped	<input type="checkbox"/>	6 2
surged with block, bailed and pumped	<input type="checkbox"/>	7 0
compressed air	<input type="checkbox"/>	2 0
bailed only	<input type="checkbox"/>	1 0
pumped only	<input type="checkbox"/>	5 1
pumped slowly	<input type="checkbox"/>	5 0
Other _____	<input type="checkbox"/>	

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 33 . 6 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 5 . 4 gal.

7. Volume of water removed from well _____ 60 . 0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 28 . 37 ft.	_____ 28 . 41 ft.
Date	b. <u>12</u> / <u>02</u> / <u>2015</u>	<u>12</u> / <u>02</u> / <u>2015</u>
Time	c. <u>02</u> : <u>00</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>04</u> : <u>00</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ 0 . inches	_____ 0 . inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l
16. Well developed by: Name (first, last) and Firm		
First Name:	Gary	Last Name: Sterkel
Firm:	SCS ENGINEERS	

17. Additional comments on development:

Name and Address of Facility Contact/Owner/Responsible Party First Name: Nate Last Name: Sievers Facility/Firm: Wisconsin Power and Light Street: W8375 Murray Rd. City/State/Zip: Pardeeville, WI 53954	I hereby certify that the above information is true and correct to the best of my knowledge.
	Signature: <i>[Handwritten Signature]</i> for G.S.
	Print Name: Gary Sterkel
	Firm: SCS ENGINEERS

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-317	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/11/2024		Date Drilling Completed 4/11/2024	
Drilling Method rotasonic		WI Unique Well No. VZ439		DNR Well ID No.	
Common Well Name		Final Static Water Level 33.0 Feet MSL		Surface Elevation 816.58 Feet MSL	
Borehole Diameter 6.0 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,466 N, 2,124,519 E S/C/N		Lat 45° 16' 16.76"		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 24' 7.50"		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
				Civil Town/City/ or Village Town of Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S1	33		1	ORGANIC SILT (OL), dark brown (10YR 3/3), organics (roots).	OL										
			2	POORLY GRADED SAND (SP) and gravel, dark yellowish brown (10YR 4/6), fine to coarse sand and trace fine to coarse gravel, rounded sand, subrounded to subangular gravel (fill), , broken up rock at bottom.	SP						M				Soil from 0-10' extremely hot, had to collect in bucket. Steaming when dumped on table.
S2	60		5	POORLY GRADED SAND (SP), light yellowish brown and dark yellowish brown (10YR 6/4 and 4/4), fine to medium sand, trace silt, fine to coarse gravel, rounded sand (native soil), subrounded to rounded gravel (alluvium).											
			8	Yellowish brown	SP					1.0	M				
S3	32		10	Red brown transition layer											
			13	SILTY SAND (SM), very pale brown (10YR 7/4), very fine to fine sand, silt, trace fine to coarse angular gravel.	SM						0.5	M		Samples from: 0-11", 11"-5", 5-7.5", 7.5-10", 10-12.5", 12.5-15", 15-20"	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Druell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-317** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S4	24		16		SM				1.0	M				
			17											
S5	34		18	POORLY GRADED SAND (SP), yellowish brown (10YR 5/4), trace silt, trace fine to coarse subround gravel.	SP					M				
			19											
S6	44		20	SILTY SAND (SM), very pale brown and light yellowish brown (10YR 7/3 and 6/4), very fine to fine sand.	SM					M/W			Samples from: 20-22', 22-25', 25-27', 27-30'	
			21											
S7	44		22	LEAN CLAY (CL), light yellowish brown (10YR 6/4), trace red mottling. seam of silt and trace sand	CL					M/W				
			23											
S8	47		24	SILTY SAND (SM), pale brown (10YR 6/3), very fine to fine sand, clay, trace fine gravel, rounded sand, rounded gravel.	SM				0.25	M/W			30-35' fell out, likely in the saturated "silty quicksand-like zone" Going to 40' with catcher bit.	
			25											
			26	POORLY GRADED SAND (SP), very pale brown (10YR 7/3 and 8/4), very fine to coarse sand, fine to coarse gravel and trace silt (outwash), rounded sand, rounded gravel.	SP					W			Hole sluffed back in to 33' after drilling to 40' in saturated zone.	
			27											
			28											
			29											
			30											
			31											
			32											
			33											
			34											
			35											
			36											
			37											
			38											
			39											
			40											

Boring Number **MW-317** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	43		41 42 43 44 45	Yellow (2.5Y 7/6), Iron and grey mottling	SP								Had to drill to 45' to clear out way and prevent sluffing. Well to be set at 42'. Sampled from: 40-41', 41-45'.	
				End of boring at 45'.										

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-318	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/10/2024		Date Drilling Completed 4/10/2024	
Drilling Method rotasonic		WI Unique Well No. VZ438		DNR Well ID No.	
Common Well Name		Final Static Water Level 31.0 Feet MSL		Surface Elevation 818.04 Feet MSL	
Borehole Diameter 4.5/6 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,484 N, 2,124,661 E S/C/N		Lat 45° 16' 16.27"		Feet <input type="checkbox"/> N <input type="checkbox"/> S	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 24' 0.98"		Feet <input type="checkbox"/> E <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
Civil Town/City/ or Village Town of Pacific					

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	35		1	ORGANIC SILT (OL), very dark greyish brown (10YR 3/2), gravel, (topsoil).	OL									Samples: 0-11", 11"-5', 5-10', 10-15', 15-19', 19-20"
			2	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6), trace fine to coarse gravel, silt, and roots.								M		
S2	33		3											
			4	some dark yellowish brown (10YR 3/4).										
			5	trace black mottling.							M			
S3	25		6											
			7	trace roots (fill).	SP									
			8											
			9											
			10								M			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Powell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
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Boring Number **MW-318** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S4	23		16											
			17	SP										
			18											
			19	Very pale brown (10YR 7/4)										
			20	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6 and 3/4) silt, and roots, trace mottling.										
S5	15		21											
			22											
			23		SP									
			24											
			25	trace gravel, fine to coarse subround black sand										
			26											
S6	37		27											
			28	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), formation change with color change, very fine to fine rounded sand.	SP									
			29											
			30	LEAN CLAY (CL), very pale brown (10YR 7/4), silt seams.										
S7	44		31											
			32											
			33		CL				1.0	M/W				
			34	organic odor										
			35											
S8	2		36	SILT (ML), very pale brown (10YR 7/4), trace sand, very soft.										
			37		ML									
			38											
			39											
			40											

Samples: 20-25',
25-27.5',
27.5-30', 30-35',
35-40' 4.5"
diameter from
now on using
water

DTW- 31'/32'
clay very soft

35-40' almost no
recovery.

Boring Number **MW-318** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	17		41		ML									
			42	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), fine to medium sand, fine to coarse gravel, rounded sand, rounded gravel.	SP								Samples: 40-41', 41-43'.	
			43	End of boring at 43'										

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-319	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/9/2024		Date Drilling Completed 4/9/2024	
Drilling Method rotasonic		WI Unique Well No. VZ437		DNR Well ID No.	
Common Well Name		Final Static Water Level 20.0 Feet MSL		Surface Elevation 825.70 Feet MSL	
Borehole Diameter 4.5/6 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,488 N, 2,124,963 E S/C/N		Lat 45° 16' 14.12"		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 23' 47.49"		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
		Civil Town/City/ or Village Town of Pacific			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	11		1	ORGANIC SILT (OL), dark brown (10YR 3/3), trace fine rounded sand, organics (roots).	OL									4.5" diameter rods 7' run for first run, 5' for following
			2	POORLY GRADED SAND (SP), yellowish brown (10YR 5/8), fine to coarse sand, fine to coarse gravel, angular gravel, rounded sand, trace silt.								M		
S2	11		3											Samples: 0-5", 5"-7", 7-12'
			4	light gray (10YR 7/2), large subround cobbles, fine to coarse angular gravel (alluvium)								M		
S3	0		5										No recovery 12-17' or 17-22',	
			6	no recovery										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Druell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
------------------------------------	--	--------------

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Boring Number **MW-319** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments		
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200			
S4	0		16-21													no water used in 12-22'.
S5	21		22-26	POORLY GRADED SAND (SP), pale brown (10YR 6/3), fine to medium sand, trace fine to coarse gravel, rounded sand, subangular gravel (alluvium)	SP						M					6" diameter rods 27' onward using water 22' onward
S6	11		27-32	SILTY SAND (SM), light yellowish brown (10YR 6/4), very fine to fine sand, trace medium to coarse sand, rounded sand. no medium to coarse sand							M/W					Samples from: 22-27', 27-32' 32-37' might have hit water, going to confirm with next 5' run. Water receding very shallow only on high sensitivity, stuck in casing.
S7	16		33-37		SM						M/W					Felt very different at 38'
S8	13		38-40								W					DTW at 38' measured at 20',

Boring Number **MW-319** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	43		41		SM				3.5	W			but stuck in casing	
			42											
			43											
			44											
			45											
			46	LEAN CLAY, yellowish brown (10yr 5/4), some red mottling	CL									
			47	Original End of boring at 47', ended up dropping to 50' when pulling rods. EOB at 50'.										
			48											
			49											
			50											

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy - Columbia		License/Permit/Monitoring Number 03025		Boring Number MW-33AR	
Boring Drilled By: Name of crew chief (first, last) and Firm Ryan Fisher Boart Longyear		Date Drilling Started 4/9/2003		Date Drilling Completed 4/9/2003	
Drilling Method 4 1/4" HSA		WI Unique Well No. PE223		DNR Well ID No. 138	
Common Well Name MW-33AR		Final Static Water Level Feet MSL		Surface Elevation 805.4 Feet MSL	
Borehole Diameter 8.0 inches		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 542,663 N, 2,123,584 E S/C/N		Lat _____ "		<input type="checkbox"/> N <input type="checkbox"/> E	
NE 1/4 of SW 1/4 of Section 27, T 12 N, R 9 E		Long _____ "		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
				Civil Town/City/ or Village Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 27.5	Blind drilled to 29 feet. See log of MW-33BR for lithology.	SM										
				End of boring at 29 feet.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **RMT, Inc.** Tel: _____ Fax: _____

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy - Columbia		License/Permit/Monitoring Number 03025		Boring Number MW-33BR	
Boring Drilled By: Name of crew chief (first, last) and Firm Ryan Fisher Boart Longyear		Date Drilling Started 4/8/2003		Date Drilling Completed 4/9/2003	
WI Unique Well No. PE224		DNR Well ID No. 140		Common Well Name MW-33BR	
Final Static Water Level 785.3 Feet MSL		Surface Elevation 805.3 Feet MSL		Borehole Diameter 8.0 inches	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		State Plane 542,660 N, 2,123,585 E S/C/N		Local Grid Location	
NE 1/4 of SW 1/4 of Section 27, T 12 N, R 9 E		Lat _____ "		<input type="checkbox"/> N <input type="checkbox"/> E	
		Long _____ "		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
				Civil Town/City/ or Village Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments					
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200						
AUGER	60		1																
1 SS	24	4 4 4 4	5	SILTY SAND (SM), 85% fine to medium sand, 15% fines, nonplastic, 10YR 5/4 yellowish brown, no odor, moist.	SM														
2 SS	24	3 5 5 5	10																
			11																
			12																
			13																
			14																
			15																

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *R. M. C.* Firm **RMT, Inc.** Tel: _____ Fax: _____

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

WDNR_SBL_98 03024WDORY.GPJ WL_DNR98.GDT 7/18/03

Boring Number **MW-33BR** Use only as an attachment to Form 4400-122.

Page 2 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Alt. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
3 SS	24	4	15											
		5	16											
		4	17											
		4	18											
		5	19											
4 SS	24	4	20	Same as above, but wet.	SM									
		3	21											
		4	22											
		4	23											
5 SS	24	50/0	25	Hit a rock, auger through.										
			26											
			27											
			28											
			29											
6 SS	24	8	30	SILTY SAND WITH GRAVEL (SM), 70% fine to medium sand, 15% gravel, 15% fines, nonplastic, 10YR 4/3 brown, wet, dense.										
		20	31											
		19	32											
		27	33											
			34											
7 SS	24	10	35		SM									
		17	36											
		19	37											
		24	38											
			39											
	40													

WDNR_SBL_98_03024WDYR.GPJ WI_DNR98.GDT 7/18/03

Boring Number **MW-33BR** Use only as an attachment to Form 4400-122.

Page 3 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
8 SS	24	18 20 28 39	41	Same as above.										
9 SS	24	27 50/2	45		SM									
10 SS	24	7 50/1	53	WEATHERED SANDSTONE, 95% poorly graded medium sand, 5% fines, white to brown, well sorted and rounded, poorly cemented.										
			56	End of boring at 56 feet.										

WDNR_SBL_98 03024WDYR.GPJ WL_DNR98.GDT 7/18/03

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name Alliant Energy - Columbia	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-33AR
Facility License, Permit or Monitoring No. 03025	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input checked="" type="checkbox"/> Lat. _____ Long. _____ or	Wis. Unique Well No. PE223 DNR Well Number 138
Facility ID 111049180	St. Plane 542,663 ft. N, 2,123,584 ft. E. S/C/N	Date Well Installed 04/09/2003
Type of Well Well Code 71/dw	Section Location of Waste/Source NE 1/4 of SW 1/4 of Sec. 27, T. 12 N, R. 9 E W	Well Installed By: (Person's Name and Firm) R. Fischer
Distance from Waste/Source 500 ft. Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input checked="" type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number Boart Longyear

A. Protective pipe, top elevation 808.09 ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation 808.29 ft. MSL	2. Protective cover pipe: a. Inside diameter: 4.0 in. b. Length: 7.0 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation 805.4 ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom 804.4 ft. MSL or 1.0 ft.	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>
13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. 10.5 Lbs/gal mud weight . . . Bentonite slurry <input checked="" type="checkbox"/> 31 d. _____ % Bentonite . . . Bentonite-cement grout <input type="checkbox"/> 50 e. 3.5 Ft ³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input checked="" type="checkbox"/> 02 Gravity <input type="checkbox"/> 08
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	6. Bentonite seal: a. Bentonite granules <input checked="" type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	7. Fine sand material: Manufacturer, product name & mesh size a. #7 Badger b. Volume added 0.5 ft ³
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. #40 Badger b. Volume added 4.5 ft ³
17. Source of water (attach analysis, if required): _____	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
E. Bentonite seal, top 794.4 ft. MSL or 11.0 ft.	10. Screen material: PVC a. Screen Type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
F. Fine sand, top 789.4 ft. MSL or 16.0 ft.	b. Manufacturer Boart Longyear c. Slot size: 0.010 in. d. Slotted length: 10.0 ft.
G. Filter pack, top 788.4 ft. MSL or 17.0 ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>
H. Screen joint, top 787.4 ft. MSL or 18.0 ft.	
I. Well bottom 777.4 ft. MSL or 28.0 ft.	
J. Filter pack, bottom 776.4 ft. MSL or 29.0 ft.	
K. Borehole, bottom 776.4 ft. MSL or 29.0 ft.	
L. Borehole, diameter 8.0 in.	
M. O.D. well casing 2.37 in.	
N. I.D. well casing 2.06 in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature *R. Fischer* Firm **RMT, Inc.** Tel: _____ Fax: _____

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name Alliant Energy - Columbia	County Columbia	Well Name MW-33AR	
Facility License, Permit or Monitoring Number 03025	County Code 11	Wis. Unique Well Number PE223	DNR Well Number 138

1. Can this well be purged dry? Yes No
2. Well development method:
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed, and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - other _____ _____
3. Time spent developing well **60 min.**
4. Depth of well (from top of well casing) **31.3 ft.**
5. Inside diameter of well **2.06 in.**
6. Volume of water in filter pack and well casing **6.0 gal.**
7. Volume of water removed from well **35.0 gal.**
8. Volume of water added (if any) **0.0 gal.**
9. Source of water added _____
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 23.47 ft.	23.62 ft.
Date	b. 4/10/2003	4/10/2003
Time	c. 08:50 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	11:50 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	0.0 inches	0.0 inches
13. Water clarity (Describe)	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 Opaque, brown	Clear <input type="checkbox"/> 2 0 Turbid <input checked="" type="checkbox"/> 2 5 Slight, tan

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	72 mg/l
15. COD	mg/l	mg/l

16. Well developed by: Person's Name and Firm

Peter M. Chase
RMT, Inc.

17. Additional comments on development:
Pumped dry 3 times.

Facility Address or Owner/Responsible Party Address

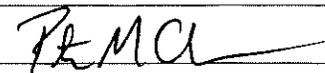
Name: **Peter M. Chase**

Firm: **RMT, Inc.**

Street: **744 Heartland Tr.**

City/State/Zip: **Madison, WI 53717**

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: **Peter M. Chase**

Firm: **RMT, Inc.**

NOTE: See instructions for more information including a list of county codes and well type codes.

SUBSTATION

ASH POND
DISCHARGE
DRAINAGE DITCH
ERR
B# 34A&B

medium to
coarse sand
and gravel

fill-
fine to
medium
sand

fine to
medium
sand

dstone

Scale:

Horizontal 1"=100'

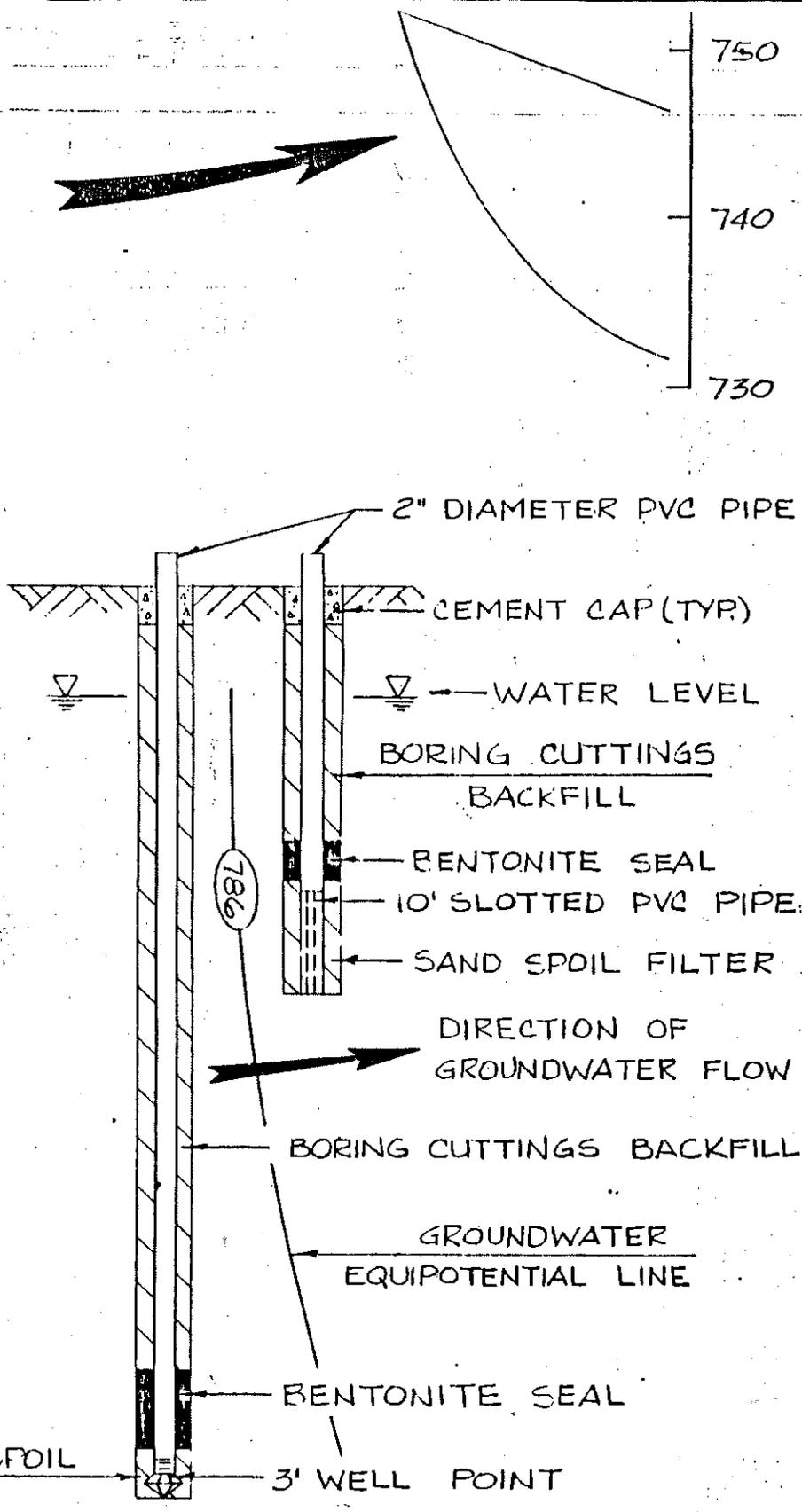
Vertical 1"=10'

No legend available

Warzyn Engineering Inc.
Geologic Cross Sections

Drawing No. C7134-11

Date 1-20-78



TYPICAL MONITORING WELL DETAIL

NOT TO SCALE

Date - 1-20-78 Drawing No. 7134-9

Warzyn Engineering Inc.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station SCS#: 25217156.01		License/Permit/Monitoring Number		Boring Number MW-309	
Boring Drilled By: Name of crew chief (first, last) and Firm Mark Crampton Badger State Drilling, Co.		Date Drilling Started 2/13/2018		Date Drilling Completed 2/14/2018	
Drilling Method hollow stem auger		WI Unique Well No. VR111		DNR Well ID No.	
Common Well Name MW-309		Final Static Water Level 26.7 Feet MSL		Surface Elevation 809.88 Feet MSL	
Borehole Diameter 8.5 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,448 N, 2,124,151 E S/C/N		Lat		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of SE 1/4 of Section 27, T 12 N, R 9 E		Long		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Columbia		County Code 11	
				Civil Town/City/ or Village Town of Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	Hydrovaced boring to 8.5 below ground surface; open hole.										
			2											
			3											
			4											
			5											
			6											
			7											
			8											
S1	20	11 14 18	9	POORLY GRADED SAND, fine to coarse, yellow, (10YR 7/6), rounded grains.					N/A	M				
S2	20	12 15 20 28	12	Same but with trace gravel.	SP				N/A	M				
S3	24	16 20 26	14	Same as above but with no gravel.					N/A	M				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number		MW-309		Use only as an attachment to Form 4400-122.				Page 2 of 2								
Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments		
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200			
S4	22	11 17 32 41	16 17	POORLY GRADED SAND, fine to coarse, yellow, (10YR 7/6), rounded grains, trace silt.				N/A	M							
S5		22 29 36	18 19 20					N/A	M							
S6	24	18 20 28 36	21 22					N/A	M							
S7		18 24 32	23 24 25					N/A	M							
S8	22	14 18 30 40	26 27					SP				N/A	W		Depth to water at ~ 26 feet.	
S9	22	22 32 34	28 29 30									N/A	W			
			31 32 33 34 35 36													
								End of Boring at 36.5 feet bgs.								

Route to: Watershed/Wastewater Remediation/Redevelopment Waste Management Other

Facility/Project Name WPL-Columbia Generating Station	Local Grid Location of Well 543447.673 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 2124151.113 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-309
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ " Long. _____ " or _____ " or _____ "	Wis. Unique Well No. VR111
Facility ID	St. Plane _____ ft. N. _____ ft. E. S/C/N	Date Well Installed <u>02</u> / <u>14</u> / <u>2018</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. <u>27</u> , T. <u>12</u> N, R. <u>09</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Mark Crampton
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input checked="" type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____
Enf. Stds. Apply <input checked="" type="checkbox"/>		Badger State Drilling Co., Inc.

<p>A. Protective pipe, top elevation --- 813.59 ft. MSL</p> <p>B. Well casing, top elevation --- 813.28 ft. MSL</p> <p>C. Land surface elevation --- 809.88 ft. MSL</p> <p>D. Surface seal, bottom --- 807.61 ft. MSL or --- 2.27 ft.</p>	<p>1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe: a. Inside diameter: --- 6 in. b. Length: --- 5 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/> d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____</p> <p>3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/></p> <p>4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 30 Filter Sand (#5) Other <input checked="" type="checkbox"/></p> <p>5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. ___ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 35 c. ___ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 31 d. ___ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 50 e. <u>0.342</u> Ft³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08</p> <p>6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. Other <input type="checkbox"/></p> <p>7. Fine sand material: Manufacturer, product name & mesh size a. <u>RW Sidley #7 (1 bag)</u> <input checked="" type="checkbox"/> b. Volume added _____ ft³</p> <p>8. Filter pack material: Manufacturer, product name & mesh size a. <u>RW Sidley #5 (6 bags)</u> <input checked="" type="checkbox"/> b. Volume added _____ ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/></p> <p>10. Screen material: PVC a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/> b. Manufacturer <u>Monoflex</u> c. Slot size: <u>0.010</u> in. d. Slotted length: <u>10</u> ft.</p> <p>11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/></p>
---	--

12. USCS classification of soil near screen:
GP GM GC GW SW SP
SM SC ML MH CL CH
Bedrock

13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 50
Hollow Stem Auger 41
Other

15. Drilling fluid used: Water 02 Air 01
Drilling Mud 03 None 99

16. Drilling additives used? Yes No
Describe: _____

17. Source of water (attach analysis, if required): _____

<p>E. Bentonite seal, top --- 807.61 ft. MSL or --- 2.27 ft.</p> <p>F. Fine sand, top --- 788.61 ft. MSL or --- 21.27 ft.</p> <p>G. Filter pack, top --- 786.61 ft. MSL or --- 23.27 ft.</p> <p>H. Screen joint, top --- 785.61 ft. MSL or --- 24.27 ft.</p> <p>I. Well bottom --- 775.61 ft. MSL or --- 34.27 ft.</p> <p>J. Filter pack, bottom --- 773.38 ft. MSL or --- 36.5 ft.</p> <p>K. Borehole, bottom --- 773.38 ft. MSL or --- 36.5 ft.</p> <p>L. Borehole, diameter --- 8.5 in.</p> <p>M. O.D. well casing --- 2.38 in.</p> <p>N. I.D. well casing --- 2.01 in.</p>
--

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature:  Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station	County Name Columbia	Well Name MW-309	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VR111	DNR Well ID Number _____

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input type="checkbox"/>	4 1
surged with bailer and pumped	<input checked="" type="checkbox"/>	6 1
surged with block and bailed	<input type="checkbox"/>	4 2
surged with block and pumped	<input type="checkbox"/>	6 2
surged with block, bailed and pumped	<input type="checkbox"/>	7 0
compressed air	<input type="checkbox"/>	2 0
bailed only	<input type="checkbox"/>	1 0
pumped only	<input type="checkbox"/>	5 1
pumped slowly	<input type="checkbox"/>	5 0
Other _____	<input type="checkbox"/>	

3. Time spent developing well _____ 75 min.

4. Depth of well (from top of well casing) _____ 37.67 ft.

5. Inside diameter of well _____ 2.0 in.

6. Volume of water in filter pack and well casing _____ 7.04 gal.

7. Volume of water removed from well _____ 50.0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 30.07 ft.	_____ 32.29 ft.
Date	b. <u>02</u> / <u>16</u> / <u>2018</u>	<u>02</u> / <u>16</u> / <u>2018</u>
	m m d d y y y y	m m d d y y y y
Time	c. <u>12</u> : <u>47</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>13</u> : <u>50</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
	Brown _____	_____
	Silty _____	_____

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids _____ mg/l _____ mg/l

15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Kyle Last Name: Kramer

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:
Two cycles of well purging dry and recharging.

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

Street: W8375 Murray Road

City/State/Zip: Pardeeville, Wisconsin 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Kyle Kramer

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

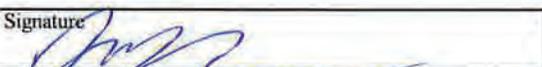
NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station SCS#: 25217156.01		License/Permit/Monitoring Number		Boring Number MW-310	
Boring Drilled By: Name of crew chief (first, last) and Firm Dave Cruise Badger State Drilling, Co.		Date Drilling Started 2/13/2018		Date Drilling Completed 2/13/2018	
Drilling Method hollow stem auger		WI Unique Well No. VR110		DNR Well ID No.	
Common Well Name MW-310		Final Static Water Level 27.9 Feet MSL		Surface Elevation 810.96 Feet MSL	
Borehole Diameter 8.5 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,332 N, 2,123,880 E S/C/N		Lat _____ "		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of SE 1/4 of Section 27, T 12 N, R 9 E		Long _____ "		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Columbia		County Code 11	
				Civil Town/City/ or Village Town of Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	Hydrovaced boring to 8 feet below ground surface; open hole.										
			2											
			3											
			4											
			5											
			6											
			7											
			8											
S1	18	46 88	9	POORLY GRADED SAND AND GRAVEL, fine to medium sand, coarse gravel, brownish yellow, (10YR 6/6), angular gravel, round sand.					N/A	M				
			10											
S2	24	1827 3840	11	Same as above but trace gravel,	SP				N/A	M				
			12											
			13											
S3	24	2632 4038	14						N/A	M				
			15											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
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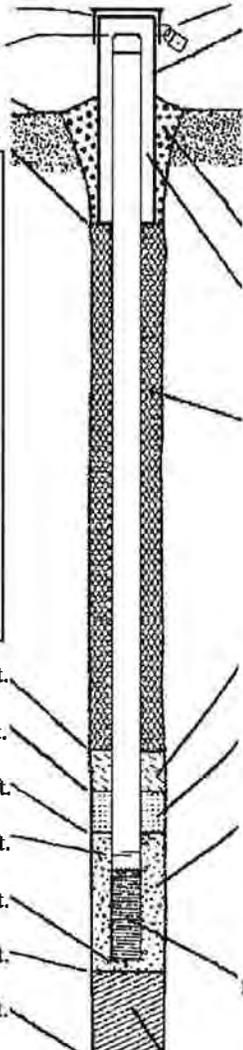
This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-310** Use only as an attachment to Form 4400-122. Page 2 of 2

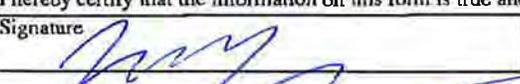
Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments		
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200			
S4	10	25 50/5	16 17	POORLY GRADED SAND AND GRAVEL, fine to medium sand, coarse gravel, brownish yellow, (10YR 6/6), angular gravel, round sand.	SP			N/A	M					Tough drilling		
S5	24	38 60 50/4	19 20					N/A	M							
S6	12	38 50/5	21 22					N/A	M							
S7	24	32 46 50/4	23 24 25					N/A	M							
S8	16	25 40 50/5	26 27					N/A	W					Depth to water at -26 feet		
S9		32 25 50/5	28 29 30					N/A	W							
			31 32 33 34 35 36													
End of Boring at 36.5 feet bgs.																

Route to: Watershed/Wastewater Remediation/Redevelopment Waste Management Other

Facility/Project Name WPL-Columbia Generating Station	Local Grid Location of Well 543331.971 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 2123879.85 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-310
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ " Long. _____ "	Wis. Unique Well No. <input type="checkbox"/> DNR Well ID No. <input type="checkbox"/> VR110
Facility ID	St. Plane _____ ft. N. _____ ft. E. S/C/N	Date Well Installed 02 / 13 / 2018 m m d d y y y y
Type of Well Well Code 11 / MW	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 27, T. 12 N, R. 09 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Dave Cruise
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source <input type="checkbox"/> Upgradient <input type="checkbox"/> Sidegradient <input checked="" type="checkbox"/> Downgradient <input type="checkbox"/> Not Known	Gov. Lot Number _____
Enf. Stds. Apply <input checked="" type="checkbox"/>		Badger State Drilling Co., Inc.

<p>A. Protective pipe, top elevation --- 813.93 ft. MSL</p> <p>B. Well casing, top elevation --- 813.62 ft. MSL</p> <p>C. Land surface elevation --- 810.96 ft. MSL</p> <p>D. Surface seal, bottom --- 809.21 ft. MSL or --- 1.75 ft.</p> <div style="border: 1px solid black; padding: 5px;"> <p>12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input checked="" type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis performed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 5 0 Hollow Stem Auger <input checked="" type="checkbox"/> 4 1 Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1 Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe ---</p> <p>17. Source of water (attach analysis, if required): ---</p> </div> <p>E. Bentonite seal, top --- 809.21 ft. MSL or --- 1.75 ft.</p> <p>F. Fine sand, top --- 789.21 ft. MSL or --- 21.75 ft.</p> <p>G. Filter pack, top --- 787.21 ft. MSL or --- 23.75 ft.</p> <p>H. Screen joint, top --- 785.21 ft. MSL or --- 25.75 ft.</p> <p>I. Well bottom --- 775.21 ft. MSL or --- 35.75 ft.</p> <p>J. Filter pack, bottom --- 774.46 ft. MSL or --- 36.5 ft.</p> <p>K. Borehole, bottom --- 774.46 ft. MSL or --- 36.5 ft.</p> <p>L. Borehole, diameter --- 8.5 in.</p> <p>M. O.D. well casing --- 2.38 in.</p> <p>N. I.D. well casing --- 2.01 in.</p>	 <p>1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Protective cover pipe: a. Inside diameter: --- 6 in. b. Length: --- 5 ft. c. Material: Steel <input checked="" type="checkbox"/> 0 4 Other <input type="checkbox"/> d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____</p> <p>3. Surface seal: Bentonite <input checked="" type="checkbox"/> 3 0 Concrete <input type="checkbox"/> 0 1 Other <input type="checkbox"/></p> <p>4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 3 0 Filter Sand (#5) <input checked="" type="checkbox"/></p> <p>5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 3 3 b. ___ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 3 5 c. ___ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 3 1 d. ___ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 5 0 e. 0.369 Ft³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 0 1 Tremie pumped <input type="checkbox"/> 0 2 Gravity <input checked="" type="checkbox"/> 0 8</p> <p>6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 3 3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 3 2 c. Other <input type="checkbox"/></p> <p>7. Fine sand material: Manufacturer, product name & mesh size a. RW Sidley #7 (1 bag) <input checked="" type="checkbox"/> b. Volume added _____ ft³</p> <p>8. Filter pack material: Manufacturer, product name & mesh size a. RW Sidley #5 (7 bags) <input checked="" type="checkbox"/> b. Volume added _____ ft³</p> <p>9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3 Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4 Other <input type="checkbox"/></p> <p>10. Screen material: PVC a. Screen type: Factory cut <input checked="" type="checkbox"/> 1 1 Continuous slot <input type="checkbox"/> 0 1 Other <input type="checkbox"/> b. Manufacturer Monoflex c. Slot size: 0.010 in. d. Slotted length: --- 10 ft.</p> <p>11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 1 4 Other <input type="checkbox"/></p>
--	---

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station	County Name Columbia	Well Name MW-310	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VR110	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other _____

3. Time spent developing well _____ 171 min.

4. Depth of well (from top of well casing) _____ 38 41 ft.

5. Inside diameter of well _____ 2 0 in.

6. Volume of water in filter pack and well casing _____ 7 28 gal.

7. Volume of water removed from well _____ 60 0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

17. Additional comments on development:
Four cycles of well purging dry and recharging.

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 30 _____ 55 ft.	_____ 32 _____ 30 ft.
Date	b. <u>2</u> / <u>16</u> / <u>2018</u>	<u>2</u> / <u>16</u> / <u>2018</u>
Time	c. <u>9</u> : <u>45</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>12</u> : <u>36</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids _____ mg/l _____ mg/l

15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Kyle Last Name: Kramer
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact / Owner / Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

Street: W8375 Murray Road

City/State/Zip: Pardeeville, Wisconsin 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Kyle Kramer

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station SCS#: 25217156.01		License/Permit/Monitoring Number		Boring Number MW-311	
Boring Drilled By: Name of crew chief (first, last) and Firm Mark Crampton Badger State Drilling, Co.		Date Drilling Started 2/14/2018		Date Drilling Completed 2/14/2018	
Drilling Method hollow stem auger		WI Unique Well No. VR112		DNR Well ID No.	
Common Well Name MW-311		Final Static Water Level 23.5 Feet MSL		Surface Elevation 806.53 Feet MSL	
Borehole Diameter 8.5 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 542,874 N, 2,123,437 E S/C/N		Lat _____ "		Feet <input type="checkbox"/> N	
NE 1/4 of SW 1/4 of Section 27, T 12 N, R 9 E		Long _____ "		Feet <input type="checkbox"/> S	
Facility ID		County Columbia		County Code 11	
				Civil Town/City/ or Village Town of Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1-8	Hydrovaced boring to 8 feet below ground surface; open hole.										
S1	24	12 16 20 24	9-10	POORLY GRADED SAND AND GRAVEL, fine to coarse sand, coarse gravel, yellow, (10YR 7/6), rounded sand, angular gravel.					N/A	M				
S2	24	17 27 30 38	12	Same as above but with trace silt.	SP				N/A	M				
S3	24	18 26 31	14						N/A	M				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature:  Firm: SCS Engineers
2830 Dairy Drive Madison, WI 53711 Tel: (608) 224-2830 Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-311**

Use only as an attachment to Form 4400-122.

Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			16	POORLY GRADED SAND AND GRAVEL, fine to coarse sand, coarse gravel, yellow, (10YR 7/6), rounded sand, angular gravel, trace silt.										
S4	24	18 30 40 50/5	17						N/A	M				
S5	24	30 40 45	19						N/A	M				
S6	8	45 34 50/3	22						N/A	M+/W				
S7	18	46 50/5	24			SP			N/A	W				Depth to water at ~25 feet.
S8	20	46 54 54 50/4	27						N/A	W				
S9	24	25 38 50/5	29		Same as above but with thin silt seams.				N/A	W				
			30											
			31											
			32											
			33	End of Boring at 33 feet bgs.										

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Columbia Generating Station	Local Grid Location of Well 542874.39 ft. <input checked="" type="checkbox"/> N. <input checked="" type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W. 2123437.50 ft.	Well Name MW-311
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. " Long. " or	Wis. Unique Well No. DNR Well ID No. VR112
Facility ID	St. Plane ft. N, ft. E. S/C/N	Date Well Installed 02 / 14 / 2018 m m d d y y y y
Type of Well Well Code 11 / MW	Section Location of Waste/Source NE 1/4 of SW 1/4 of Sec. 27, T. 12 N, R. 09 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Mark Crampton
Distance from Waste/Source ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input checked="" type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number
Enf. Stds. Apply <input checked="" type="checkbox"/>		Badger State Drilling Co., Inc.

A. Protective pipe, top elevation --- 810.05 ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation --- 809.74 ft. MSL	2. Protective cover pipe: a. Inside diameter: --- 6 in. b. Length: --- 5 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation --- 806.53 ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom --- 803.55 ft. MSL or --- 2.98 ft.	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input checked="" type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 30 Filter Sand (#5) <input checked="" type="checkbox"/>
13. Sieve analysis performed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. ___ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 35 c. ___ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 31 d. ___ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 50 e. 0.288 Ft ³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. ___ Other <input type="checkbox"/>
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	7. Fine sand material: Manufacturer, product name & mesh size a. RW Sidley #7 (1 bag) <input checked="" type="checkbox"/> b. Volume added ___ ft ³
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	8. Filter pack material: Manufacturer, product name & mesh size a. RW Sidley #5 (6 bags) <input checked="" type="checkbox"/> b. Volume added ___ ft ³
Describe -- 17. Source of water (attach analysis, if required):	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
E. Bentonite seal, top --- 803.55 ft. MSL or --- 2.98 ft.	10. Screen material: PVC a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
F. Fine sand, top --- 787.55 ft. MSL or --- 18.98 ft.	b. Manufacturer Monoflex c. Slot size: 0.010 in. d. Slotted length: --- 10 ft.
G. Filter pack, top --- 785.55 ft. MSL or --- 20.98 ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>
H. Screen joint, top --- 783.55 ft. MSL or --- 22.98 ft.	
I. Well bottom --- 773.55 ft. MSL or --- 32.98 ft.	
J. Filter pack, bottom --- 773.53 ft. MSL or --- 33 ft.	
K. Borehole, bottom --- 773.53 ft. MSL or --- 33 ft.	
L. Borehole, diameter --- 8.5 in.	
M. O.D. well casing --- 2.38 in.	
N. I.D. well casing --- 2.01 in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature _____ Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name WPL - Alliant Columbia Generating Station	County Name Columbia	Well Name MW-311	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VR112	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input type="checkbox"/>	4 1
surged with bailer and pumped	<input checked="" type="checkbox"/>	6 1
surged with block and bailed	<input type="checkbox"/>	4 2
surged with block and pumped	<input type="checkbox"/>	6 2
surged with block, bailed and pumped	<input type="checkbox"/>	7 0
compressed air	<input type="checkbox"/>	2 0
bailed only	<input type="checkbox"/>	1 0
pumped only	<input type="checkbox"/>	5 1
pumped slowly	<input type="checkbox"/>	5 0
Other _____	<input type="checkbox"/>	

3. Time spent developing well _____ 168 min.

4. Depth of well (from top of well casing) _____ 36 19 ft.

5. Inside diameter of well _____ 2 0 in.

6. Volume of water in filter pack and well casing _____ 8 74 gal.

7. Volume of water removed from well _____ 100 0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 26 _____ 75 ft.	_____ 28 _____ 51 ft.
Date	b. <u>2</u> / <u>16</u> / <u>2018</u>	<u>2</u> / <u>16</u> / <u>2018</u>
Time	c. _____ 2 : 00 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 4 : 48 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

17. Additional comments on development:

16. Well developed by: Name (first, last) and Firm
First Name: Kyle Last Name: Kramer
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Columbia Dry Ash & Ash Pond Disposal Facilities

Street: W8375 Murray Road

City/State/Zip: Pardeeville, Wisconsin 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Kyle Kramer

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name COL	County Name Columbia	Well Name MW-317	
Facility License, Permit or Monitoring Number 03025	County Code 11	Wis. Unique Well Number VZ439	DNR Well ID Number --

1. Can this well be purged dry? Yes No
2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other
3. Time spent developing well 262 min.
4. Depth of well (from top of well casing) 44.3 ft.
5. Inside diameter of well 2.0 in.
6. Volume of water in filter pack and well casing 9.2 gal.
7. Volume of water removed from well 15.0 gal.
8. Volume of water added (if any) 0.0 gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

- | | | |
|--|---------------------------|--------------------------|
| | <u>Before Development</u> | <u>After Development</u> |
|--|---------------------------|--------------------------|
11. Depth to Water (from top of well casing)
- a. 35.23 ft. 43.17 ft.
- Date b. 05/20/2024 06/05/2024
m m d d y y y y m m d d y y y y
- Time c. 1:14 a.m. p.m. 12:30 a.m. p.m.
12. Sediment in well bottom 4.5 inches 1.5 inches
13. Water clarity
- | | |
|--|--|
| Clear <input type="checkbox"/> 1 0 | Clear <input type="checkbox"/> 2 0 |
| Turbid <input checked="" type="checkbox"/> 1 5 | Turbid <input checked="" type="checkbox"/> 2 5 |
| (Describe) | (Describe) |
| <u>Black</u> | <u>grayish brown</u> |
| <u></u> | <u>very turbid</u> |
| <u></u> | <u>no odor</u> |
| <u></u> | <u></u> |
- Fill in if drilling fluids were used and well is at solid waste facility:
14. Total suspended solids 495.00 mg/l -- mg/l
15. COD -- mg/l -- mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Bridget / Paul Last Name: Russell / Grover

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1314-1440): DTW: 35.23 / TD 44.3 / 4.5 inches sediment / 16 W in casing 10 ft filter pack = 9.12x10=91.2 gallons / black color and turbid / Developed for 86 min / Purged dry 3 times / Purged 4.5 gallons / light brown and turbid / DTW after: 37.64 / 0.5 inches of sediment / Bridget Russell

6/05/2024 (934-1230): DTW: -- / TD: 44.5 / volume of water in filter pack: 9.2 gallons / Developed for 176 minutes / Purged 10.5 gallons / grayish brown, very turbid, no odor / 1.5 inches of sediment / DTW 43.17 / Paul Grover

Name and Address of Facility Contact / Owner / Responsible Party

First Name: Brian Last Name: Clepper

Facility/Firm: Alliant Energy - Columbia

Street: W8375 Murray Rd

City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Bridget Russell

Print Name: Bridget Russell and Paul Grover

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater Waste Management
 Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-317	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/11/2024		Date Drilling Completed 4/11/2024	
Drilling Method rotasonic		WI Unique Well No. VZ439		DNR Well ID No.	
Common Well Name		Final Static Water Level 33.0 Feet MSL		Surface Elevation 816.58 Feet MSL	
Borehole Diameter 6.0 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,466 N, 2,124,519 E S/C/N		Lat 45° 16' 16.76"		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 24' 7.50"		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
				Civil Town/City/ or Village Town of Pacific	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S1	33		1	ORGANIC SILT (OL), dark brown (10YR 3/3), organics (roots).	OL										
			2	POORLY GRADED SAND (SP) and gravel, dark yellowish brown (10YR 4/6), fine to coarse sand and trace fine to coarse gravel, rounded sand, subrounded to subangular gravel (fill), , broken up rock at bottom.	SP						M			Soil from 0-10' extremely hot, had to collect in bucket. Steaming when dumped on table.	
S2	60		5	POORLY GRADED SAND (SP), light yellowish brown and dark yellowish brown (10YR 6/4 and 4/4), fine to medium sand, trace silt, fine to coarse gravel, rounded sand (native soil), subrounded to rounded gravel (alluvium).											
			8	Yellowish brown	SP					1.0	M				
S3	32		10	Red brown transition layer											
			13	SILTY SAND (SM), very pale brown (10YR 7/4), very fine to fine sand, silt, trace fine to coarse angular gravel.	SM					0.5	M		Samples from: 0-11", 11"-5", 5-7.5", 7.5-10", 10-12.5", 12.5-15", 15-20"		

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Druell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
------------------------------------	--	--------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-317** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S4	24		16		SM				1.0	M				
			17											
S5	34		18	POORLY GRADED SAND (SP), yellowish brown (10YR 5/4), trace silt, trace fine to coarse subround gravel.	SP					M			Samples from: 20-22', 22-25', 25-27', 27-30'	
			19											
			20											
			21											
S6	44		22	SILTY SAND (SM), very pale brown and light yellowish brown (10YR 7/3 and 6/4), very fine to fine sand.	SM					M/W			30-35' fell out, likely in the saturated "silty quicksand-like zone" Going to 40' with catcher bit.	
			23											
			24											
			25											
			26											
			27											
S7	11	0 (first attempt) / 11 (second)	27	LEAN CLAY (CL), light yellowish brown (10YR 6/4), trace red mottling. seam of silt and trace sand	CL					M/W				
			28											
S8	47		30	SILTY SAND (SM), pale brown (10YR 6/3), very fine to fine sand, clay, trace fine gravel, rounded sand, rounded gravel.	SM				0.25	M/W			Hole sluffed back in to 33' after drilling to 40' in saturated zone.	
			31											
			32											
			33											
			34											
			35											
			36											
			37											
38														
S8	47		35	POORLY GRADED SAND (SP), very pale brown (10YR 7/3 and 8/4), very fine to coarse sand, fine to coarse gravel and trace silt (outwash), rounded sand, rounded gravel.	SP					W				
			36											
			37											
			38											
			39											
			40											

Boring Number **MW-317** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	43		41 42 43 44 45	Yellow (2.5Y 7/6), Iron and grey mottling	SP								Had to drill to 45' to clear out way and prevent sluffing. Well to be set at 42'. Sampled from: 40-41', 41-45'.	
				End of boring at 45'.										

Facility/Project Name WPL-COL Dry Ash	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-317
Facility License, Permit or Monitoring No. 03025	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. 45° 16' 16.7629" Long. -70° 24' 07.5014" or	Wis. Unique Well No. <u>VZ439</u> DNR Well ID No. _____
Facility ID 111049180	St. Plane 543466.051 ft. N, 2124519.41 ft. E. S/C/N	Date Well Installed <u>04</u> / <u>11</u> / <u>2024</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source NW 1/4 of NE 1/4 of Sec. <u>27</u> , T. <u>12</u> N, R. <u>9</u> E <input checked="" type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <u>Adam Sweet</u>
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Horizon _____
Enf. Stds. Apply <input checked="" type="checkbox"/>	Gov. Lot Number _____	

- A. Protective pipe, top elevation --- 819.37 ft. MSL
- B. Well casing, top elevation --- 818.88 ft. MSL
- C. Land surface elevation --- 816.6 ft. MSL
- D. Surface seal, bottom --- 816.6 ft. MSL or --- 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

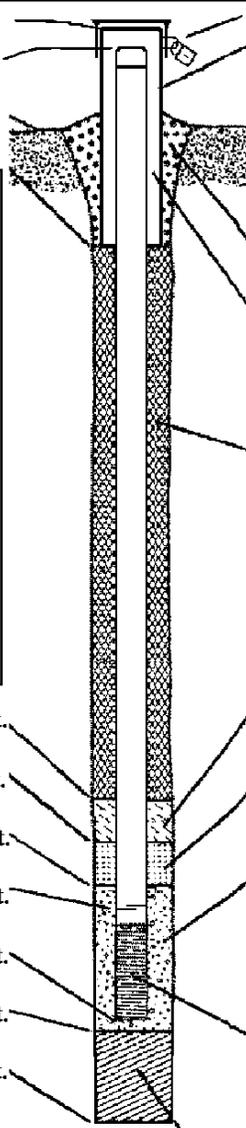
13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
Rotosonic Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis, if required):
Tap water horizon office



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: _____ in.
 - b. Length: _____ ft.
 - c. Material: Steel 0 4
anodized aluminum Other
 - d. Additional protection? Yes No
 If yes, describe: cement blocks
- 3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
- 4. Material between well casing and protective pipe: Bentonite 3 0
Red flint #40 Other
- 5. Annular space seal: a. Granular/Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. 10 % Bentonite Bentonite-cement grout 5 0
 e. 5.347 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
- 6. Bentonite seal: a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 3 2
 c. _____ Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint #15
 b. Volume added 0.5 ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
 a. Red Flint #40
 b. Volume added 1.5 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC schedule 40
 a. Screen type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Johnson
 c. Slot size: 10 slot
 d. Slotted length: 10 ft.
- 11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top --- 793.6 ft. MSL or --- 23 ft.
- F. Fine sand, top --- 788.6 ft. MSL or --- 28 ft.
- G. Filter pack, top --- 786.6 ft. MSL or --- 30 ft.
- H. Screen joint, top --- 784.6 ft. MSL or --- 32 ft.
- I. Well bottom --- 774.6 ft. MSL or --- 42 ft.
- J. Filter pack, bottom --- 771.6 ft. MSL or --- 45 ft.
- K. Borehole, bottom --- 771.6 ft. MSL or --- 45 ft.
- L. Borehole, diameter --- 6.0 in.
- M. O.D. well casing --- 2.25 in.
- N. I.D. well casing --- 2.0 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Budget Brunell Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-318	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/10/2024		Date Drilling Completed 4/10/2024	
Drilling Method rotasonic		WI Unique Well No. VZ438		DNR Well ID No.	
Common Well Name		Final Static Water Level 31.0 Feet MSL		Surface Elevation 818.04 Feet MSL	
Borehole Diameter 4.5/6 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,484 N, 2,124,661 E S/C/N		Lat 45° 16' 16.27"		Feet <input type="checkbox"/> N <input type="checkbox"/> S	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 24' 0.98"		Feet <input type="checkbox"/> E <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
		Civil Town/City/ or Village Town of Pacific			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	35		1	ORGANIC SILT (OL), very dark greyish brown (10YR 3/2), gravel, (topsoil).	OL									Samples: 0-11", 11"-5', 5-10', 10-15', 15-19', 19-20"
			2	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6), trace fine to coarse gravel, silt, and roots.								M		
S2	33		3											
			4	some dark yellowish brown (10YR 3/4).										
			5	trace black mottling.							M			
S3	25		6											
			7	trace roots (fill).	SP									
			8											
			9											
			10								M			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Powell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
------------------------------------	--	--------------

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Boring Number **MW-318** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S4	23		16												
			17		SP										
S5	15		18												
			19	Very pale brown (10YR 7/4)											
			20	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6 and 3/4) silt, and roots, trace mottling.											
			21												
			22												
S6	37		23		SP										
			24												
			25	trace gravel, fine to coarse subround black sand											
			26												
S7	44		27												
			28	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), formation change with color change, very fine to fine rounded sand.	SP										
			29												
			30	LEAN CLAY (CL), very pale brown (10YR 7/4), silt seams.											
S8	2		31												
			32												
			33		CL					1.0	M/W				
			34	organic odor											
			35	SILT (ML), very pale brown (10YR 7/4), trace sand, very soft.											
			36												
			37												
			38		ML										
			39												
			40												

Samples: 20-25',
25-27.5',
27.5-30', 30-35',
35-40' 4.5"
diameter from
now on using
water

DTW- 31'/32'
clay very soft

35-40' almost no
recovery.

Boring Number **MW-318** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S9	17		41		ML									
			42	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), fine to medium sand, fine to coarse gravel, rounded sand, rounded gravel.	SP								Samples: 40-41', 41-43'.	
			43	End of boring at 43'										

Facility/Project Name WPL-COL Dry Ash	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-318
Facility License, Permit or Monitoring No. 03025	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. 45° 16' 16.2735" Long. -70° 24' 00.9814" or	Wis. Unique Well No. <u>VZ438</u> DNR Well ID No. _____
Facility ID 111049180	St. Plane 543484.464 ft. N, 2124661.211 ft. E. S/C/N	Date Well Installed <u>04</u> / <u>10</u> / <u>2024</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 9 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Adam Sweet
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Horizon _____
Enf. Stds. Apply <input checked="" type="checkbox"/>	Gov. Lot Number _____	

- A. Protective pipe, top elevation --- 820.94 ft. MSL
- B. Well casing, top elevation --- 820.37 ft. MSL
- C. Land surface elevation --- 818.0 ft. MSL
- D. Surface seal, bottom --- 818.0 ft. MSL or --- 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

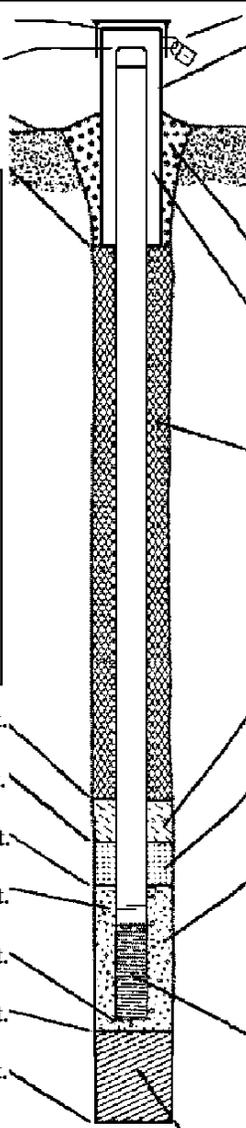
13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
rotosonic Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis, if required):
Tap water horizon office



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: _____ in.
 - b. Length: _____ ft.
 - c. Material: Steel 0 4
anodized aluminum Other
 - d. Additional protection? Yes No
 If yes, describe: cement blocks
- 3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
- 4. Material between well casing and protective pipe: Bentonite 3 0
Red flint #40 Other
- 5. Annular space seal: a. Granular/Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. 10 % Bentonite Bentonite-cement grout 5 0
 e. 5.347 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
- 6. Bentonite seal: a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 3 2
 c. _____ Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint #15
 b. Volume added 0.5 ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
 a. Red Flint #40
 b. Volume added 1.5 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC schedule 40
 a. Screen type: Factory cut 1 1
 Continuous slot 0 1
10 slot Other
 b. Manufacturer Johnson
 c. Slot size: 0. _____ 1 in.
 d. Slotted length: _____ 10 ft.
- 11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top --- 797.0 ft. MSL or --- 21 ft.
- F. Fine sand, top --- 792.0 ft. MSL or --- 26 ft.
- G. Filter pack, top --- 790.0 ft. MSL or --- 28 ft.
- H. Screen joint, top --- 787.4 ft. MSL or --- 30.6 ft.
- I. Well bottom --- 777.4 ft. MSL or --- 40.6 ft.
- J. Filter pack, bottom --- 775 ft. MSL or --- 43 ft.
- K. Borehole, bottom --- 775.0 ft. MSL or --- 43 ft.
- L. Borehole, diameter --- 6.0 in.
- M. O.D. well casing --- 2.25 in.
- N. I.D. well casing --- 2.0 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Bridget Brunell Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name COL	County Name Columbia	Well Name MW-318	
Facility License, Permit or Monitoring Number 03025	County Code 11	Wis. Unique Well Number VZ438	DNR Well ID Number _____

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed	<input checked="" type="checkbox"/> 4 1
surged with bailer and pumped	<input checked="" type="checkbox"/> 6 1
surged with block and bailed	<input type="checkbox"/> 4 2
surged with block and pumped	<input type="checkbox"/> 6 2
surged with block, bailed and pumped	<input type="checkbox"/> 7 0
compressed air	<input type="checkbox"/> 2 0
bailed only	<input type="checkbox"/> 1 0
pumped only	<input type="checkbox"/> 5 1
pumped slowly	<input type="checkbox"/> 5 0
Other _____	<input type="checkbox"/> _____

3. Time spent developing well _____ 149 min.

4. Depth of well (from top of well casing) _____ 42.95 ft.

5. Inside diameter of well _____ 2.0 in.

6. Volume of water in filter pack and well casing _____ 8.27 gal.

7. Volume of water removed from well _____ 13.0 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____ N/A

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 36 _____ 6 ft.	_____ 41 _____ 97 ft.
Date	b. <u>05</u> / <u>20</u> / <u>2024</u>	<u>06</u> / <u>05</u> / <u>2024</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 2 : 55 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 11 : 15 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	_____ 14 _____ 0 inches	_____ 1 _____ 5 inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input type="checkbox"/> 2 0 Turbid <input checked="" type="checkbox"/> 2 5 (Describe) _____
	very turbid _____ thick with sediment _____ brown _____	grayish brown _____ very turbid _____ no odor _____
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ 3410 _____ 0 mg/l	_____ -- _____ mg/l
15. COD	_____ -- _____ mg/l	_____ -- _____ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Bridget / Paul Last Name: Russell / Grover

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1455-1524): DTW: 36.6 / TD 42.95 / 14.0 inches of sediment / 8.27 gallons rose for volume in filter pack + casing = 8.27x10=82.7 gallons / brown color, thick with sediment and very turbid / Developed for 29 min / Purged dry 3 times / Purged 2.0 gallons / brown color, thick with sediment and very turbid / DTW after: 37.12 / 2.5 inches of sediment / Bridget Russell

6/05/2024 (915-1115): DTW: -- / TD: 43.1 / volume of water in filter pack: 8.3 gallons / Developed for 120 minutes / Purged 11 gallons / grayish brown, very turbid, no odor / DTW 41.97 / 1.5 inches of sediment / Paul Grover

Name and Address of Facility Contact / Owner / Responsible Party

First Name: Brian Last Name: Clepper

Facility/Firm: Alliant Energy - Columbia

Street: W8375 Murray Rd

City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Bridget Russell

Print Name: Bridget Russell and Paul Grover

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other N

Facility/Project Name WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00		License/Permit/Monitoring Number 03025		Boring Number MW-319	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration		Date Drilling Started 4/9/2024		Date Drilling Completed 4/9/2024	
Drilling Method rotasonic		WI Unique Well No. VZ437		DNR Well ID No.	
Common Well Name		Final Static Water Level 20.0 Feet MSL		Surface Elevation 825.70 Feet MSL	
Borehole Diameter 4.5/6 in.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location	
State Plane 543,488 N, 2,124,963 E S/C/N		Lat 45° 16' 14.12"		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E		Long -70° 23' 47.49"		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID 111049180		County Columbia		County Code 11	
		Civil Town/City/ or Village Town of Pacific			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	11		1	ORGANIC SILT (OL), dark brown (10YR 3/3), trace fine rounded sand, organics (roots).	OL									4.5" diameter rods 7' run for first run, 5' for following
			2	POORLY GRADED SAND (SP), yellowish brown (10YR 5/8), fine to coarse sand, fine to coarse gravel, angular gravel, rounded sand, trace silt.								M		
S2	11		3										Samples: 0-5", 5"-7", 7-12'	
			4	light gray (10YR 7/2), large subround cobbles, fine to coarse angular gravel (alluvium)	SP							M		
S3	0		5										No recovery 12-17' or 17-22',	
			6	no recovery										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Bridget Druell</i>	Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Tel: Fax:
------------------------------------	--	--------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-319** Use only as an attachment to Form 4400-122. Page **2** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S4	0		16 17 18 19 20 21												no water used in 12-22'.
S5	21		22 23 24 25 26	POORLY GRADED SAND (SP), pale brown (10YR 6/3), fine to medium sand, trace fine to coarse gravel, rounded sand, subangular gravel (alluvium)	SP						M				6" diameter rods 27' onward using water 22' onward
S6	11		27 28 29 30 31 32	SILTY SAND (SM), light yellowish brown (10YR 6/4), very fine to fine sand, trace medium to coarse sand, rounded sand. no medium to coarse sand							M/W				Samples from: 22-27', 27-32' 32-37' might have hit water, going to confirm with next 5' run. Water receding very shallow only on high sensitivity, stuck in casing.
S7	16		33 34 35 36 37		SM						M/W				Felt very different at 38'
S8	13		38 39 40								W				DTW at 38' measured at 20',

Boring Number **MW-319** Use only as an attachment to Form 4400-122. Page **3** of **3**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S9	43		41		SM				3.5	W				but stuck in casing	
			42												
			43												
			44												
			45												
			46	LEAN CLAY, yellowish brown (10yr 5/4), some red mottling	CL										
			47	Original End of boring at 47', ended up dropping to 50' when pulling rods. EOB at 50'.											
			48												
			49												
			50												

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name WPL-COL Dry Ash	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-319
Facility License, Permit or Monitoring No. 03025	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. 45° 16' 14.1238" Long. -70° 23' 47.4896" or	Wis. Unique Well No. <u>VZ437</u> DNR Well ID No. _____
Facility ID 111049180	St. Plane 543488.425 ft. N, 2124962.822 ft. E. S/C/N	Date Well Installed <u>04</u> / <u>9</u> / <u>2024</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 9 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Adam Sweet
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Horizon _____
Enf. Stds. Apply <input checked="" type="checkbox"/>	Gov. Lot Number _____	

- A. Protective pipe, top elevation --- 828.81 ft. MSL
- B. Well casing, top elevation --- 828.28 ft. MSL
- C. Land surface elevation --- 825.7 ft. MSL
- D. Surface seal, bottom --- 825.7 ft. MSL or --- 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

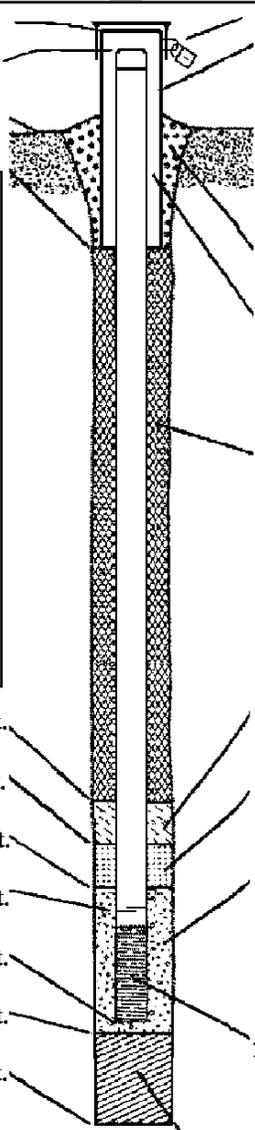
13. Sieve analysis performed? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
rotasonic Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis, if required):
 Tap water horizon office



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: _____ in.
 - b. Length: _____ ft.
 - c. Material: Steel 0 4
anodized aluminum Other
 - d. Additional protection? Yes No
 If yes, describe: cement blocks
- 3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
- 4. Material between well casing and protective pipe: Bentonite 3 0
Red flint #40 Other
- 5. Annular space seal: a. Granular/Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. 10 % Bentonite Bentonite-cement grout 5 0
 e. 5.347 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
- 6. Bentonite seal: a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 3 2
 c. _____ Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint #15
 b. Volume added 0.5 ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
 a. Red Flint #40
 b. Volume added 1.5 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC schedule 40
 a. Screen type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Johnson
 c. Slot size: 0.1 in.
 d. Slotted length: 10 ft.
- 11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top --- 797.7 ft. MSL or --- 28 ft.
- F. Fine sand, top --- 792.7 ft. MSL or --- 33 ft.
- G. Filter pack, top --- 790.7 ft. MSL or --- 35 ft.
- H. Screen joint, top --- 789.2 ft. MSL or --- 36.5 ft.
- I. Well bottom --- 779.2 ft. MSL or --- 46.5 ft.
- J. Filter pack, bottom --- 775.7 ft. MSL or --- 50 ft.
- K. Borehole, bottom --- 775.7 ft. MSL or --- 50 ft.
- L. Borehole, diameter --- 6.0 in.
- M. O.D. well casing --- 2.25 in.
- N. I.D. well casing --- 2.0 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Bridget Brunell Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater Waste Management
Remediation/Redevelopment Other

Facility/Project Name COL	County Name Columbia	Well Name MW-319	
Facility License, Permit or Monitoring Number 03025	County Code 11	Wis. Unique Well Number VZ437	DNR Well ID Number _____

1. Can this well be purged dry? Yes No
2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other _____
3. Time spent developing well _____ 190 min.
4. Depth of well (from top of well casing) _____ 49.1 ft.
5. Inside diameter of well _____ 2.0 in.
6. Volume of water in filter pack and well casing _____ 8.0 gal.
7. Volume of water removed from well _____ 9.0 gal.
8. Volume of water added (if any) _____ gal.
9. Source of water added _____ N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

- | | | |
|--|---------------------------|--------------------------|
| | <u>Before Development</u> | <u>After Development</u> |
|--|---------------------------|--------------------------|
11. Depth to Water (from top of well casing)
- a. _____ 42 _____ 10 ft. _____ 48 _____ 37 ft.
- Date
- b. 05 / 20 / 2024 06 / 05 / 2024
m m d d y y y y m m d d y y y y
- Time
- c. _____ 3 : 40 a.m. p.m. _____ 13 : 00 a.m. p.m.
12. Sediment in well bottom _____ 60 _____ 0 inches _____ ? _____ inches
13. Water clarity
- | | |
|--|--|
| Clear <input type="checkbox"/> 1 0 | Clear <input type="checkbox"/> 2 0 |
| Turbid <input checked="" type="checkbox"/> 1 5 | Turbid <input checked="" type="checkbox"/> 2 5 |
| (Describe) | (Describe) |
| _____ | _____ |
| very turbid | grayish brown |
| Lots of silt + clay | very turbid |
| chunks coming out as purged dry | no odor |
| thick with sediment | _____ |
| brown | _____ |
- Fill in if drilling fluids were used and well is at solid waste facility:
14. Total suspended solids _____ 13300 _____ 0 mg/l _____ mg/l
15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Bridget Last Name: Russell

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1540-1630): DTW: 42.10 / TD 44.6 (difficult to determine TD due to high sediment content) / 60 inches of sediment / 8.03 gallons for volume in filter pack + casing = 8.03x10=80.3 gallons / brown color, thick with sediment and very turbid / Developed for 50 min / Purged dry 3 times / Purged 1.5 gallons / brown color, thick with sediment, less chunks and very turbid / DTW after: 39.50 / TD after: 47.6 / 36 inches of sediment / Bridget Russell

6/05/2024 (915-1115): DTW: -- / TD: 49.1 / volume of water in filter pack: 8.0 gallons / Developed for 140 minutes / Purged 7.5 gallons / grayish brown, very turbid, no odor / DTW 48.37 / ? inches of sediment, very fine uniform SM in bottom / Paul Grover

Name and Address of Facility Contact / Owner / Responsible Party

First Name: Brian Last Name: Clepper

Facility/Firm: Alliant Energy - Columbia

Street: W8375 Murray Rd

City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Bridget Russell

Print Name: Bridget Russell and Paul Grover

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.



Appendix C
Laboratory Reports

C1 October 2024 Laboratory Reports



October 21, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR MOD 1-3
Pace Project No.: 40285193

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2024. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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



CERTIFICATIONS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285193001	MW-302	Water	10/02/24 14:55	10/04/24 08:35
40285193002	MW-33AR	Water	10/02/24 15:30	10/04/24 08:35
40285193003	MW-34A	Water	10/02/24 14:40	10/04/24 08:35
40285193004	FIELD BLANK-MOD1-3LF	Water	10/02/24 15:00	10/04/24 08:35
40285193005	MW-302 DUP	Water	10/02/24 15:15	10/04/24 08:35

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40285193001	MW-302	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285193002	MW-33AR	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285193003	MW-34A	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285193004	FIELD BLANK-MOD1-3LF	EPA 6020B	KXS	3
			SM 2540C	LMB
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
		40285193005	MW-302 DUP	EPA 6020B

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Sample: MW-302 **Lab ID: 40285193001** Collected: 10/02/24 14:55 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	290	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:28	7440-42-8	
Calcium	63600	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:28	7440-70-2	
Total Hardness by 2340B	282	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:28		
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.32	Std. Units			1		10/02/24 14:55		
Field Specific Conductance	422.7	umhos/cm			1		10/02/24 14:55		
Oxygen, Dissolved	7.91	mg/L			1		10/02/24 14:55	7782-44-7	
REDOX	53.0	mV			1		10/02/24 14:55		
Turbidity	3.81	NTU			1		10/02/24 14:55		
Static Water Level	788.35	feet			1		10/02/24 14:55		
Temperature, Water (C)	13.3	deg C			1		10/02/24 14:55		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	262	mg/L	20.0	8.7	1		10/08/24 15:27		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 14:12		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	1.9J	mg/L	2.0	0.59	1		10/18/24 00:50	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 00:50	16984-48-8	
Sulfate	57.9	mg/L	10.0	2.2	5		10/18/24 13:57	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	213	mg/L	25.0	7.4	1		10/08/24 09:35		

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Sample: MW-33AR Lab ID: 40285193002 Collected: 10/02/24 15:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	477	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:50	7440-42-8	
Calcium	96400	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:50	7440-70-2	
Total Hardness by 2340B	415	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:50		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.52	Std. Units			1		10/02/24 15:30		
Field Specific Conductance	900	umhos/cm			1		10/02/24 15:30		
Oxygen, Dissolved	7.77	mg/L			1		10/02/24 15:30	7782-44-7	
REDOX	158.3	mV			1		10/02/24 15:30		
Turbidity	0.00	NTU			1		10/02/24 15:30		
Static Water Level	787.33	feet			1		10/02/24 15:30		
Temperature, Water (C)	14.4	deg C			1		10/02/24 15:30		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	620	mg/L	20.0	8.7	1		10/08/24 18:01		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 14:16		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	52.7	mg/L	40.0	11.8	20		10/18/24 14:08	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 01:01	16984-48-8	M0
Sulfate	224	mg/L	40.0	8.9	20		10/18/24 14:08	14808-79-8	M0
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	193	mg/L	25.0	7.4	1		10/08/24 09:36		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Sample: **MW-34A** Lab ID: **40285193003** Collected: 10/02/24 14:40 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	219	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:54	7440-42-8	
Calcium	57900	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:54	7440-70-2	
Total Hardness by 2340B	258	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:54		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.64	Std. Units			1		10/02/24 14:40		
Field Specific Conductance	476.2	umhos/cm			1		10/02/24 14:40		
Oxygen, Dissolved	9.10	mg/L			1		10/02/24 14:40	7782-44-7	
REDOX	156.1	mV			1		10/02/24 14:40		
Turbidity	0.86	NTU			1		10/02/24 14:40		
Static Water Level	786.79	feet			1		10/02/24 14:40		
Temperature, Water (C)	12.9	deg C			1		10/02/24 14:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	278	mg/L	20.0	8.7	1		10/08/24 18:01		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 14:19		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	5.4	mg/L	2.0	0.59	1		10/18/24 16:41	16887-00-6	M0
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 16:41	16984-48-8	
Sulfate	57.5	mg/L	10.0	2.2	5		10/21/24 11:31	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	194	mg/L	25.0	7.4	1		10/08/24 09:37		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Sample: FIELD BLANK-MOD1-3LF Lab ID: 40285193004 Collected: 10/02/24 15:00 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:41	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:41	7440-70-2	
Total Hardness by 2340B	<0.32	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:41		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	14.0J	mg/L	20.0	8.7	1		10/15/24 17:20		H1
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.8	Std. Units	0.10	0.010	1		10/16/24 14:32		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		10/18/24 17:13	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 17:13	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/18/24 17:13	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		10/08/24 09:38		

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Sample: MW-302 DUP Lab ID: 40285193005 Collected: 10/02/24 15:15 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	300	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:58	7440-42-8	
Calcium	66300	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:58	7440-70-2	
Total Hardness by 2340B	293	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:58		

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch:	486339	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40285193001, 40285193002, 40285193003, 40285193004, 40285193005		

METHOD BLANK: 2785742 Matrix: Water
 Associated Lab Samples: 40285193001, 40285193002, 40285193003, 40285193004, 40285193005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/08/24 12:59	
Calcium	ug/L	<76.2	254	10/08/24 12:59	
Total Hardness by 2340B	mg/L	<0.32	1.7	10/08/24 12:59	

LABORATORY CONTROL SAMPLE: 2785743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	219	88	80-120	
Calcium	ug/L	10000	9390	94	80-120	
Total Hardness by 2340B	mg/L		65.0			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785744 2785745

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40284992002 Result	Spike Conc.	Spike Conc.	Result								
Boron	ug/L	14.6	250	250	231	236	87	89	75-125	2	20		
Calcium	ug/L	88300	10000	10000	94500	96100	62	78	75-125	2	20	P6	
Total Hardness by 2340B	mg/L	401			455	465				2	20		

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch: 486562	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193001

METHOD BLANK: 2786475 Matrix: Water

Associated Lab Samples: 40285193001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 15:24	

LABORATORY CONTROL SAMPLE: 2786476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	538	92	80-120	

SAMPLE DUPLICATE: 2786486

Parameter	Units	40284993001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	430	472	9	10	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch: 486616

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193002, 40285193003

METHOD BLANK: 2786836

Matrix: Water

Associated Lab Samples: 40285193002, 40285193003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 17:59	

LABORATORY CONTROL SAMPLE: 2786837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	506	87	80-120	

SAMPLE DUPLICATE: 2786842

Parameter	Units	40285126001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	498	472	5	10	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch: 487239

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193004

METHOD BLANK: 2790274

Matrix: Water

Associated Lab Samples: 40285193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/15/24 17:20	

LABORATORY CONTROL SAMPLE: 2790275

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2790277

Parameter	Units	40285651003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	434	414	5	10	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch: 487360

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193001, 40285193002, 40285193003, 40285193004

SAMPLE DUPLICATE: 2790777

Parameter	Units	40285646001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.4	1	20	H6

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch: 487482	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193001, 40285193002

METHOD BLANK: 2791543 Matrix: Water

Associated Lab Samples: 40285193001, 40285193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/17/24 19:11	
Fluoride	mg/L	<0.095	0.32	10/17/24 19:11	
Sulfate	mg/L	<0.44	2.0	10/17/24 19:11	

LABORATORY CONTROL SAMPLE: 2791544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.0	99	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791545 2791546

Parameter	Units	40285153002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	280	400	400	723	724	111	111	90-110	0	15	M0	
Fluoride	mg/L	<1.9	40	40	42.3	42.7	101	102	90-110	1	15		
Sulfate	mg/L	213	400	400	645	647	108	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791547 2791548

Parameter	Units	40285193002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	52.7	400	400	487	476	109	106	90-110	2	15		
Fluoride	mg/L	<0.095	2	2	1.7	1.7	86	87	90-110	1	15	M0	
Sulfate	mg/L	224	400	400	676	662	113	109	90-110	2	15	M0	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch:	487590	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285193003, 40285193004

METHOD BLANK: 2792311 Matrix: Water

Associated Lab Samples: 40285193003, 40285193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/18/24 16:18	
Fluoride	mg/L	<0.095	0.32	10/18/24 16:18	
Sulfate	mg/L	<0.44	2.0	10/18/24 16:18	

LABORATORY CONTROL SAMPLE: 2792312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	21.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792313 2792314

Parameter	Units	40285193003		MSD		MSD		% Rec		Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	5.4	20	20	27.2	27.6	109	111	90-110	1	15	M0	
Fluoride	mg/L	<0.095	2	2	2.1	2.1	105	106	90-110	1	15		
Sulfate	mg/L	57.5	100	100	167	157	109	100	90-110	6	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792315 2792316

Parameter	Units	40285267005		MSD		MSD		% Rec		Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	31.1	20	20	53.0	53.4	109	112	90-110	1	15	M0	
Fluoride	mg/L	0.78	2	2	2.8	2.9	103	106	90-110	2	15		
Sulfate	mg/L	116	200	200	377	345	130	114	90-110	9	15	M0	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

QC Batch:	486447	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40285193001, 40285193002, 40285193003, 40285193004		

METHOD BLANK: 2786090 Matrix: Water
 Associated Lab Samples: 40285193001, 40285193002, 40285193003, 40285193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	40285195001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	367	100	100	467	472	100	105	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	40285280009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	466	200	200	648	643	91	88	90-110	1	20 M0	

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QUALIFIERS

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H1 Analysis conducted outside the recognized method holding time.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40285193

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285193001	MW-302	EPA 3010A	486339	EPA 6020B	486460
40285193002	MW-33AR	EPA 3010A	486339	EPA 6020B	486460
40285193003	MW-34A	EPA 3010A	486339	EPA 6020B	486460
40285193004	FIELD BLANK-MOD1-3LF	EPA 3010A	486339	EPA 6020B	486460
40285193005	MW-302 DUP	EPA 3010A	486339	EPA 6020B	486460
40285193001	MW-302				
40285193002	MW-33AR				
40285193003	MW-34A				
40285193001	MW-302	SM 2540C	486562		
40285193002	MW-33AR	SM 2540C	486616		
40285193003	MW-34A	SM 2540C	486616		
40285193004	FIELD BLANK-MOD1-3LF	SM 2540C	487239		
40285193001	MW-302	EPA 9040	487360		
40285193002	MW-33AR	EPA 9040	487360		
40285193003	MW-34A	EPA 9040	487360		
40285193004	FIELD BLANK-MOD1-3LF	EPA 9040	487360		
40285193001	MW-302	EPA 300.0	487482		
40285193002	MW-33AR	EPA 300.0	487482		
40285193003	MW-34A	EPA 300.0	487590		
40285193004	FIELD BLANK-MOD1-3LF	EPA 300.0	487590		
40285193001	MW-302	EPA 310.2	486447		
40285193002	MW-33AR	EPA 310.2	486447		
40285193003	MW-34A	EPA 310.2	486447		
40285193004	FIELD BLANK-MOD1-3LF	EPA 310.2	486447		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: **40285193**

Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____



Tracking #: _____
 Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR-141 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.5

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/17/24 / Initials: GF
 Labeled By Initials: mt

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>present.</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: - DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Date/Time: _____
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: <u>W</u>	12. <u>004 ID: 'Field blank Mod 1-3'</u> <u>004 time: 1515. 005 time: 1500.</u> <u>10/17/24 GF</u>
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____



October 21, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067 COLUMBIA CCR MOD 4-6
Pace Project No.: 40285195

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2024. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285195001	MW-309	Water	10/01/24 16:35	10/04/24 08:35
40285195002	MW-310	Water	10/01/24 15:40	10/04/24 08:35
40285195003	MW-311	Water	10/01/24 14:55	10/04/24 08:35
40285195004	FIELD BLANK MOD4	Water	10/01/24 15:50	10/04/24 08:35

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40285195001	MW-309	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285195002	MW-310	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285195003	MW-311	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285195004	FIELD BLANK MOD4	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Sample: MW-309 Lab ID: 40285195001 Collected: 10/01/24 16:35 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	72.1	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 15:02	7440-42-8	
Calcium	105000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 15:02	7440-70-2	
Total Hardness by 2340B	438	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 15:02		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.64	Std. Units			1		10/01/24 16:35		
Field Specific Conductance	3454	umhos/cm			1		10/01/24 16:35		
Oxygen, Dissolved	7.84	mg/L			1		10/01/24 16:35	7782-44-7	
REDOX	131.6	mV			1		10/01/24 16:35		
Turbidity	2.24	NTU			1		10/01/24 16:35		
Static Water Level	786.46	feet			1		10/01/24 16:35		
Temperature, Water (C)	13.5	deg C			1		10/01/24 16:35		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	2180	mg/L	20.0	8.7	1		10/08/24 13:02		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 14:36		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	971	mg/L	100	29.6	50		10/21/24 12:04	16887-00-6	
Fluoride	<4.8	mg/L	15.8	4.8	50		10/21/24 12:04	16984-48-8	D3
Sulfate	142	mg/L	100	22.2	50		10/21/24 12:04	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	367	mg/L	25.0	7.4	1		10/08/24 09:15		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Sample: **MW-310** Lab ID: **40285195002** Collected: 10/01/24 15:40 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	93.1	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 15:11	7440-42-8	
Calcium	108000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 15:11	7440-70-2	
Total Hardness by 2340B	554	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 15:11		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.65	Std. Units			1		10/01/24 15:40		
Field Specific Conductance	1927	umhos/cm			1		10/01/24 15:40		
Oxygen, Dissolved	8.56	mg/L			1		10/01/24 15:40	7782-44-7	
REDOX	90.5	mV			1		10/01/24 15:40		
Turbidity	2.49	NTU			1		10/01/24 15:40		
Static Water Level	786.35	feet			1		10/01/24 15:40		
Temperature, Water (C)	14.0	deg C			1		10/01/24 15:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	1210	mg/L	20.0	8.7	1		10/08/24 15:27		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 14:38		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	420	mg/L	40.0	11.8	20		10/21/24 12:14	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 17:35	16984-48-8	
Sulfate	179	mg/L	40.0	8.9	20		10/21/24 12:14	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	286	mg/L	25.0	7.4	1		10/08/24 09:22		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Sample: MW-311 Lab ID: 40285195003 Collected: 10/01/24 14:55 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	34.0	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 15:16	7440-42-8	
Calcium	64800	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 15:16	7440-70-2	
Total Hardness by 2340B	307	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 15:16		
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.71	Std. Units			1		10/01/24 14:55		
Field Specific Conductance	442.9	umhos/cm			1		10/01/24 14:55		
Oxygen, Dissolved	8.78	mg/L			1		10/01/24 14:55	7782-44-7	
REDOX	61.0	mV			1		10/01/24 14:55		
Turbidity	2.81	NTU			1		10/01/24 14:55		
Static Water Level	786.4	feet			1		10/01/24 14:55		
Temperature, Water (C)	13.7	deg C			1		10/01/24 14:55		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	262	mg/L	20.0	8.7	1		10/08/24 15:27		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		10/16/24 14:40		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	2.6	mg/L	2.0	0.59	1		10/18/24 17:46	16887-00-6	
Fluoride	0.10J	mg/L	0.32	0.095	1		10/18/24 17:46	16984-48-8	
Sulfate	11.2	mg/L	2.0	0.44	1		10/18/24 17:46	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	265	mg/L	25.0	7.4	1		10/08/24 09:23		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Sample: FIELD BLANK MOD4 **Lab ID: 40285195004** Collected: 10/01/24 15:50 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 14:45	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 14:45	7440-70-2	
Total Hardness by 2340B	<0.32	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 14:45		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/08/24 15:34		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.8	Std. Units	0.10	0.010	1		10/16/24 14:56		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		10/18/24 18:29	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 18:29	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/18/24 18:29	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		10/08/24 09:24		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch:	486339	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

METHOD BLANK: 2785742 Matrix: Water
 Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/08/24 12:59	
Calcium	ug/L	<76.2	254	10/08/24 12:59	
Total Hardness by 2340B	mg/L	<0.32	1.7	10/08/24 12:59	

LABORATORY CONTROL SAMPLE: 2785743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	219	88	80-120	
Calcium	ug/L	10000	9390	94	80-120	
Total Hardness by 2340B	mg/L		65.0			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785744 2785745

Parameter	Units	40284992002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	14.6	250	250	231	236	87	89	75-125	2	20	
Calcium	ug/L	88300	10000	10000	94500	96100	62	78	75-125	2	20	P6
Total Hardness by 2340B	mg/L	401			455	465				2	20	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch: 486561	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285195001

METHOD BLANK: 2786441 Matrix: Water

Associated Lab Samples: 40285195001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 12:56	

LABORATORY CONTROL SAMPLE: 2786442

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2786455

Parameter	Units	40285189004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	<8.7	<8.7		10	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch:	486562	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40285195002, 40285195003, 40285195004		

METHOD BLANK: 2786475 Matrix: Water
 Associated Lab Samples: 40285195002, 40285195003, 40285195004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 15:24	

LABORATORY CONTROL SAMPLE: 2786476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	538	92	80-120	

SAMPLE DUPLICATE: 2786486

Parameter	Units	40284993001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	430	472	9	10	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch: 487360

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

SAMPLE DUPLICATE: 2790777

Parameter	Units	40285646001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.4	1	20	H6

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch:	487590	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

METHOD BLANK: 2792311 Matrix: Water

Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/18/24 16:18	
Fluoride	mg/L	<0.095	0.32	10/18/24 16:18	
Sulfate	mg/L	<0.44	2.0	10/18/24 16:18	

LABORATORY CONTROL SAMPLE: 2792312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	21.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792313 2792314

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285193003 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	5.4	20	20	27.2	27.6	109	111	90-110	1	15	M0	
Fluoride	mg/L	<0.095	2	2	2.1	2.1	105	106	90-110	1	15		
Sulfate	mg/L	57.5	100	100	167	157	109	100	90-110	6	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792315 2792316

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285267005 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	31.1	20	20	53.0	53.4	109	112	90-110	1	15	M0	
Fluoride	mg/L	0.78	2	2	2.8	2.9	103	106	90-110	2	15		
Sulfate	mg/L	116	200	200	377	345	130	114	90-110	9	15	M0	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

QC Batch:	486447	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

METHOD BLANK: 2786090 Matrix: Water
 Associated Lab Samples: 40285195001, 40285195002, 40285195003, 40285195004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	40285195001		2786093		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.							
Alkalinity, Total as CaCO3	mg/L	367	100	467	100	472	100	105	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	40285280009		2786095		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.							
Alkalinity, Total as CaCO3	mg/L	466	200	648	200	643	91	88	90-110	1	20 M0	

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QUALIFIERS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40285195

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285195001	MW-309	EPA 3010A	486339	EPA 6020B	486460
40285195002	MW-310	EPA 3010A	486339	EPA 6020B	486460
40285195003	MW-311	EPA 3010A	486339	EPA 6020B	486460
40285195004	FIELD BLANK MOD4	EPA 3010A	486339	EPA 6020B	486460
40285195001	MW-309				
40285195002	MW-310				
40285195003	MW-311				
40285195001	MW-309	SM 2540C	486561		
40285195002	MW-310	SM 2540C	486562		
40285195003	MW-311	SM 2540C	486562		
40285195004	FIELD BLANK MOD4	SM 2540C	486562		
40285195001	MW-309	EPA 9040	487360		
40285195002	MW-310	EPA 9040	487360		
40285195003	MW-311	EPA 9040	487360		
40285195004	FIELD BLANK MOD4	EPA 9040	487360		
40285195001	MW-309	EPA 300.0	487590		
40285195002	MW-310	EPA 300.0	487590		
40285195003	MW-311	EPA 300.0	487590		
40285195004	FIELD BLANK MOD4	EPA 300.0	487590		
40285195001	MW-309	EPA 310.2	486447		
40285195002	MW-310	EPA 310.2	486447		
40285195003	MW-311	EPA 310.2	486447		
40285195004	FIELD BLANK MOD4	EPA 310.2	486447		

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40285195



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>.

Section A

Required Client Information:

Company: SCS ENGINEERS
 Address: 2830 Dairy Drive
 Madison, WI 53718
 Email: mblodgett@scsengineers.com
 Phone: 608-216-7362 Fax:
 Requested Due Date:

Section B

Required Project Information:

Report To: Meghan Blodgett
 Copy To:
 Purchase Order #:
 Project Name: 25224067 Columbia CCR Mod 4-6
 Project #: 25224067

Section C

Invoice Information:

Attention:
 Company Name:
 Address:
 Pace Quote:
 Pace Project Manager: dan.milewsky@pacelabs.com,
 Pace Profile #:

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE Drinking Water DIW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Other OT Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)			
					START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Metals (B/Ca)	Chloride/Fluoride/Sulfate		TDS and pH	Alkalinity	Hardness
					DATE	TIME	DATE	TIME																
1				WT																				
2	MW-309			WT	10/1	1635																		001
3	MW-310			WT	10/1	1540																		002
4	MW-311			WT	10/1	1455																		003
5	FIELD BLANK MOD4			WT	10/1	1530																		004
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
ALL SAMPLES UNFILTERED	<i>Carlo Shea</i>	10/13/24	1500							
	OS LOGISTICS	10/14/24	0830	<i>Gregory D...</i>	10/14/24	0835	0.5	y	y	y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: *Edwin Schaefer*

SIGNATURE of SAMPLER: *[Signature]* DATE Signed: 10/13/24

Samples sealed across multiple coolers

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: **40285195**

Courier: CS Logistics Fed Ex Speedee UPS Walto
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR-141 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0-5 / Corr: 0-5

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/14/24 Initials: GF
 Labeled By Initials: mt

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>preserve</u> . <u>10/14/24</u> <u>GF</u> <u>10/24/24</u> <u>GF</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No - DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Date/Time:
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	9.
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A -Includes date/time/ID/Analysis Matrix: <u>W</u>	12. <u>004 ID: Field blank mod 4-6!</u> <u>10/14/24 GF</u>
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



October 28, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067 COLUMBIA CCR MOD10-13
Pace Project No.: 40285201

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory between October 04, 2024 and October 06, 2024. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



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CERTIFICATIONS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25224067 COLUMBIA CCR MOD10-13
Pace Project No.: 40285201

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285201001	MW-317	Water	10/01/24 10:30	10/04/24 08:35
40285201002	MW-318	Water	10/01/24 12:20	10/04/24 08:35
40285201003	MW-319	Water	10/01/24 14:20	10/06/24 08:35
40285201004	FIELD BLANK MOD 10-13	Water	10/01/24 14:05	10/06/24 08:35

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40285201001	MW-317	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285201002	MW-318	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285201003	MW-319	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40285201004	FIELD BLANK MOD 10-13	EPA 6020B	KXS	3
			LB	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Sample: MW-317 **Lab ID: 40285201001** Collected: 10/01/24 10:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	32.1	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 15:28	7440-42-8	
Calcium	48700	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 15:28	7440-70-2	
Total Hardness by 2340B	221	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 15:28		
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.84	Std. Units			1		10/01/24 10:30		
Field Specific Conductance	422.8	umhos/cm			1		10/01/24 10:30		
Oxygen, Dissolved	2.26	mg/L			1		10/01/24 10:30	7782-44-7	
REDOX	-103.80	mV			1		10/01/24 10:30		
Turbidity	2.31	NTU			1		10/01/24 10:30		
Static Water Level	786.41	feet			1		10/01/24 10:30		
Temperature, Water (C)	11.4	deg C			1		10/01/24 10:30		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	242	mg/L	20.0	8.7	1		10/08/24 15:28		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 15:02		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.2	mg/L	2.0	0.59	1		10/18/24 19:13	16887-00-6	
Fluoride	0.17J	mg/L	0.32	0.095	1		10/18/24 19:13	16984-48-8	
Sulfate	5.2	mg/L	2.0	0.44	1		10/18/24 19:13	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	256	mg/L	25.0	7.4	1		10/08/24 09:25		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Sample: MW-318 Lab ID: 40285201002 Collected: 10/01/24 12:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	13.6	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 15:33	7440-42-8	
Calcium	106000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 15:33	7440-70-2	
Total Hardness by 2340B	477	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 15:33		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.45	Std. Units			1		10/01/24 12:20		
Field Specific Conductance	942.0	umhos/cm			1		10/01/24 12:20		
Oxygen, Dissolved	6.84	mg/L			1		10/01/24 12:20	7782-44-7	
REDOX	59.80	mV			1		10/01/24 12:20		
Turbidity	7.62	NTU			1		10/01/24 12:20		
Static Water Level	786.71	feet			1		10/01/24 12:20		
Temperature, Water (C)	11.6	deg C			1		10/01/24 12:20		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	684	mg/L	20.0	8.7	1		10/08/24 15:29		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 15:05		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	63.7	mg/L	20.0	5.9	10		10/21/24 12:25	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 19:24	16984-48-8	
Sulfate	224	mg/L	20.0	4.4	10		10/21/24 12:25	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	245	mg/L	25.0	7.4	1		10/08/24 09:26		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Sample: MW-319 Lab ID: 40285201003 Collected: 10/01/24 14:20 Received: 10/06/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	23.7	ug/L	10.0	3.0	1	10/11/24 07:24	10/15/24 10:58	7440-42-8	
Calcium	110000	ug/L	254	76.2	1	10/11/24 07:24	10/15/24 00:57	7440-70-2	
Total Hardness by 2340B	458	mg/L	1.7	0.32	1	10/11/24 07:24	10/15/24 00:57		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.61	Std. Units			1		10/01/24 14:20		
Field Specific Conductance	2344	umhos/cm			1		10/01/24 14:20		
Oxygen, Dissolved	7.52	mg/L			1		10/01/24 14:20	7782-44-7	
REDOX	78.0	mV			1		10/01/24 14:20		
Turbidity	7.40	NTU			1		10/01/24 14:20		
Static Water Level	788.22	feet			1		10/01/24 14:20		
Temperature, Water (C)	11.4	deg C			1		10/01/24 14:20		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	1440	mg/L	33.3	14.5	1		10/08/24 15:29		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		10/16/24 15:07		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	647	mg/L	40.0	11.8	20		10/21/24 16:57	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		10/21/24 16:57	16984-48-8	D3
Sulfate	62.0	mg/L	40.0	8.9	20		10/21/24 16:57	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	354	mg/L	25.0	7.4	1		10/08/24 13:57		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Sample: **FIELD BLANK MOD 10-13** Lab ID: **40285201004** Collected: 10/01/24 14:05 Received: 10/06/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	10/11/24 07:24	10/15/24 01:01	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	10/11/24 07:24	10/15/24 01:01	7440-70-2	
Total Hardness by 2340B	<0.32	mg/L	1.7	0.32	1	10/11/24 07:24	10/15/24 01:01		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/08/24 15:29		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		10/16/24 16:03		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		10/21/24 17:08	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/21/24 17:08	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/21/24 17:08	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		10/08/24 14:00		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	486339	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201001, 40285201002

METHOD BLANK: 2785742 Matrix: Water

Associated Lab Samples: 40285201001, 40285201002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/08/24 12:59	
Calcium	ug/L	<76.2	254	10/08/24 12:59	
Total Hardness by 2340B	mg/L	<0.32	1.7	10/08/24 12:59	

LABORATORY CONTROL SAMPLE: 2785743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	219	88	80-120	
Calcium	ug/L	10000	9390	94	80-120	
Total Hardness by 2340B	mg/L		65.0			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785744 2785745

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40284992002	Result	Spike Conc.	Spike Conc.								
Boron	ug/L	14.6	250	250	231	236	87	89	75-125	2	20		
Calcium	ug/L	88300	10000	10000	94500	96100	62	78	75-125	2	20	P6	
Total Hardness by 2340B	mg/L	401			455	465					2	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.

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	486918	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201003, 40285201004

METHOD BLANK: 2788571 Matrix: Water

Associated Lab Samples: 40285201003, 40285201004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/14/24 22:51	
Calcium	ug/L	<76.2	254	10/14/24 22:51	
Total Hardness by 2340B	mg/L	<0.32	1.7	10/14/24 22:51	

LABORATORY CONTROL SAMPLE: 2788572

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	221	89	80-120	
Calcium	ug/L	10000	9690	97	80-120	
Total Hardness by 2340B	mg/L		65.3			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2788573 2788574

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285519001 Result	Spike Conc.	Spike Conc.	Result						
Boron	ug/L	9.8J	250	250	235	232	90	89	75-125	1	20
Calcium	ug/L	76100	10000	10000	85900	84500	99	85	75-125	2	20
Total Hardness by 2340B	mg/L	362			425	416				2	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	486562	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201001, 40285201002, 40285201003, 40285201004

METHOD BLANK: 2786475 Matrix: Water
 Associated Lab Samples: 40285201001, 40285201002, 40285201003, 40285201004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 15:24	

LABORATORY CONTROL SAMPLE: 2786476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	538	92	80-120	

SAMPLE DUPLICATE: 2786486

Parameter	Units	40284993001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	430	472	9	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch: 487360 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201001, 40285201002, 40285201003, 40285201004

SAMPLE DUPLICATE: 2790777

Parameter	Units	40285646001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.4	1	20	H6

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	487590	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201001, 40285201002

METHOD BLANK: 2792311 Matrix: Water

Associated Lab Samples: 40285201001, 40285201002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/18/24 16:18	
Fluoride	mg/L	<0.095	0.32	10/18/24 16:18	
Sulfate	mg/L	<0.44	2.0	10/18/24 16:18	

LABORATORY CONTROL SAMPLE: 2792312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	21.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792313 2792314

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285193003 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	5.4	20	20	27.2	27.6	109	111	90-110	1	15	M0	
Fluoride	mg/L	<0.095	2	2	2.1	2.1	105	106	90-110	1	15		
Sulfate	mg/L	57.5	100	100	167	157	109	100	90-110	6	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792315 2792316

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285267005 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	31.1	20	20	53.0	53.4	109	112	90-110	1	15	M0	
Fluoride	mg/L	0.78	2	2	2.8	2.9	103	106	90-110	2	15		
Sulfate	mg/L	116	200	200	377	345	130	114	90-110	9	15	M0	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	487595	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201003, 40285201004

METHOD BLANK: 2792337 Matrix: Water

Associated Lab Samples: 40285201003, 40285201004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/21/24 14:14	
Fluoride	mg/L	<0.095	0.32	10/21/24 14:14	
Sulfate	mg/L	<0.44	2.0	10/21/24 14:14	

LABORATORY CONTROL SAMPLE: 2792338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.1	105	90-110	
Fluoride	mg/L	2	2.0	100	90-110	
Sulfate	mg/L	20	21.1	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2792339 2792340

Parameter	Units	40285312002		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	3800	10000	10000	14400	14700	106	109	90-110	2	15			
Fluoride	mg/L	<9.5	200	200	204	219	100	107	90-110	7	15			
Sulfate	mg/L	<44.4	2000	2000	1940	2130	95	105	90-110	9	15			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch: 486447	Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2	Analysis Description: 310.2 Alkalinity
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201001, 40285201002

METHOD BLANK: 2786090 Matrix: Water

Associated Lab Samples: 40285201001, 40285201002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	40285195001		2786093		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	367	100	100	467	472	100	105	90-110	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	40285280009		2786095		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	466	200	200	648	643	91	88	90-110	1	20 M0

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

QC Batch:	486611	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285201003, 40285201004

METHOD BLANK: 2786751 Matrix: Water

Associated Lab Samples: 40285201003, 40285201004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 13:52	

LABORATORY CONTROL SAMPLE: 2786752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	103	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786753 2786754

Parameter	Units	40285201003		2786753		2786754		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.					
Alkalinity, Total as CaCO3	mg/L	354	100	100	100	453	456	99	102	90-110	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786755 2786756

Parameter	Units	40285280024		2786755		2786756		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.					
Alkalinity, Total as CaCO3	mg/L	510	200	200	200	701	697	96	93	90-110	1	20

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QUALIFIERS

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067 COLUMBIA CCR MOD10-13

Pace Project No.: 40285201

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285201001	MW-317	EPA 3010A	486339	EPA 6020B	486460
40285201002	MW-318	EPA 3010A	486339	EPA 6020B	486460
40285201003	MW-319	EPA 3010A	486918	EPA 6020B	487131
40285201004	FIELD BLANK MOD 10-13	EPA 3010A	486918	EPA 6020B	487131
40285201001	MW-317				
40285201002	MW-318				
40285201003	MW-319				
40285201001	MW-317	SM 2540C	486562		
40285201002	MW-318	SM 2540C	486562		
40285201003	MW-319	SM 2540C	486562		
40285201004	FIELD BLANK MOD 10-13	SM 2540C	486562		
40285201001	MW-317	EPA 9040	487360		
40285201002	MW-318	EPA 9040	487360		
40285201003	MW-319	EPA 9040	487360		
40285201004	FIELD BLANK MOD 10-13	EPA 9040	487360		
40285201001	MW-317	EPA 300.0	487590		
40285201002	MW-318	EPA 300.0	487590		
40285201003	MW-319	EPA 300.0	487595		
40285201004	FIELD BLANK MOD 10-13	EPA 300.0	487595		
40285201001	MW-317	EPA 310.2	486447		
40285201002	MW-318	EPA 310.2	486447		
40285201003	MW-319	EPA 310.2	486611		
40285201004	FIELD BLANK MOD 10-13	EPA 310.2	486611		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: **40285201**

Courier: CS Logistics Fed Ex Speedee UPS Walto
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 141 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/14/24 / Initials: GF
 Labeled By Initials: MD/KKS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>preserve</u> <u>10/14/24 GF</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay, Pace IR, Non-Pace</u>	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: did not receive MW-319 or Field blank mod 10-B. processing as normal as per PM. 10/14/24 GF

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



October 28, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40285189

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285189001	MW-317	Water	10/01/24 10:30	10/04/24 08:35
40285189002	MW-318	Water	10/01/24 12:20	10/04/24 08:35
40285189003	MW-319	Water	10/01/24 14:20	10/04/24 08:35
40285189004	FIELD BLANK	Water	10/01/24 14:05	10/04/24 08:35

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
40285189001	MW-317	EPA 6010D	SIS	5	PASI-G		
		EPA 6020B	KXS	14	PASI-G		
		EPA 7470	AJT	1	PASI-G		
			LB	7	PASI-G		
		EPA 903.1	CLM	1	PASI-PA		
		EPA 904.0	VAL	1	PASI-PA		
		Total Radium Calculation	JAL	1	PASI-PA		
		SM 2540C	LMB	1	PASI-G		
		EPA 9040	HML	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		EPA 310.2	MT	1	PASI-G		
		EPA 353.2	MT	1	PASI-G		
		40285189002	MW-318	EPA 6010D	SIS	5	PASI-G
				EPA 6020B	KXS	14	PASI-G
EPA 7470	AJT			1	PASI-G		
	LB			7	PASI-G		
EPA 903.1	CLM			1	PASI-PA		
EPA 904.0	VAL			1	PASI-PA		
Total Radium Calculation	JAL			1	PASI-PA		
SM 2540C	LMB			1	PASI-G		
EPA 9040	HML			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
EPA 310.2	MT			1	PASI-G		
EPA 353.2	MT			1	PASI-G		
40285189003	MW-319			EPA 6010D	SIS	5	PASI-G
				EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G		
			LB	7	PASI-G		
		EPA 903.1	CLM	1	PASI-PA		
		EPA 904.0	VAL	1	PASI-PA		
		Total Radium Calculation	JAL	1	PASI-PA		
		SM 2540C	LMB	1	PASI-G		
		EPA 9040	HML	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		EPA 310.2	MT	1	PASI-G		
		EPA 353.2	MT	1	PASI-G		
		40285189004	FIELD BLANK	EPA 6010D	SIS	5	PASI-G

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317 Lab ID: 40285189001 Collected: 10/01/24 10:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 19:52	7440-50-8	
Manganese	239	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 19:52	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 19:52	7440-22-4	
Total Hardness by 2340B	227	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 19:52		
Zinc	48.5	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 19:52	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:56	7440-36-0	
Arsenic	1.3	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:56	7440-38-2	
Barium	51.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:56	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:56	7440-41-7	
Boron	75.6	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:56	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:56	7440-43-9	
Calcium	46400	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:56	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:56	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:56	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:56	7439-92-1	
Lithium	5.0	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:56	7439-93-2	
Molybdenum	24.6	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:56	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:56	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:56	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.84	Std. Units			1		10/01/24 10:30		
Field Specific Conductance	422.8	umhos/cm			1		10/01/24 10:30		
Oxygen, Dissolved	2.26	mg/L			1		10/01/24 10:30	7782-44-7	
REDOX	-103.80	mV			1		10/01/24 10:30		
Turbidity	2.31	NTU			1		10/01/24 10:30		
Static Water Level	786.41	feet			1		10/01/24 10:30		
Temperature, Water (C)	11.4	deg C			1		10/01/24 10:30		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	248	mg/L	20.0	8.7	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		10/16/24 17:02		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317 Lab ID: 40285189001 Collected: 10/01/24 10:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.2	mg/L	2.0	0.59	1		10/17/24 23:45	16887-00-6	
Fluoride	0.17J	mg/L	0.32	0.095	1		10/17/24 23:45	16984-48-8	
Sulfate	5.2	mg/L	2.0	0.44	1		10/17/24 23:45	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	254	mg/L	25.0	7.4	1		10/08/24 09:07		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	0.26	mg/L	0.25	0.059	1		10/16/24 12:54		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318 **Lab ID: 40285189002** Collected: 10/01/24 12:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:04	7440-50-8	
Manganese	13.7	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:04	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:04	7440-22-4	
Total Hardness by 2340B	464	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:04		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:04	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:00	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 19:00	7440-38-2	
Barium	22.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 19:00	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 19:00	7440-41-7	
Boron	37.6	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 19:00	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:00	7440-43-9	
Calcium	103000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 19:00	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 19:00	7440-47-3	
Cobalt	0.18J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 19:00	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 19:00	7439-92-1	
Lithium	1.1	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 19:00	7439-93-2	
Molybdenum	0.52J	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 19:00	7439-98-7	
Selenium	0.80J	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 19:00	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 19:00	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:40	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.45	Std. Units			1		10/01/24 12:20		
Field Specific Conductance	942.0	umhos/cm			1		10/01/24 12:20		
Oxygen, Dissolved	6.84	mg/L			1		10/01/24 12:20	7782-44-7	
REDOX	59.80	mV			1		10/01/24 12:20		
Turbidity	7.62	NTU			1		10/01/24 12:20		
Static Water Level	786.71	feet			1		10/01/24 12:20		
Temperature, Water (C)	11.6	deg C			1		10/01/24 12:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	674	mg/L	20.0	8.7	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 17:06		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318 Lab ID: 40285189002 Collected: 10/01/24 12:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	65.5	mg/L	20.0	5.9	10		10/18/24 13:46	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/17/24 23:56	16984-48-8	
Sulfate	231	mg/L	20.0	4.4	10		10/18/24 13:46	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	245	mg/L	25.0	7.4	1		10/08/24 09:08		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	1.4	mg/L	0.25	0.059	1		10/16/24 12:55		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 Lab ID: 40285189003 Collected: 10/01/24 14:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:08	7440-50-8	
Manganese	9.8	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:08	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:08	7440-22-4	
Total Hardness by 2340B	470	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:08		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:08	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:05	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 19:05	7440-38-2	
Barium	41.2	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 19:05	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 19:05	7440-41-7	
Boron	30.8	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 19:05	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:05	7440-43-9	
Calcium	106000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 19:05	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 19:05	7440-47-3	
Cobalt	0.42J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 19:05	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 19:05	7439-92-1	
Lithium	0.98J	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 19:05	7439-93-2	
Molybdenum	0.62J	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 19:05	7439-98-7	
Selenium	1.4	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 19:05	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 19:05	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:42	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.61	Std. Units			1		10/01/24 14:20		
Field Specific Conductance	2344	umhos/cm			1		10/01/24 14:20		
Oxygen, Dissolved	7.52	mg/L			1		10/01/24 14:20	7782-44-7	
REDOX	78.0	mV			1		10/01/24 14:20		
Turbidity	7.40	NTU			1		10/01/24 14:20		
Static Water Level	788.22	feet			1		10/01/24 14:20		
Temperature, Water (C)	11.4	deg C			1		10/01/24 14:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	1450	mg/L	33.3	14.5	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 17:10		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 Lab ID: 40285189003 Collected: 10/01/24 14:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	649	mg/L	40.0	11.8	20		10/18/24 00:06	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		10/18/24 00:06	16984-48-8	D3
Sulfate	62.9	mg/L	40.0	8.9	20		10/18/24 00:06	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	350	mg/L	25.0	7.4	1		10/08/24 09:09		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	2.0	mg/L	0.25	0.059	1		10/16/24 12:56		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: FIELD BLANK **Lab ID: 40285189004** Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:10	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:10	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:10	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:10		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:10	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:48	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:48	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:48	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:48	7440-41-7	
Boron	3.4J	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:48	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:48	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:48	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:48	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:48	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:48	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:48	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:48	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:48	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:48	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:45	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/08/24 13:02		1q
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		10/16/24 17:20		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		10/18/24 00:17	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 00:17	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/18/24 00:17	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		10/08/24 09:14		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: FIELD BLANK Lab ID: 40285189004 Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		10/16/24 12:56		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 486508	Analysis Method: EPA 7470
QC Batch Method: EPA 7470	Analysis Description: 7470 Mercury
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786308 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	10/10/24 08:28	

LABORATORY CONTROL SAMPLE: 2786309

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786310 2786311

Parameter	Units	2786310		2786311		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285189001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.066	5	5	5.0	4.9	101	98	85-115	3	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486501	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786292 Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	10/08/24 19:40	
Manganese	ug/L	<1.5	5.0	10/08/24 19:40	
Silver	ug/L	<3.2	10.0	10/08/24 19:40	
Total Hardness by 2340B	mg/L	<1.0	5.4	10/08/24 19:40	
Zinc	ug/L	<11.6	40.0	10/08/24 19:40	

LABORATORY CONTROL SAMPLE: 2786293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	263	105	80-120	
Manganese	ug/L	250	263	105	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		67.5			
Zinc	ug/L	250	254	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786294 2786295

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285189001 Result	Spike Conc.	Spike Conc.	Result						
Copper	ug/L	<3.4	250	250	264	261	105	104	75-125	1	20
Manganese	ug/L	239	250	250	503	496	106	103	75-125	1	20
Silver	ug/L	<3.2	125	125	130	129	104	103	75-125	1	20
Total Hardness by 2340B	mg/L	227			297	291				2	20
Zinc	ug/L	48.5	250	250	258	250	84	81	75-125	3	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486340	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2785746 Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	10/08/24 17:03	
Arsenic	ug/L	<0.28	1.0	10/08/24 17:03	
Barium	ug/L	<0.70	2.3	10/08/24 17:03	
Beryllium	ug/L	<0.25	1.0	10/08/24 17:03	
Boron	ug/L	<3.0	10.0	10/08/24 17:03	
Cadmium	ug/L	<0.15	1.0	10/08/24 17:03	
Calcium	ug/L	<76.2	254	10/08/24 17:03	
Chromium	ug/L	<1.0	3.4	10/08/24 17:03	
Cobalt	ug/L	<0.12	1.0	10/08/24 17:03	
Lead	ug/L	<0.24	1.0	10/08/24 17:03	
Lithium	ug/L	<0.22	1.0	10/08/24 17:03	
Molybdenum	ug/L	<0.44	1.5	10/08/24 17:03	
Selenium	ug/L	<0.32	1.1	10/08/24 17:03	
Thallium	ug/L	<0.14	1.0	10/08/24 17:03	

LABORATORY CONTROL SAMPLE: 2785747

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	249	100	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	248	99	80-120	
Beryllium	ug/L	250	247	99	80-120	
Boron	ug/L	250	217	87	80-120	
Cadmium	ug/L	250	251	100	80-120	
Calcium	ug/L	10000	9820	98	80-120	
Chromium	ug/L	250	238	95	80-120	
Cobalt	ug/L	250	246	99	80-120	
Lead	ug/L	250	251	101	80-120	
Lithium	ug/L	250	245	98	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	250	100	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785748												2785749	
Parameter	Units	40285191001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD		RPD	
Antimony	ug/L	<0.15	250	250	254	255	102	102	75-125	0	20		
Arsenic	ug/L	<0.28	250	250	256	257	102	103	75-125	0	20		
Barium	ug/L	10.6	250	250	265	265	102	102	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	254	253	102	101	75-125	1	20		
Boron	ug/L	22.1	250	250	246	241	89	88	75-125	2	20		
Cadmium	ug/L	<0.15	250	250	255	255	102	102	75-125	0	20		
Calcium	ug/L	97000	10000	10000	115000	113000	182	162	75-125	2	20 P6		
Chromium	ug/L	<1.0	250	250	241	242	96	97	75-125	0	20		
Cobalt	ug/L	<0.12	250	250	248	247	99	99	75-125	0	20		
Lead	ug/L	<0.24	250	250	252	251	101	100	75-125	1	20		
Lithium	ug/L	0.80J	250	250	253	252	101	100	75-125	0	20		
Molybdenum	ug/L	<0.44	250	250	257	255	103	102	75-125	1	20		
Selenium	ug/L	0.39J	250	250	253	253	101	101	75-125	0	20		
Thallium	ug/L	0.15J	250	250	245	245	98	98	75-125	0	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486561	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786441 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 12:56	

LABORATORY CONTROL SAMPLE: 2786442

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2786455

Parameter	Units	40285189004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	<8.7	<8.7		10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 487364

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

SAMPLE DUPLICATE: 2790786

Parameter	Units	40285189001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.5	8.5	0	20	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	487482	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2791543 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/17/24 19:11	
Fluoride	mg/L	<0.095	0.32	10/17/24 19:11	
Sulfate	mg/L	<0.44	2.0	10/17/24 19:11	

LABORATORY CONTROL SAMPLE: 2791544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.0	99	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791545 2791546

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285153002 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	280	400	400	400	723	724	111	111	90-110	0	15	M0
Fluoride	mg/L	<1.9	40	40	40	42.3	42.7	101	102	90-110	1	15	
Sulfate	mg/L	213	400	400	400	645	647	108	109	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791547 2791548

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285193002 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	52.7	400	400	400	487	476	109	106	90-110	2	15	
Fluoride	mg/L	<0.095	2	2	2	1.7	1.7	86	87	90-110	1	15	M0
Sulfate	mg/L	224	400	400	400	676	662	113	109	90-110	2	15	M0

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486446	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003

METHOD BLANK: 2786084 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 08:40	

LABORATORY CONTROL SAMPLE: 2786085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	99.7	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786086 2786087

Parameter	Units	40284992002		2786087		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	331	100	434	100	103	96	90-110	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786088 2786089

Parameter	Units	40285189003		2786089		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	350	100	444	100	95	98	90-110	1	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 486447	Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2	Analysis Description: 310.2 Alkalinity
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189004

METHOD BLANK: 2786090 Matrix: Water

Associated Lab Samples: 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	2786092		2786093		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	367	100	467	472	100	105	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	2786094		2786095		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	466	200	648	643	91	88	90-110	1	20 M0	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	487331	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2790665 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	10/16/24 12:08	

LABORATORY CONTROL SAMPLE: 2790666

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.6	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2790667 2790668

Parameter	Units	40285018001		2790668		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	<0.059	2.5	2.5	2.4	2.4	94	94	90-110	1	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2790669 2790670

Parameter	Units	40285209001		2790670		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	0.085J	2.5	2.5	2.6	2.6	101	99	90-110	2	20		

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317 **Lab ID: 40285189001** Collected: 10/01/24 10:30 Received: 10/04/24 08:35 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	-0.115 ± 0.277 (1.00) C:NA T:98%	pCi/L	10/21/24 15:04	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.634 ± 0.375 (1.00) C:84% T:86%	pCi/L	10/23/24 14:45	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.634 ± 0.652 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318	Lab ID: 40285189002	Collected: 10/01/24 12:20	Received: 10/04/24 08:35	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	-0.0661 ± 0.467 (1.00) C:NA T:92%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.397 ± 0.363 (1.00) C:85% T:82%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.397 ± 0.830 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 **Lab ID: 40285189003** Collected: 10/01/24 14:20 Received: 10/04/24 08:35 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	0.432 ± 0.529 (1.00) C:NA T:94%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.28 ± 0.478 (1.00) C:83% T:84%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.71 ± 1.01 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 40285189004 Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.215 ± 1.08 (2.03) C:NA T:93%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.251 ± 0.339 (1.00) C:82% T:87%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.466 ± 1.42 (3.03)	pCi/L	10/24/24 15:37	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 701604

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: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 3417132

Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0442 ± 0.202 (0.476) C:NA T:91%	pCi/L	10/21/24 14:37	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 701605

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: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 3417133

Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.347 ± 0.326 (0.659) C:76% T:89%	pCi/L	10/23/24 14:43	

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: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- 1q Analyte was measured in the associated method blank at a concentration of -10mg/L
- D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- H6 Analysis initiated outside of the 15 minute EPA required holding time.
- M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
- P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285189001	MW-317	EPA 3010A	486501	EPA 6010D	486632
40285189002	MW-318	EPA 3010A	486501	EPA 6010D	486632
40285189003	MW-319	EPA 3010A	486501	EPA 6010D	486632
40285189004	FIELD BLANK	EPA 3010A	486501	EPA 6010D	486632
40285189001	MW-317	EPA 3010A	486340	EPA 6020B	486463
40285189002	MW-318	EPA 3010A	486340	EPA 6020B	486463
40285189003	MW-319	EPA 3010A	486340	EPA 6020B	486463
40285189004	FIELD BLANK	EPA 3010A	486340	EPA 6020B	486463
40285189001	MW-317	EPA 7470	486508	EPA 7470	486537
40285189002	MW-318	EPA 7470	486508	EPA 7470	486537
40285189003	MW-319	EPA 7470	486508	EPA 7470	486537
40285189004	FIELD BLANK	EPA 7470	486508	EPA 7470	486537
40285189001	MW-317				
40285189002	MW-318				
40285189003	MW-319				
40285189001	MW-317	EPA 903.1	701604		
40285189002	MW-318	EPA 903.1	701604		
40285189003	MW-319	EPA 903.1	701604		
40285189004	FIELD BLANK	EPA 903.1	701604		
40285189001	MW-317	EPA 904.0	701605		
40285189002	MW-318	EPA 904.0	701605		
40285189003	MW-319	EPA 904.0	701605		
40285189004	FIELD BLANK	EPA 904.0	701605		
40285189001	MW-317	Total Radium Calculation	705148		
40285189002	MW-318	Total Radium Calculation	705148		
40285189003	MW-319	Total Radium Calculation	705148		
40285189004	FIELD BLANK	Total Radium Calculation	705148		
40285189001	MW-317	SM 2540C	486561		
40285189002	MW-318	SM 2540C	486561		
40285189003	MW-319	SM 2540C	486561		
40285189004	FIELD BLANK	SM 2540C	486561		
40285189001	MW-317	EPA 9040	487364		
40285189002	MW-318	EPA 9040	487364		
40285189003	MW-319	EPA 9040	487364		
40285189004	FIELD BLANK	EPA 9040	487364		
40285189001	MW-317	EPA 300.0	487482		
40285189002	MW-318	EPA 300.0	487482		
40285189003	MW-319	EPA 300.0	487482		
40285189004	FIELD BLANK	EPA 300.0	487482		
40285189001	MW-317	EPA 310.2	486446		
40285189002	MW-318	EPA 310.2	486446		
40285189003	MW-319	EPA 310.2	486446		
40285189004	FIELD BLANK	EPA 310.2	486447		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285189001	MW-317	EPA 353.2	487331		
40285189002	MW-318	EPA 353.2	487331		
40285189003	MW-319	EPA 353.2	487331		
40285189004	FIELD BLANK	EPA 353.2	487331		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY Analytical Request Document
 Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here



40285189

Scan QR Code for instructions

Company Name: SCS ENGINEERS
 Street Address: 2830 Dairy Drive
 Madison, WI 53718

Customer Project #:
 Project Name: 25219067 COLUMBIA LF MOD 12-13 CCR

Site Collection Info/Facility ID (as applicable):

Contact/Report To: Meghan Blodgett
 Phone #: 608-216-7362
 E-Mail: mblodgett@scsengineers.com
 Cc E-Mail:

Invoice To: Accounts Payable
 Invoice E-Mail: aradunzel@scsengineers.com

Purchase Order # (if applicable):
 Quote #:

Specify Container Size **
 Identify Container Preservative Type***
 Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Time Zone Collected: [] AK [] PT [] MT [] CT [] ET
 Data Deliverables:
 [] Level II [] Level III [] Level IV
 [] EQUIS
 [] Other

County / State origin of sample(s): Wisconsin

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [] Yes [] No

Rush (Pre-approval required):
 [] Same Day [] 1 Day [] 2 Day [] 3 Day [] Other

Date Results Requested:
 Field Filtered (if applicable): [] Yes [] No

Chloride/Fluoride/Sulfate	Metals and Hardness	NO2+NO3	Radium 226 & 228	TDS, pH, Alkalinity	Lab Use Only
X	X	X	X	X	Proj. Mgr: Dan Milewsky
X	X	X	X	X	AcctNum / Client ID:
X	X	X	X	X	Table #:
X	X	X	X	X	Profile / Template: 3946
X	X	X	X	X	Prelog / Bottle Ord. ID: EZ 3157909
					Sample Comment
					001
					002
					003
					004

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start		Collected or Composite End		# Cont.	Res. Chlorine	
			Date	Time	Date	Time		Results	Units
MW-317 ✓	WT	G	10/11	1030					
MW-318 ✓	WT	G	↓	1220					
MW-319 ✓	WT	G	↓	1420					
FIELD BLANK ✓	WT	G	↓	1405					

Additional Instructions from Pace:
 Metals=6020 B,Ca,Sb,As,Ba,Be,Cd,Cr,Co,Pb,LI,Mo,Se,Te
 6010 Cu,Mn,Ag,Zn+hardness
 Mercury

Collected By: *Ethan Schorsted*
 (Printed Name)
 Signature: *[Signature]*

Customer Remarks / Special Conditions / Possible Hazards:

Coolers: 7 Thermometer ID: 141 Correction Factor (°C): - Obs. Temp. (°C): 0.5 Corrected Temp. (°C): 0.5 On Ice: J

Relinquished by/Company: (Signature) *[Signature]*
 Date/Time: 10/13/24 1500

Relinquished by/Company: (Signature) *[Signature]*
 Date/Time: 10/14/24 0835

Relinquished by/Company: (Signature)

Relinquished by/Company: (Signature)

Date/Time: 10/13/24 1500

Date/Time: 10/14/24 0835

Date/Time:

Date/Time:

Received by/Company: (Signature)

Received by/Company: (Signature) *[Signature]*

Received by/Company: (Signature)

Received by/Company: (Signature)

Date/Time:

Date/Time: 10/14/24 0835

Date/Time:

Date/Time:

Tracking Number:

Delivered by: [] In-Person [x] Courier
 [] FedEx [] UPS [] Other

Page: 1 of 1

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #:

WO#: **40285189**



Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 141 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/14/24 / Initials: GF
 Labeled By Initials: md

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Preserve</u> <u>10/14/24 GF</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <u>10/14/24 GF</u> <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Matrix: <u>W</u>	12. <u>004 time: '1420'</u> <u>10/14/24 GF</u>
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample log in



October 31, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40285191

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40285191

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285191001	MW-301	Water	10/02/24 12:40	10/04/24 08:35
40285191002	MW-84A	Water	10/02/24 11:50	10/04/24 08:35
40285191003	MW-84A DUP	Water	10/02/24 11:55	10/04/24 08:35

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SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40285191001	MW-301	EPA 6020B	KXS	15	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	LAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
40285191002	MW-84A	EPA 6020B	KXS	15	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	LAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
40285191003	MW-84A DUP	EPA 6020B	KXS	15	PASI-G
		EPA 7470	AJT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-301 **Lab ID: 40285191001** Collected: 10/02/24 12:40 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 17:28	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 17:28	7440-38-2	
Barium	10.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 17:28	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 17:28	7440-41-7	
Boron	22.1	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 17:28	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 17:28	7440-43-9	
Calcium	97000	ug/L	2540	762	10	10/06/24 09:18	10/08/24 17:11	7440-70-2	P6
Chromium	<1.0	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 17:28	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 17:28	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 17:28	7439-92-1	
Lithium	0.80J	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 17:28	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 17:28	7439-98-7	
Selenium	0.39J	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 17:28	7782-49-2	
Thallium	0.15J	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 17:28	7440-28-0	
Total Hardness by 2340B	434	mg/L	17.0	3.2	10	10/06/24 09:18	10/08/24 17:11		
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:47	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	6.85	Std. Units			1		10/02/24 12:40		
Field Specific Conductance	602.4	umhos/cm			1		10/02/24 12:40		
Oxygen, Dissolved	2.77	mg/L			1		10/02/24 12:40	7782-44-7	
REDOX	68.1	mV			1		10/02/24 12:40		
Turbidity	1.84	NTU			1		10/02/24 12:40		
Static Water Level	787.92	feet			1		10/02/24 12:40		
Temperature, Water (C)	11.7	deg C			1		10/02/24 12:40		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	410	mg/L	20.0	8.7	1		10/08/24 18:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		10/16/24 17:23		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	1.5J	mg/L	2.0	0.59	1		10/18/24 00:28	16887-00-6	
Fluoride	0.13J	mg/L	0.32	0.095	1		10/18/24 00:28	16984-48-8	
Sulfate	10.4	mg/L	2.0	0.44	1		10/18/24 00:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-301 Lab ID: 40285191001 Collected: 10/02/24 12:40 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	433	mg/L	25.0	7.4	1		10/08/24 09:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-84A Lab ID: 40285191002 Collected: 10/02/24 11:50 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:02	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:02	7440-38-2	
Barium	13.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:02	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:02	7440-41-7	
Boron	10.3	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:02	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:02	7440-43-9	
Calcium	73300	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:02	7440-70-2	
Chromium	1.7J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:02	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:02	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:02	7439-92-1	
Lithium	0.57J	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:02	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:02	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:02	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:02	7440-28-0	
Total Hardness by 2340B	341	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 18:02		
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:49	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.36	Std. Units			1		10/02/24 11:50		
Field Specific Conductance	502.7	umhos/cm			1		10/02/24 11:50		
Oxygen, Dissolved	8.73	mg/L			1		10/02/24 11:50	7782-44-7	
REDOX	65.1	mV			1		10/02/24 11:50		
Turbidity	2.55	NTU			1		10/02/24 11:50		
Static Water Level	787.14	feet			1		10/02/24 11:50		
Temperature, Water (C)	12.4	deg C			1		10/02/24 11:50		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	318	mg/L	20.0	8.7	1		10/08/24 18:01		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		10/16/24 17:26		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.3	mg/L	2.0	0.59	1		10/18/24 00:39	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 00:39	16984-48-8	
Sulfate	1.8J	mg/L	2.0	0.44	1		10/18/24 00:39	14808-79-8	

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-84A Lab ID: 40285191002 Collected: 10/02/24 11:50 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	350	mg/L	25.0	7.4	1		10/08/24 09:34		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-84A DUP Lab ID: 40285191003 Collected: 10/02/24 11:55 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:10	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:10	7440-38-2	
Barium	13.7	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:10	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:10	7440-41-7	
Boron	10.4	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:10	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:10	7440-43-9	
Calcium	72500	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:10	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:10	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:10	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:10	7439-92-1	
Lithium	0.48J	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:10	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:10	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:10	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:10	7440-28-0	
Total Hardness by 2340B	339	mg/L	1.7	0.32	1	10/06/24 09:18	10/08/24 18:10		
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 09:02	7439-97-6	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch:	486508	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40285191001, 40285191002, 40285191003		

METHOD BLANK: 2786308 Matrix: Water

Associated Lab Samples: 40285191001, 40285191002, 40285191003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	10/10/24 08:28	

LABORATORY CONTROL SAMPLE: 2786309

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786310 2786311

Parameter	Units	2786310		2786311		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40285189001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Mercury	ug/L	<0.066	5	5	5.0	4.9	101	98	85-115	3	20	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch:	486340	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285191001, 40285191002, 40285191003

METHOD BLANK: 2785746 Matrix: Water

Associated Lab Samples: 40285191001, 40285191002, 40285191003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	10/08/24 17:03	
Arsenic	ug/L	<0.28	1.0	10/08/24 17:03	
Barium	ug/L	<0.70	2.3	10/08/24 17:03	
Beryllium	ug/L	<0.25	1.0	10/08/24 17:03	
Boron	ug/L	<3.0	10.0	10/08/24 17:03	
Cadmium	ug/L	<0.15	1.0	10/08/24 17:03	
Calcium	ug/L	<76.2	254	10/08/24 17:03	
Chromium	ug/L	<1.0	3.4	10/08/24 17:03	
Cobalt	ug/L	<0.12	1.0	10/08/24 17:03	
Lead	ug/L	<0.24	1.0	10/08/24 17:03	
Lithium	ug/L	<0.22	1.0	10/08/24 17:03	
Molybdenum	ug/L	<0.44	1.5	10/08/24 17:03	
Selenium	ug/L	<0.32	1.1	10/08/24 17:03	
Thallium	ug/L	<0.14	1.0	10/08/24 17:03	
Total Hardness by 2340B	mg/L	<0.32	1.7	10/08/24 17:03	

LABORATORY CONTROL SAMPLE: 2785747

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	249	100	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	248	99	80-120	
Beryllium	ug/L	250	247	99	80-120	
Boron	ug/L	250	217	87	80-120	
Cadmium	ug/L	250	251	100	80-120	
Calcium	ug/L	10000	9820	98	80-120	
Chromium	ug/L	250	238	95	80-120	
Cobalt	ug/L	250	246	99	80-120	
Lead	ug/L	250	251	101	80-120	
Lithium	ug/L	250	245	98	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	250	100	80-120	
Total Hardness by 2340B	mg/L		65.9			

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785748												2785749	
Parameter	Units	40285191001		MS	MSD	MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Antimony	ug/L	<0.15	250	250	254	255	102	102	75-125	0	20		
Arsenic	ug/L	<0.28	250	250	256	257	102	103	75-125	0	20		
Barium	ug/L	10.6	250	250	265	265	102	102	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	254	253	102	101	75-125	1	20		
Boron	ug/L	22.1	250	250	246	241	89	88	75-125	2	20		
Cadmium	ug/L	<0.15	250	250	255	255	102	102	75-125	0	20		
Calcium	ug/L	97000	10000	10000	115000	113000	182	162	75-125	2	20	P6	
Chromium	ug/L	<1.0	250	250	241	242	96	97	75-125	0	20		
Cobalt	ug/L	<0.12	250	250	248	247	99	99	75-125	0	20		
Lead	ug/L	<0.24	250	250	252	251	101	100	75-125	1	20		
Lithium	ug/L	0.80J	250	250	253	252	101	100	75-125	0	20		
Molybdenum	ug/L	<0.44	250	250	257	255	103	102	75-125	1	20		
Selenium	ug/L	0.39J	250	250	253	253	101	101	75-125	0	20		
Thallium	ug/L	0.15J	250	250	245	245	98	98	75-125	0	20		
Total Hardness by 2340B	mg/L	434			534	522				2	20		

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch: 486616

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285191001, 40285191002

METHOD BLANK: 2786836

Matrix: Water

Associated Lab Samples: 40285191001, 40285191002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 17:59	

LABORATORY CONTROL SAMPLE: 2786837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	506	87	80-120	

SAMPLE DUPLICATE: 2786842

Parameter	Units	40285126001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	498	472	5	10	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch: 487364

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285191001, 40285191002

SAMPLE DUPLICATE: 2790786

Parameter	Units	40285189001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.5	8.5	0	20	H6

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch:	487482	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285191001, 40285191002

METHOD BLANK: 2791543 Matrix: Water

Associated Lab Samples: 40285191001, 40285191002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/17/24 19:11	
Fluoride	mg/L	<0.095	0.32	10/17/24 19:11	
Sulfate	mg/L	<0.44	2.0	10/17/24 19:11	

LABORATORY CONTROL SAMPLE: 2791544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.0	99	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791545 2791546

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285153002 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	280	400	400	723	724	111	111	90-110	0	15	M0	
Fluoride	mg/L	<1.9	40	40	42.3	42.7	101	102	90-110	1	15		
Sulfate	mg/L	213	400	400	645	647	108	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791547 2791548

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285193002 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	52.7	400	400	487	476	109	106	90-110	2	15		
Fluoride	mg/L	<0.095	2	2	1.7	1.7	86	87	90-110	1	15	M0	
Sulfate	mg/L	224	400	400	676	662	113	109	90-110	2	15	M0	

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QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch:	486447	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285191001, 40285191002

METHOD BLANK: 2786090 Matrix: Water

Associated Lab Samples: 40285191001, 40285191002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	40285195001		2786093		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	367	100	467	100	100	105	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	40285280009		2786095		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	466	200	648	200	91	88	90-110	1	20 M0	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Sample: MW-301	Lab ID: 40285191001	Collected: 10/02/24 12:40	Received: 10/04/24 08:35	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	0.102 ± 0.661 (1.00) C:NA T:93%	pCi/L	10/21/24 14:11	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.731 ± 0.340 (1.00) C:81% T:91%	pCi/L	10/22/24 12:01	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.833 ± 1.00 (2.00)	pCi/L	10/28/24 16:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.000 ± 0.507 (1.00) C:NA T:89%	pCi/L	10/21/24 14:23	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.668 ± 0.345 (1.00) C:86% T:87%	pCi/L	10/22/24 12:01	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.668 ± 0.852 (2.00)	pCi/L	10/28/24 16:04	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch: 701602

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: 40285191001, 40285191002

METHOD BLANK: 3417130

Matrix: Water

Associated Lab Samples: 40285191001, 40285191002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.243 ± 0.253 (0.376) C:NA T:91%	pCi/L	10/21/24 13:59	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

QC Batch: 701603

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: 40285191001, 40285191002

METHOD BLANK: 3417131

Matrix: Water

Associated Lab Samples: 40285191001, 40285191002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.553 ± 0.364 (0.691) C:85% T:85%	pCi/L	10/22/24 11:58	

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QUALIFIERS

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR BACKGROU

Pace Project No.: 40285191

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285191001	MW-301	EPA 3010A	486340	EPA 6020B	486463
40285191002	MW-84A	EPA 3010A	486340	EPA 6020B	486463
40285191003	MW-84A DUP	EPA 3010A	486340	EPA 6020B	486463
40285191001	MW-301	EPA 7470	486508	EPA 7470	486537
40285191002	MW-84A	EPA 7470	486508	EPA 7470	486537
40285191003	MW-84A DUP	EPA 7470	486508	EPA 7470	486537
40285191001	MW-301				
40285191002	MW-84A				
40285191001	MW-301	EPA 903.1	701602		
40285191002	MW-84A	EPA 903.1	701602		
40285191001	MW-301	EPA 904.0	701603		
40285191002	MW-84A	EPA 904.0	701603		
40285191001	MW-301	Total Radium Calculation	705774		
40285191002	MW-84A	Total Radium Calculation	705774		
40285191001	MW-301	SM 2540C	486616		
40285191002	MW-84A	SM 2540C	486616		
40285191001	MW-301	EPA 9040	487364		
40285191002	MW-84A	EPA 9040	487364		
40285191001	MW-301	EPA 300.0	487482		
40285191002	MW-84A	EPA 300.0	487482		
40285191001	MW-301	EPA 310.2	486447		
40285191002	MW-84A	EPA 310.2	486447		

REPORT OF LABORATORY ANALYSIS

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Client Name: SCS

Sample Preservation Receipt Form
 Project # 40285191

All containers needing preservation have been checked and noted below:

Yes No N/A

Lab Lot# of pH paper: 10D3733

Lab Std #ID of preservation (if pH adjusted):

Initial when completed: GF

Date/Time:

Pace Lab #	Glass						Plastic						Vials					Jars				General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)					
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU								SP5T	ZPLC	GN 1	GN 2	
001									2		-															2							X		2.5 / 5
002									2		-															2							X		2.5 / 5
003									-		-																						X		2.5 / 5
004																																			2.5 / 5
005																																			2.5 / 5
006																																			2.5 / 5
007																																			2.5 / 5
008																																			2.5 / 5
009																																			2.5 / 5
010																																			2.5 / 5
011																																			2.5 / 5
012																																			2.5 / 5
013																																			2.5 / 5
014																																			2.5 / 5
015																																			2.5 / 5
016																																			2.5 / 5
017																																			2.5 / 5
018																																			2.5 / 5
019																																			2.5 / 5
020																																			2.5 / 5

10/4/22 GF

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : Yes No N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	1 liter plastic HNO3
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: 40285191



40285191

Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR-111 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.5

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/17/24 / Initials: GF
 Labeled By Initials: mt

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Preserve</u> <u>10/17/24 GF</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample log in



October 28, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40285189

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40285189001	MW-317	Water	10/01/24 10:30	10/04/24 08:35
40285189002	MW-318	Water	10/01/24 12:20	10/04/24 08:35
40285189003	MW-319	Water	10/01/24 14:20	10/04/24 08:35
40285189004	FIELD BLANK	Water	10/01/24 14:05	10/04/24 08:35

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40285189001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40285189002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AJT			1	PASI-G
	LB			7	PASI-G
EPA 903.1	CLM			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	LMB			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40285189003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40285189004	FIELD BLANK	EPA 6010D	SIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317 **Lab ID: 40285189001** Collected: 10/01/24 10:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 19:52	7440-50-8	
Manganese	239	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 19:52	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 19:52	7440-22-4	
Total Hardness by 2340B	227	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 19:52		
Zinc	48.5	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 19:52	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:56	7440-36-0	
Arsenic	1.3	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:56	7440-38-2	
Barium	51.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:56	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:56	7440-41-7	
Boron	75.6	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:56	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:56	7440-43-9	
Calcium	46400	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:56	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:56	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:56	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:56	7439-92-1	
Lithium	5.0	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:56	7439-93-2	
Molybdenum	24.6	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:56	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:56	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:56	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.84	Std. Units			1		10/01/24 10:30		
Field Specific Conductance	422.8	umhos/cm			1		10/01/24 10:30		
Oxygen, Dissolved	2.26	mg/L			1		10/01/24 10:30	7782-44-7	
REDOX	-103.80	mV			1		10/01/24 10:30		
Turbidity	2.31	NTU			1		10/01/24 10:30		
Static Water Level	786.41	feet			1		10/01/24 10:30		
Temperature, Water (C)	11.4	deg C			1		10/01/24 10:30		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	248	mg/L	20.0	8.7	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		10/16/24 17:02		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317 Lab ID: 40285189001 Collected: 10/01/24 10:30 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.2	mg/L	2.0	0.59	1		10/17/24 23:45	16887-00-6	
Fluoride	0.17J	mg/L	0.32	0.095	1		10/17/24 23:45	16984-48-8	
Sulfate	5.2	mg/L	2.0	0.44	1		10/17/24 23:45	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	254	mg/L	25.0	7.4	1		10/08/24 09:07		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	0.26	mg/L	0.25	0.059	1		10/16/24 12:54		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318 **Lab ID: 40285189002** Collected: 10/01/24 12:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:04	7440-50-8	
Manganese	13.7	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:04	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:04	7440-22-4	
Total Hardness by 2340B	464	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:04		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:04	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:00	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 19:00	7440-38-2	
Barium	22.6	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 19:00	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 19:00	7440-41-7	
Boron	37.6	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 19:00	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:00	7440-43-9	
Calcium	103000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 19:00	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 19:00	7440-47-3	
Cobalt	0.18J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 19:00	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 19:00	7439-92-1	
Lithium	1.1	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 19:00	7439-93-2	
Molybdenum	0.52J	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 19:00	7439-98-7	
Selenium	0.80J	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 19:00	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 19:00	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:40	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.45	Std. Units			1		10/01/24 12:20		
Field Specific Conductance	942.0	umhos/cm			1		10/01/24 12:20		
Oxygen, Dissolved	6.84	mg/L			1		10/01/24 12:20	7782-44-7	
REDOX	59.80	mV			1		10/01/24 12:20		
Turbidity	7.62	NTU			1		10/01/24 12:20		
Static Water Level	786.71	feet			1		10/01/24 12:20		
Temperature, Water (C)	11.6	deg C			1		10/01/24 12:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	674	mg/L	20.0	8.7	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 17:06		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318 Lab ID: 40285189002 Collected: 10/01/24 12:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	65.5	mg/L	20.0	5.9	10		10/18/24 13:46	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/17/24 23:56	16984-48-8	
Sulfate	231	mg/L	20.0	4.4	10		10/18/24 13:46	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	245	mg/L	25.0	7.4	1		10/08/24 09:08		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	1.4	mg/L	0.25	0.059	1		10/16/24 12:55		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 **Lab ID: 40285189003** Collected: 10/01/24 14:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:08	7440-50-8	
Manganese	9.8	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:08	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:08	7440-22-4	
Total Hardness by 2340B	470	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:08		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:08	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:05	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 19:05	7440-38-2	
Barium	41.2	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 19:05	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 19:05	7440-41-7	
Boron	30.8	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 19:05	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 19:05	7440-43-9	
Calcium	106000	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 19:05	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 19:05	7440-47-3	
Cobalt	0.42J	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 19:05	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 19:05	7439-92-1	
Lithium	0.98J	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 19:05	7439-93-2	
Molybdenum	0.62J	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 19:05	7439-98-7	
Selenium	1.4	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 19:05	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 19:05	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:42	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.61	Std. Units			1		10/01/24 14:20		
Field Specific Conductance	2344	umhos/cm			1		10/01/24 14:20		
Oxygen, Dissolved	7.52	mg/L			1		10/01/24 14:20	7782-44-7	
REDOX	78.0	mV			1		10/01/24 14:20		
Turbidity	7.40	NTU			1		10/01/24 14:20		
Static Water Level	788.22	feet			1		10/01/24 14:20		
Temperature, Water (C)	11.4	deg C			1		10/01/24 14:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	1450	mg/L	33.3	14.5	1		10/08/24 13:00		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		10/16/24 17:10		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 Lab ID: 40285189003 Collected: 10/01/24 14:20 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	649	mg/L	40.0	11.8	20		10/18/24 00:06	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		10/18/24 00:06	16984-48-8	D3
Sulfate	62.9	mg/L	40.0	8.9	20		10/18/24 00:06	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	350	mg/L	25.0	7.4	1		10/08/24 09:09		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	2.0	mg/L	0.25	0.059	1		10/16/24 12:56		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: FIELD BLANK Lab ID: 40285189004 Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	10/08/24 08:01	10/08/24 20:10	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	10/08/24 08:01	10/08/24 20:10	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	10/08/24 08:01	10/08/24 20:10	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	10/08/24 08:01	10/08/24 20:10		
Zinc	<11.6	ug/L	40.0	11.6	1	10/08/24 08:01	10/08/24 20:10	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:48	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	10/06/24 09:18	10/08/24 18:48	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	10/06/24 09:18	10/08/24 18:48	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	10/06/24 09:18	10/08/24 18:48	7440-41-7	
Boron	3.4J	ug/L	10.0	3.0	1	10/06/24 09:18	10/08/24 18:48	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	10/06/24 09:18	10/08/24 18:48	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	10/06/24 09:18	10/08/24 18:48	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	10/06/24 09:18	10/08/24 18:48	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	10/06/24 09:18	10/08/24 18:48	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	10/06/24 09:18	10/08/24 18:48	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	10/06/24 09:18	10/08/24 18:48	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	10/06/24 09:18	10/08/24 18:48	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	10/06/24 09:18	10/08/24 18:48	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	10/06/24 09:18	10/08/24 18:48	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	10/08/24 06:34	10/10/24 08:45	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/08/24 13:02		1q
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		10/16/24 17:20		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		10/18/24 00:17	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/18/24 00:17	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/18/24 00:17	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		10/08/24 09:14		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: FIELD BLANK Lab ID: 40285189004 Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		10/16/24 12:56		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 486508 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Laboratory: Pace Analytical Services - Green Bay
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786308 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	10/10/24 08:28	

LABORATORY CONTROL SAMPLE: 2786309

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786310 2786311

Parameter	Units	40285189001		2786311		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Mercury	ug/L	<0.066	5	5	5.0	4.9	101	98	85-115	3	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486501	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786292 Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	10/08/24 19:40	
Manganese	ug/L	<1.5	5.0	10/08/24 19:40	
Silver	ug/L	<3.2	10.0	10/08/24 19:40	
Total Hardness by 2340B	mg/L	<1.0	5.4	10/08/24 19:40	
Zinc	ug/L	<11.6	40.0	10/08/24 19:40	

LABORATORY CONTROL SAMPLE: 2786293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	263	105	80-120	
Manganese	ug/L	250	263	105	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		67.5			
Zinc	ug/L	250	254	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786294 2786295

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285189001 Result	Spike Conc.	Spike Conc.	Conc.								
Copper	ug/L	<3.4	250	250	250	264	261	105	104	75-125	1	20	
Manganese	ug/L	239	250	250	250	503	496	106	103	75-125	1	20	
Silver	ug/L	<3.2	125	125	125	130	129	104	103	75-125	1	20	
Total Hardness by 2340B	mg/L	227				297	291				2	20	
Zinc	ug/L	48.5	250	250	250	258	250	84	81	75-125	3	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486340	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2785746 Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	10/08/24 17:03	
Arsenic	ug/L	<0.28	1.0	10/08/24 17:03	
Barium	ug/L	<0.70	2.3	10/08/24 17:03	
Beryllium	ug/L	<0.25	1.0	10/08/24 17:03	
Boron	ug/L	<3.0	10.0	10/08/24 17:03	
Cadmium	ug/L	<0.15	1.0	10/08/24 17:03	
Calcium	ug/L	<76.2	254	10/08/24 17:03	
Chromium	ug/L	<1.0	3.4	10/08/24 17:03	
Cobalt	ug/L	<0.12	1.0	10/08/24 17:03	
Lead	ug/L	<0.24	1.0	10/08/24 17:03	
Lithium	ug/L	<0.22	1.0	10/08/24 17:03	
Molybdenum	ug/L	<0.44	1.5	10/08/24 17:03	
Selenium	ug/L	<0.32	1.1	10/08/24 17:03	
Thallium	ug/L	<0.14	1.0	10/08/24 17:03	

LABORATORY CONTROL SAMPLE: 2785747

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	249	100	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	248	99	80-120	
Beryllium	ug/L	250	247	99	80-120	
Boron	ug/L	250	217	87	80-120	
Cadmium	ug/L	250	251	100	80-120	
Calcium	ug/L	10000	9820	98	80-120	
Chromium	ug/L	250	238	95	80-120	
Cobalt	ug/L	250	246	99	80-120	
Lead	ug/L	250	251	101	80-120	
Lithium	ug/L	250	245	98	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	250	100	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2785748 2785749												
Parameter	Units	40285191001		MS	MSD	2785749		% Rec	% Rec	% Rec	Max	Qual
		Result	Conc.	Spike	Spike	MS	MSD					
Antimony	ug/L	<0.15	250	250	250	254	255	102	102	75-125	0	20
Arsenic	ug/L	<0.28	250	250	250	256	257	102	103	75-125	0	20
Barium	ug/L	10.6	250	250	250	265	265	102	102	75-125	0	20
Beryllium	ug/L	<0.25	250	250	250	254	253	102	101	75-125	1	20
Boron	ug/L	22.1	250	250	250	246	241	89	88	75-125	2	20
Cadmium	ug/L	<0.15	250	250	250	255	255	102	102	75-125	0	20
Calcium	ug/L	97000	10000	10000	115000	113000	182	162	75-125	2	20	P6
Chromium	ug/L	<1.0	250	250	250	241	242	96	97	75-125	0	20
Cobalt	ug/L	<0.12	250	250	250	248	247	99	99	75-125	0	20
Lead	ug/L	<0.24	250	250	250	252	251	101	100	75-125	1	20
Lithium	ug/L	0.80J	250	250	250	253	252	101	100	75-125	0	20
Molybdenum	ug/L	<0.44	250	250	250	257	255	103	102	75-125	1	20
Selenium	ug/L	0.39J	250	250	250	253	253	101	101	75-125	0	20
Thallium	ug/L	0.15J	250	250	250	245	245	98	98	75-125	0	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486561	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2786441 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/08/24 12:56	

LABORATORY CONTROL SAMPLE: 2786442

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2786455

Parameter	Units	40285189004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	<8.7	<8.7		10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 487364

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

SAMPLE DUPLICATE: 2790786

Parameter	Units	40285189001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.5	8.5	0	20	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	487482	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2791543 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/17/24 19:11	
Fluoride	mg/L	<0.095	0.32	10/17/24 19:11	
Sulfate	mg/L	<0.44	2.0	10/17/24 19:11	

LABORATORY CONTROL SAMPLE: 2791544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.0	99	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791545 2791546

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285153002 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	280	400	400	723	724	111	111	90-110	0	15	M0	
Fluoride	mg/L	<1.9	40	40	42.3	42.7	101	102	90-110	1	15		
Sulfate	mg/L	213	400	400	645	647	108	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2791547 2791548

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40285193002 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	52.7	400	400	487	476	109	106	90-110	2	15		
Fluoride	mg/L	<0.095	2	2	1.7	1.7	86	87	90-110	1	15	M0	
Sulfate	mg/L	224	400	400	676	662	113	109	90-110	2	15	M0	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	486446	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40285189001, 40285189002, 40285189003		

METHOD BLANK: 2786084 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 08:40	

LABORATORY CONTROL SAMPLE: 2786085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	99.7	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786086 2786087

Parameter	Units	40284992002		2786087		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	331	100	100	434	427	103	96	90-110	2	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786088 2786089

Parameter	Units	40285189003		2786089		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	350	100	100	444	448	95	98	90-110	1	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 486447	Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2	Analysis Description: 310.2 Alkalinity
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189004

METHOD BLANK: 2786090 Matrix: Water

Associated Lab Samples: 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	10/08/24 09:12	

LABORATORY CONTROL SAMPLE: 2786091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786092 2786093

Parameter	Units	2786092		2786093		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	367	100	467	472	100	105	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2786094 2786095

Parameter	Units	2786094		2786095		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	466	200	648	643	91	88	90-110	1	20 M0	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch:	487331	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 2790665 Matrix: Water
 Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	10/16/24 12:08	

LABORATORY CONTROL SAMPLE: 2790666

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.6	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2790667 2790668

Parameter	Units	40285018001		2790668		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Nitrogen, NO2 plus NO3	mg/L	<0.059	2.5	2.4	2.4	94	94	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2790669 2790670

Parameter	Units	40285209001		2790670		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Nitrogen, NO2 plus NO3	mg/L	0.085J	2.5	2.6	2.6	101	99	90-110	2	20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-317	Lab ID: 40285189001	Collected: 10/01/24 10:30	Received: 10/04/24 08:35	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	-0.115 ± 0.277 (1.00) C:NA T:98%	pCi/L	10/21/24 15:04	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.634 ± 0.375 (1.00) C:84% T:86%	pCi/L	10/23/24 14:45	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.634 ± 0.652 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-318 **Lab ID: 40285189002** Collected: 10/01/24 12:20 Received: 10/04/24 08:35 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	-0.0661 ± 0.467 (1.00) C:NA T:92%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.397 ± 0.363 (1.00) C:85% T:82%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.397 ± 0.830 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Sample: MW-319 **Lab ID: 40285189003** Collected: 10/01/24 14:20 Received: 10/04/24 08:35 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	0.432 ± 0.529 (1.00) C:NA T:94%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.28 ± 0.478 (1.00) C:83% T:84%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.71 ± 1.01 (2.00)	pCi/L	10/24/24 15:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 40285189004 Collected: 10/01/24 14:05 Received: 10/04/24 08:35 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.215 ± 1.08 (2.03) C:NA T:93%	pCi/L	10/21/24 15:04	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.251 ± 0.339 (1.00) C:82% T:87%	pCi/L	10/23/24 14:45	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.466 ± 1.42 (3.03)	pCi/L	10/24/24 15:37	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 701604

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: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 3417132

Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0442 ± 0.202 (0.476) C:NA T:91%	pCi/L	10/21/24 14:37	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

QC Batch: 701605

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: 40285189001, 40285189002, 40285189003, 40285189004

METHOD BLANK: 3417133

Matrix: Water

Associated Lab Samples: 40285189001, 40285189002, 40285189003, 40285189004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.347 ± 0.326 (0.659) C:76% T:89%	pCi/L	10/23/24 14:43	

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QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- 1q Analyte was measured in the associated method blank at a concentration of -10mg/L
- D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- H6 Analysis initiated outside of the 15 minute EPA required holding time.
- M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
- P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285189001	MW-317	EPA 3010A	486501	EPA 6010D	486632
40285189002	MW-318	EPA 3010A	486501	EPA 6010D	486632
40285189003	MW-319	EPA 3010A	486501	EPA 6010D	486632
40285189004	FIELD BLANK	EPA 3010A	486501	EPA 6010D	486632
40285189001	MW-317	EPA 3010A	486340	EPA 6020B	486463
40285189002	MW-318	EPA 3010A	486340	EPA 6020B	486463
40285189003	MW-319	EPA 3010A	486340	EPA 6020B	486463
40285189004	FIELD BLANK	EPA 3010A	486340	EPA 6020B	486463
40285189001	MW-317	EPA 7470	486508	EPA 7470	486537
40285189002	MW-318	EPA 7470	486508	EPA 7470	486537
40285189003	MW-319	EPA 7470	486508	EPA 7470	486537
40285189004	FIELD BLANK	EPA 7470	486508	EPA 7470	486537
40285189001	MW-317				
40285189002	MW-318				
40285189003	MW-319				
40285189001	MW-317	EPA 903.1	701604		
40285189002	MW-318	EPA 903.1	701604		
40285189003	MW-319	EPA 903.1	701604		
40285189004	FIELD BLANK	EPA 903.1	701604		
40285189001	MW-317	EPA 904.0	701605		
40285189002	MW-318	EPA 904.0	701605		
40285189003	MW-319	EPA 904.0	701605		
40285189004	FIELD BLANK	EPA 904.0	701605		
40285189001	MW-317	Total Radium Calculation	705148		
40285189002	MW-318	Total Radium Calculation	705148		
40285189003	MW-319	Total Radium Calculation	705148		
40285189004	FIELD BLANK	Total Radium Calculation	705148		
40285189001	MW-317	SM 2540C	486561		
40285189002	MW-318	SM 2540C	486561		
40285189003	MW-319	SM 2540C	486561		
40285189004	FIELD BLANK	SM 2540C	486561		
40285189001	MW-317	EPA 9040	487364		
40285189002	MW-318	EPA 9040	487364		
40285189003	MW-319	EPA 9040	487364		
40285189004	FIELD BLANK	EPA 9040	487364		
40285189001	MW-317	EPA 300.0	487482		
40285189002	MW-318	EPA 300.0	487482		
40285189003	MW-319	EPA 300.0	487482		
40285189004	FIELD BLANK	EPA 300.0	487482		
40285189001	MW-317	EPA 310.2	486446		
40285189002	MW-318	EPA 310.2	486446		
40285189003	MW-319	EPA 310.2	486446		
40285189004	FIELD BLANK	EPA 310.2	486447		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40285189

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40285189001	MW-317	EPA 353.2	487331		
40285189002	MW-318	EPA 353.2	487331		
40285189003	MW-319	EPA 353.2	487331		
40285189004	FIELD BLANK	EPA 353.2	487331		

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CHAIN-OF-CUSTODY Analytical Request Document
 Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here



40285189

Scan QR Code for instructions

Company Name: SCS ENGINEERS
 Street Address: 2830 Dairy Drive
 Madison, WI 53718

Customer Project #:
 Project Name: 25219067 COLUMBIA LF MOD 12-13 CCR

Site Collection Info/Facility ID (as applicable):

Contact/Report To: Meghan Blodgett
 Phone #: 608-216-7362
 E-Mail: mblodgett@scsengineers.com
 Cc E-Mail:

Invoice To: Accounts Payable
 Invoice E-Mail: aradunzel@scsengineers.com

Purchase Order # (if applicable):
 Quote #:

Specify Container Size **
 Identify Container Preservative Type ***
 Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Time Zone Collected: [] AK [] PT [] MT [] CT [] ET
 Data Deliverables:
 [] Level II [] Level III [] Level IV
 [] EQUIS
 [] Other

County / State origin of sample(s): Wisconsin

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [] Yes [] No

Rush (Pre-approval required):
 [] Same Day [] 1 Day [] 2 Day [] 3 Day [] Other

Date Results Requested:
 Field Filtered (if applicable): [] Yes [] No

Chloride/Fluoride/Sulfate	Metals and Hardness	NO2+NO3	Radium 226 & 228	TDS, pH, Alkalinity	Analysis Requested					Sample Comment	Preservation non-conformance identified for sample.
					Res. Chlorine	Cont.	Results	Units	Other		
X	X	X	X	X						001	
X	X	X	X	X						002	
X	X	X	X	X						003	
X	X	X	X	X						004	

Lab Use Only

Proj. Mgr:
Dan Milewsky

AcctNum / Client ID:

Table #:

Profile / Template:
3946

Prelog / Bottle Ord. ID:
EZ 3157909

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start		Collected or Composite End		# Cont.	Res. Chlorine	
			Date	Time	Date	Time		Results	Units
MW-317 ✓	WT	G	10/11	1030					
MW-318 ✓	WT	G	↓	1220					
MW-319 ✓	WT	G	↓	1420					
FIELD BLANK ✓	WT	G	↓	1405					

Additional Instructions from Pace®:
 Metals=6020 B,Ca,Sb,As,Ba,Be,Cd,Cr,Co,Pb,LI,Mo,Se,Te
 6010 Cu,Mn,Ag,Zn+hardness
 Mercury

Collected By: *Ethan Schorsted*
 (Printed Name)
 Signature: *[Signature]*

Customer Remarks / Special Conditions / Possible Hazards:

Coolers: 7 Thermometer ID: 141 Correction Factor (°C): - Obs. Temp. (°C): 0.5 Corrected Temp. (°C): 0.5 On Ice: ✓

Relinquished by/Company: (Signature) *[Signature]*
 Date/Time: 10/13/24 1500

Relinquished by/Company: (Signature) *CS Logistics*
 Date/Time: 10/14/24 0835

Relinquished by/Company: (Signature)

Relinquished by/Company: (Signature)

Date/Time: 10/13/24 1500

Date/Time: 10/14/24 0835

Date/Time:

Date/Time:

Received by/Company: (Signature)

Received by/Company: (Signature) *[Signature]*

Received by/Company: (Signature)

Received by/Company: (Signature)

Date/Time:

Date/Time: 10/14/24 0835

Date/Time:

Date/Time:

Tracking Number:

Delivered by: [] In-Person [x] Courier
 [] FedEx [] UPS [] Other

Page: 1 of 1

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #:

WO#: **40285189**



Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 141 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/14/24 / Initials: GF
 Labeled By Initials: md

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Preserve</u> <u>10/14/24 GF</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <u>10/14/24 GF</u> <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Matrix: <u>W</u>	12. <u>004 time: '1420'</u> <u>10/14/24 GF</u>
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample log in



November 27, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40286846

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on November 01, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burriss, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40286846

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40286846001	MW-317	Water	10/31/24 10:14	11/01/24 08:30
40286846002	MW-318	Water	10/31/24 11:06	11/01/24 08:30
40286846003	MW-319	Water	10/31/24 11:58	11/01/24 08:30
40286846004	FIELD BLANK	Water	10/31/24 12:10	11/01/24 08:30

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40286846001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40286846002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	LB			7	PASI-G
EPA 903.1	CLM			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	LMB			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40286846003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40286846004	FIELD BLANK	EPA 6010D	SIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-317 **Lab ID: 40286846001** Collected: 10/31/24 10:14 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	11/04/24 15:27	11/05/24 13:00	7440-50-8	
Manganese	280	ug/L	5.0	1.5	1	11/04/24 15:27	11/05/24 13:00	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	11/04/24 15:27	11/05/24 13:00	7440-22-4	
Total Hardness by 2340B	225	mg/L	5.4	1.0	1	11/04/24 15:27	11/05/24 13:00		
Zinc	<11.6	ug/L	40.0	11.6	1	11/04/24 15:27	11/05/24 13:00	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:37	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.28	1	11/05/24 08:35	11/07/24 10:37	7440-38-2	
Barium	54.5	ug/L	2.3	0.70	1	11/05/24 08:35	11/07/24 10:37	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/05/24 08:35	11/07/24 10:37	7440-41-7	
Boron	39.4	ug/L	10.0	3.0	1	11/05/24 08:35	11/07/24 10:37	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:37	7440-43-9	
Calcium	48100	ug/L	254	76.2	1	11/05/24 08:35	11/07/24 10:37	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/05/24 08:35	11/07/24 10:37	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/05/24 08:35	11/07/24 10:37	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/05/24 08:35	11/07/24 10:37	7439-92-1	
Lithium	3.2	ug/L	1.0	0.22	1	11/05/24 08:35	11/07/24 10:37	7439-93-2	
Molybdenum	37.5	ug/L	1.5	0.44	1	11/05/24 08:35	11/07/24 10:37	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/05/24 08:35	11/07/24 10:37	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/05/24 08:35	11/07/24 10:37	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	11/08/24 09:20	11/12/24 13:53	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.56	Std. Units			1		10/31/24 10:14		
Field Specific Conductance	470.9	umhos/cm			1		10/31/24 10:14		
Oxygen, Dissolved	0.13	mg/L			1		10/31/24 10:14	7782-44-7	
REDOX	-93.2	mV			1		10/31/24 10:14		
Turbidity	1.80	NTU			1		10/31/24 10:14		
Static Water Level	785.73	feet			1		10/31/24 10:14		
Temperature, Water (C)	12.3	deg C			1		10/31/24 10:14		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	272	mg/L	20.0	8.7	1		11/05/24 14:35		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.7	Std. Units	0.10	0.010	1		11/07/24 15:49		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-317 Lab ID: 40286846001 Collected: 10/31/24 10:14 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	4.6	mg/L	2.0	0.59	1		11/15/24 22:39	16887-00-6	M0
Fluoride	0.22J	mg/L	0.32	0.095	1		11/15/24 22:39	16984-48-8	M0
Sulfate	5.0	mg/L	2.0	0.44	1		11/15/24 22:39	14808-79-8	M0
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	269	mg/L	25.0	7.4	1		11/05/24 14:42		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	0.079J	mg/L	0.25	0.059	1		11/06/24 12:39		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: **MW-318** Lab ID: **40286846002** Collected: 10/31/24 11:06 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	11/04/24 15:27	11/05/24 13:02	7440-50-8	
Manganese	10	ug/L	5.0	1.5	1	11/04/24 15:27	11/05/24 13:02	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	11/04/24 15:27	11/05/24 13:02	7440-22-4	
Total Hardness by 2340B	487	mg/L	5.4	1.0	1	11/04/24 15:27	11/05/24 13:02		
Zinc	<11.6	ug/L	40.0	11.6	1	11/04/24 15:27	11/05/24 13:02	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:54	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/05/24 08:35	11/07/24 10:54	7440-38-2	
Barium	30.9	ug/L	2.3	0.70	1	11/05/24 08:35	11/07/24 10:54	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/05/24 08:35	11/07/24 10:54	7440-41-7	
Boron	12.9	ug/L	10.0	3.0	1	11/05/24 08:35	11/07/24 10:54	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:54	7440-43-9	
Calcium	105000	ug/L	254	76.2	1	11/05/24 08:35	11/07/24 10:54	7440-70-2	
Chromium	1.3J	ug/L	3.4	1.0	1	11/05/24 08:35	11/07/24 10:54	7440-47-3	
Cobalt	0.15J	ug/L	1.0	0.12	1	11/05/24 08:35	11/07/24 10:54	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/05/24 08:35	11/07/24 10:54	7439-92-1	
Lithium	1.0	ug/L	1.0	0.22	1	11/05/24 08:35	11/07/24 10:54	7439-93-2	
Molybdenum	0.58J	ug/L	1.5	0.44	1	11/05/24 08:35	11/07/24 10:54	7439-98-7	
Selenium	0.76J	ug/L	1.1	0.32	1	11/05/24 08:35	11/07/24 10:54	7782-49-2	
Thallium	0.17J	ug/L	1.0	0.14	1	11/05/24 08:35	11/07/24 10:54	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	11/08/24 09:20	11/12/24 13:56	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.29	Std. Units			1		10/31/24 11:06		
Field Specific Conductance	924	umhos/cm			1		10/31/24 11:06		
Oxygen, Dissolved	7.62	mg/L			1		10/31/24 11:06	7782-44-7	
REDOX	36.0	mV			1		10/31/24 11:06		
Turbidity	1.07	NTU			1		10/31/24 11:06		
Static Water Level	785.92	feet			1		10/31/24 11:06		
Temperature, Water (C)	12.3	deg C			1		10/31/24 11:06		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	676	mg/L	20.0	8.7	1		11/05/24 14:35		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		11/07/24 15:58		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-318 Lab ID: 40286846002 Collected: 10/31/24 11:06 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	74.3	mg/L	20.0	5.9	10		11/26/24 16:04	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		11/26/24 16:04	16984-48-8	D3
Sulfate	203	mg/L	20.0	4.4	10		11/26/24 16:04	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	252	mg/L	25.0	7.4	1		11/05/24 14:45		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	2.1	mg/L	0.25	0.059	1		11/06/24 12:40		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-319 **Lab ID: 40286846003** Collected: 10/31/24 11:58 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	11/04/24 15:27	11/05/24 13:04	7440-50-8	
Manganese	2.5J	ug/L	5.0	1.5	1	11/04/24 15:27	11/05/24 13:04	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	11/04/24 15:27	11/05/24 13:04	7440-22-4	
Total Hardness by 2340B	208	mg/L	5.4	1.0	1	11/04/24 15:27	11/05/24 13:04		
Zinc	<11.6	ug/L	40.0	11.6	1	11/04/24 15:27	11/05/24 13:04	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 11:02	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/05/24 08:35	11/07/24 11:02	7440-38-2	
Barium	19.2	ug/L	2.3	0.70	1	11/05/24 08:35	11/07/24 11:02	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/05/24 08:35	11/07/24 11:02	7440-41-7	
Boron	18.3	ug/L	10.0	3.0	1	11/05/24 08:35	11/07/24 11:02	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 11:02	7440-43-9	
Calcium	48600	ug/L	254	76.2	1	11/05/24 08:35	11/07/24 11:02	7440-70-2	
Chromium	1.1J	ug/L	3.4	1.0	1	11/05/24 08:35	11/07/24 11:02	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	11/05/24 08:35	11/07/24 11:02	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/05/24 08:35	11/07/24 11:02	7439-92-1	
Lithium	0.58J	ug/L	1.0	0.22	1	11/05/24 08:35	11/07/24 11:02	7439-93-2	
Molybdenum	0.84J	ug/L	1.5	0.44	1	11/05/24 08:35	11/07/24 11:02	7439-98-7	
Selenium	1.0J	ug/L	1.1	0.32	1	11/05/24 08:35	11/07/24 11:02	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/05/24 08:35	11/07/24 11:02	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	11/08/24 09:20	11/12/24 13:59	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.70	Std. Units			1		10/31/24 11:58		
Field Specific Conductance	1088	umhos/cm			1		10/31/24 11:58		
Oxygen, Dissolved	8.16	mg/L			1		10/31/24 11:58	7782-44-7	
REDOX	52.3	mV			1		10/31/24 11:58		
Turbidity	2.74	NTU			1		10/31/24 11:58		
Static Water Level	787.88	feet			1		10/31/24 11:58		
Temperature, Water (C)	13.1	deg C			1		10/31/24 11:58		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	753	mg/L	33.3	14.5	1		11/05/24 14:35		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.8	Std. Units	0.10	0.010	1		11/07/24 16:00		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-319 Lab ID: 40286846003 Collected: 10/31/24 11:58 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	237	mg/L	20.0	5.9	10		11/15/24 23:23	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		11/15/24 23:23	16984-48-8	D3
Sulfate	38.5	mg/L	20.0	4.4	10		11/15/24 23:23	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	373	mg/L	25.0	7.4	1		11/05/24 14:46		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	1.6	mg/L	0.25	0.059	1		11/06/24 12:40		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: FIELD BLANK Lab ID: 40286846004 Collected: 10/31/24 12:10 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	11/04/24 15:27	11/05/24 13:06	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	11/04/24 15:27	11/05/24 13:06	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	11/04/24 15:27	11/05/24 13:06	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	11/04/24 15:27	11/05/24 13:06		
Zinc	<11.6	ug/L	40.0	11.6	1	11/04/24 15:27	11/05/24 13:06	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:33	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/05/24 08:35	11/07/24 10:33	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	11/05/24 08:35	11/07/24 10:33	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/05/24 08:35	11/07/24 10:33	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	11/05/24 08:35	11/07/24 10:33	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/05/24 08:35	11/07/24 10:33	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	11/05/24 08:35	11/07/24 10:33	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/05/24 08:35	11/07/24 10:33	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/05/24 08:35	11/07/24 10:33	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/05/24 08:35	11/07/24 10:33	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	11/05/24 08:35	11/07/24 10:33	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/05/24 08:35	11/07/24 10:33	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/05/24 08:35	11/07/24 10:33	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/05/24 08:35	11/07/24 10:33	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	11/08/24 09:20	11/12/24 14:01	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		11/05/24 14:35		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.6	Std. Units	0.10	0.010	1		11/07/24 16:12		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		11/15/24 23:33	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		11/15/24 23:33	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		11/15/24 23:33	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		11/05/24 14:50		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: FIELD BLANK Lab ID: 40286846004 Collected: 10/31/24 12:10 Received: 11/01/24 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		11/06/24 12:43		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch: 489671 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Laboratory: Pace Analytical Services - Green Bay
 Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 2803649 Matrix: Water
 Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	11/12/24 11:33	

LABORATORY CONTROL SAMPLE: 2803650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2803651 2803652

Parameter	Units	2803651		2803652		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40286655002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.066	5	5	4.3	4.0	86	80	85-115	7	20 M0

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	489178	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 2801292 Matrix: Water

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	11/05/24 11:50	
Manganese	ug/L	<1.5	5.0	11/05/24 11:50	
Silver	ug/L	<3.2	10.0	11/05/24 11:50	
Total Hardness by 2340B	mg/L	<1.0	5.4	11/05/24 11:50	
Zinc	ug/L	<11.6	40.0	11/05/24 11:50	

LABORATORY CONTROL SAMPLE: 2801293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	258	103	80-120	
Manganese	ug/L	250	258	103	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		66.8			
Zinc	ug/L	250	258	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2801294 2801295

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40286600001 Result	Spike Conc.	Spike Conc.	Conc.								
Copper	ug/L	122	250	250	381	377	103	102	75-125	1	20		
Manganese	ug/L	50.0	250	250	305	302	102	101	75-125	1	20		
Silver	ug/L	<3.2	125	125	125	124	100	100	75-125	1	20		
Total Hardness by 2340B	mg/L	487000			554	548					1	20	
Zinc	ug/L	44.4	250	250	298	297	102	101	75-125	1	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch: 489280	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 2801546 Matrix: Water

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	11/07/24 09:39	
Arsenic	ug/L	<0.28	1.0	11/07/24 09:39	
Barium	ug/L	<0.70	2.3	11/07/24 09:39	
Beryllium	ug/L	<0.25	1.0	11/07/24 09:39	
Boron	ug/L	<3.0	10.0	11/07/24 09:39	
Cadmium	ug/L	<0.15	1.0	11/07/24 09:39	
Calcium	ug/L	<76.2	254	11/07/24 09:39	
Chromium	ug/L	<1.0	3.4	11/07/24 09:39	
Cobalt	ug/L	<0.12	1.0	11/07/24 09:39	
Lead	ug/L	<0.24	1.0	11/07/24 09:39	
Lithium	ug/L	<0.22	1.0	11/07/24 09:39	
Molybdenum	ug/L	<0.44	1.5	11/07/24 09:39	
Selenium	ug/L	<0.32	1.1	11/07/24 09:39	
Thallium	ug/L	<0.14	1.0	11/07/24 09:39	

LABORATORY CONTROL SAMPLE: 2801547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	247	99	80-120	
Arsenic	ug/L	250	249	100	80-120	
Barium	ug/L	250	244	98	80-120	
Beryllium	ug/L	250	240	96	80-120	
Boron	ug/L	250	221	88	80-120	
Cadmium	ug/L	250	254	102	80-120	
Calcium	ug/L	10000	9630	96	80-120	
Chromium	ug/L	250	240	96	80-120	
Cobalt	ug/L	250	250	100	80-120	
Lead	ug/L	250	242	97	80-120	
Lithium	ug/L	250	244	98	80-120	
Molybdenum	ug/L	250	248	99	80-120	
Selenium	ug/L	250	246	98	80-120	
Thallium	ug/L	250	239	95	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Parameter	Units	2801548		2801549		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40286846001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	252	250	101	100	75-125	1	20		
Arsenic	ug/L	1.1	250	250	252	250	100	99	75-125	1	20		
Barium	ug/L	54.5	250	250	300	299	98	98	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	240	241	96	96	75-125	0	20		
Boron	ug/L	39.4	250	250	262	262	89	89	75-125	0	20		
Cadmium	ug/L	<0.15	250	250	257	254	103	102	75-125	1	20		
Calcium	ug/L	48100	10000	10000	58400	57600	103	95	75-125	1	20		
Chromium	ug/L	<1.0	250	250	241	239	96	96	75-125	1	20		
Cobalt	ug/L	<0.12	250	250	248	246	99	98	75-125	1	20		
Lead	ug/L	<0.24	250	250	247	244	99	98	75-125	1	20		
Lithium	ug/L	3.2	250	250	250	251	99	99	75-125	0	20		
Molybdenum	ug/L	37.5	250	250	294	291	103	101	75-125	1	20		
Selenium	ug/L	<0.32	250	250	245	241	98	97	75-125	1	20		
Thallium	ug/L	<0.14	250	250	247	243	99	97	75-125	2	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch: 489318	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 2801697 Matrix: Water
 Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/05/24 14:34	

LABORATORY CONTROL SAMPLE: 2801698

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	574	99	80-120	

SAMPLE DUPLICATE: 2801699

Parameter	Units	40286721001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	332	316	5	10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch: 489572

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

SAMPLE DUPLICATE: 2803096

Parameter	Units	40286601001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.2	9.3	1	20	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	490297	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846003, 40286846004

METHOD BLANK: 2807750 Matrix: Water

Associated Lab Samples: 40286846001, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	11/15/24 18:08	
Fluoride	mg/L	<0.095	0.32	11/15/24 18:08	
Sulfate	mg/L	<0.44	2.0	11/15/24 18:08	

LABORATORY CONTROL SAMPLE: 2807751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.3	106	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.4	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2807752 2807753

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40286682007	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	2.2	20	20	24.3	24.0	110	109	90-110	1	15		
Fluoride	mg/L	0.29J	2	2	2.5	2.5	112	110	90-110	1	15	M0	
Sulfate	mg/L	39.7	100	100	164	148	125	108	90-110	11	15	M0	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2807754 2807755

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40286846001	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	4.6	20	20	27.0	27.2	112	113	90-110	1	15	M0	
Fluoride	mg/L	0.22J	2	2	2.5	2.5	113	116	90-110	2	15	M0	
Sulfate	mg/L	5.0	20	20	27.5	27.8	112	114	90-110	1	15	M0	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	491229	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846002

METHOD BLANK: 2812611 Matrix: Water

Associated Lab Samples: 40286846002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	11/26/24 11:11	
Fluoride	mg/L	<0.095	0.32	11/26/24 11:11	
Sulfate	mg/L	<0.44	2.0	11/26/24 11:11	

LABORATORY CONTROL SAMPLE: 2812612

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.1	103	90-110	
Sulfate	mg/L	20	20.9	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2812613 2812614

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288050001	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	25.6	100	100	133	129	108	103	90-110	3	15		
Fluoride	mg/L	<0.48	10	10	11.3	10.9	110	106	90-110	4	15		
Sulfate	mg/L	19.5	100	100	128	125	108	105	90-110	2	15		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	489351	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40286846001, 40286846002, 40286846003, 40286846004		

METHOD BLANK: 2801915 Matrix: Water
 Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	11/05/24 14:40	

LABORATORY CONTROL SAMPLE: 2801916

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	101	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2801917 2801918

Parameter	Units	2801917		2801918		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	269	100	370	377	102	108	90-110	2	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	489420	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 2802278 Matrix: Water
 Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	11/06/24 12:19	

LABORATORY CONTROL SAMPLE: 2802279

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2802280 2802281

Parameter	Units	40286689001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	2.1	2.5	2.5	4.6	4.6	97	99	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2802282 2802283

Parameter	Units	40286846003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	1.6	2.5	2.5	4.1	4.2	100	101	90-110	1	20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-317 **Lab ID: 40286846001** Collected: 10/31/24 10:14 Received: 11/01/24 08:30 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	1.03U ± 0.484 (1.03) C:NA T:96%	pCi/L	11/15/24 15:08	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.941U ± 0.411 (0.941) C:79% T:88%	pCi/L	11/14/24 12:50	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.97U ± 0.895 (1.97)	pCi/L	11/18/24 15:32	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-318 Lab ID: 40286846002 Collected: 10/31/24 11:06 Received: 11/01/24 08:30 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	1.24U ± 0.685 (1.24) C:NA T:84%	pCi/L	11/15/24 15:08	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.935U ± 0.425 (0.935) C:84% T:83%	pCi/L	11/14/24 16:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	2.18U ± 1.11 (2.18)	pCi/L	11/18/24 15:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Sample: MW-319	Lab ID: 40286846003	Collected: 10/31/24 11:58	Received: 11/01/24 08:30	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	0.438 ± 0.308 (0.148) C:NA T:91%	pCi/L	11/15/24 15:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.896U ± 0.476 (0.896) C:80% T:91%	pCi/L	11/14/24 16:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.21 ± 0.784 (1.04)	pCi/L	11/18/24 15:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 40286846004 Collected: 10/31/24 12:10 Received: 11/01/24 08:30 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.705U ± 0.339 (0.705) C:NA T:96%	pCi/L	11/15/24 15:26	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.10U ± 0.504 (1.10) C:73% T:87%	pCi/L	11/14/24 16:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.81U ± 0.843 (1.81)	pCi/L	11/18/24 15:32	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch:	707583	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: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK:	3444638	Matrix:	Water
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Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.289 ± 0.317 (0.656) C:81% T:89%	pCi/L	11/14/24 14:46	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

QC Batch: 707582

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: 40286846001, 40286846002, 40286846003, 40286846004

METHOD BLANK: 3444637

Matrix: Water

Associated Lab Samples: 40286846001, 40286846002, 40286846003, 40286846004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0943 ± 0.262 (0.618) C:NA T:91%	pCi/L	11/15/24 14:53	

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QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40286846001	MW-317	EPA 3010A	489178	EPA 6010D	489325
40286846002	MW-318	EPA 3010A	489178	EPA 6010D	489325
40286846003	MW-319	EPA 3010A	489178	EPA 6010D	489325
40286846004	FIELD BLANK	EPA 3010A	489178	EPA 6010D	489325
40286846001	MW-317	EPA 3010A	489280	EPA 6020B	489417
40286846002	MW-318	EPA 3010A	489280	EPA 6020B	489417
40286846003	MW-319	EPA 3010A	489280	EPA 6020B	489417
40286846004	FIELD BLANK	EPA 3010A	489280	EPA 6020B	489417
40286846001	MW-317	EPA 7470	489671	EPA 7470	489711
40286846002	MW-318	EPA 7470	489671	EPA 7470	489711
40286846003	MW-319	EPA 7470	489671	EPA 7470	489711
40286846004	FIELD BLANK	EPA 7470	489671	EPA 7470	489711
40286846001	MW-317				
40286846002	MW-318				
40286846003	MW-319				
40286846001	MW-317	EPA 903.1	707582		
40286846002	MW-318	EPA 903.1	707582		
40286846003	MW-319	EPA 903.1	707582		
40286846004	FIELD BLANK	EPA 903.1	707582		
40286846001	MW-317	EPA 904.0	707583		
40286846002	MW-318	EPA 904.0	707583		
40286846003	MW-319	EPA 904.0	707583		
40286846004	FIELD BLANK	EPA 904.0	707583		
40286846001	MW-317	Total Radium Calculation	710250		
40286846002	MW-318	Total Radium Calculation	710250		
40286846003	MW-319	Total Radium Calculation	710250		
40286846004	FIELD BLANK	Total Radium Calculation	710250		
40286846001	MW-317	SM 2540C	489318		
40286846002	MW-318	SM 2540C	489318		
40286846003	MW-319	SM 2540C	489318		
40286846004	FIELD BLANK	SM 2540C	489318		
40286846001	MW-317	EPA 9040	489572		
40286846002	MW-318	EPA 9040	489572		
40286846003	MW-319	EPA 9040	489572		
40286846004	FIELD BLANK	EPA 9040	489572		
40286846001	MW-317	EPA 300.0	490297		
40286846002	MW-318	EPA 300.0	491229		
40286846003	MW-319	EPA 300.0	490297		
40286846004	FIELD BLANK	EPA 300.0	490297		
40286846001	MW-317	EPA 310.2	489351		
40286846002	MW-318	EPA 310.2	489351		
40286846003	MW-319	EPA 310.2	489351		
40286846004	FIELD BLANK	EPA 310.2	489351		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40286846

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40286846001	MW-317	EPA 353.2	489420		
40286846002	MW-318	EPA 353.2	489420		
40286846003	MW-319	EPA 353.2	489420		
40286846004	FIELD BLANK	EPA 353.2	489420		

REPORT OF LABORATORY ANALYSIS

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Pace Location Requested (City/State): Pace Analytical Green Bay, WI
 1241 Bellevue Street, Suite 9
 Green Bay, WI 54302

CHAIN-OF-CUSTODY Analytical Request Document
 Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

Scan QR Code for instructions

Specify Container Size **
 **Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

Identify Container Preservative Type***
 *** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Analysis Requested

Company Name: SCS ENGINEERS
 Street Address: 2830 Dairy Drive
 Madison, WI 53718

Contact/Report To: Meghan Blodgett
 Phone #: 608-216-7362
 E-Mail: mblodgett@scsengineers.com
 Cc E-Mail:

Customer Project #: Project Name: 25219067 COLUMBIA LF MOD 12-13 CCR

Invoice To: Accounts Payable
 Invoice E-Mail: aradunzel@scsengineers.com

Site Collection Info/Facility ID (as applicable):
 Purchase Order # (if applicable):
 Quote #:

Time Zone Collected: [] AK [] PT [] MT [] CT [] ET
 County / State origin of sample(s): Wisconsin

Data Deliverables:
 [] Level II [] Level III [] Level IV
 [] EQUIS
 [] Other

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [] Yes [] No
 Rush (Pre-approval required):
 [] Same Day [] 1 Day [] 2 Day [] 3 Day [] Other
 DW PWSID # or WW Permit # as applicable:
 Date Results Requested: Field Filtered (if applicable): [] Yes [X] No
 Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start		Collected or Composite End		# Cont.	Res. Chlorine		Chloride/Fluoride/Sulfate	Metals and Hardness	NO2+NO3	Radium 226 & 228	TDS, pH, Alkalinity	Lab Use Only	Sample Comment
			Date	Time	Date	Time		Results	Units							
MW-317	WT	G	10/31	1014						X	X	X	X	X		001
MW-318	WT	G	10/31	1106						X	X	X	X	X		002
MW-319	WT	G	10/31	1158						X	X	X	X	X		003
FIELD BLANK	WT	G	10/31	1210		1210				X	X	X	X	X		004

Additional Instructions from Pace®:
 Metals=6020 B,Ca,Sb,As,Ba,Be,Cd,Cr,Co,Pb,LI,Mo,Se,Tl
 6010 Cu,Mn,Ag,Zn+hardness
 Mercury

Collected By: Bridget Russell
 (Printed Name)
 Signature: Bridget Russell

Customer Remarks / Special Conditions / Possible Hazards:
 # Coolers: 1
 Thermometer ID: 123
 Correction Factor (°C):
 Obs. Temp. (°C): 2.5
 Corrected Temp. (°C): 2.5
 On Ice: Y

Relinquished by/Company: (Signature) Bridget Russell
 Date/Time: 10/31 1445
 Received by/Company: (Signature)
 Date/Time:

Relinquished by/Company: (Signature) CS Logistics SCS
 Date/Time: 11/1/24 08:30
 Received by/Company: (Signature) KES Stamp-Pace
 Date/Time: 11/1/24 08:30

Relinquished by/Company: (Signature)
 Date/Time:
 Received by/Company: (Signature)
 Date/Time:

Relinquished by/Company: (Signature)
 Date/Time:
 Received by/Company: (Signature)
 Date/Time:

Tracking Number:
 Delivered by: [] In-Person [] Courier
 [] FedEx [] UPS [X] Other
 Page: 1 of 1

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40286846**

Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____



Tracking #: NIA

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR-123 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 25 /Corr: 25

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:

Date: 11/1/24 /Initials: KKS

Labeled By Initials: G

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>No preservative type. 11/1/24 KKS</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No - DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Date/Time: _____
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	9.
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Includes date/time/ID/Analysis Matrix: <u>WT</u>	12.
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

C2 November 2024 Laboratory Reports



November 13, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067 COLUMBIA CCR MOD 1-3
Pace Project No.: 40287027

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2024. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25224067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40287027

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25224067 COLUMBIA CCR MOD 1-3
Pace Project No.: 40287027

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40287027001	MW-33AR	Water	11/05/24 10:10	11/06/24 09:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA CCR MOD 1-3
Pace Project No.: 40287027

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40287027001	MW-33AR		AG1	7
		SM 2540C	LMB	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 25224067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40287027

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40287027001	MW-33AR					
	Field pH	7.76	Std. Units		11/05/24 10:10	
	Field Specific Conductance	770	umhos/cm		11/05/24 10:10	
	Oxygen, Dissolved	8.46	mg/L		11/05/24 10:10	
	REDOX	45.1	mV		11/05/24 10:10	
	Turbidity	0.41	NTU		11/05/24 10:10	
	Static Water Level	785.98	feet		11/05/24 10:10	
	Temperature, Water (C)	13.9	deg C		11/05/24 10:10	
SM 2540C	Total Dissolved Solids	558	mg/L	20.0	11/11/24 16:31	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40287027

Sample: MW-33AR Lab ID: 40287027001 Collected: 11/05/24 10:10 Received: 11/06/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.76	Std. Units			1		11/05/24 10:10		
Field Specific Conductance	770	umhos/cm			1		11/05/24 10:10		
Oxygen, Dissolved	8.46	mg/L			1		11/05/24 10:10	7782-44-7	
REDOX	45.1	mV			1		11/05/24 10:10		
Turbidity	0.41	NTU			1		11/05/24 10:10		
Static Water Level	785.98	feet			1		11/05/24 10:10		
Temperature, Water (C)	13.9	deg C			1		11/05/24 10:10		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	558	mg/L	20.0	8.7	1		11/11/24 16:31		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40287027

QC Batch: 489580	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40287027001

METHOD BLANK: 2803122 Matrix: Water

Associated Lab Samples: 40287027001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/11/24 16:27	

LABORATORY CONTROL SAMPLE: 2803123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	558	91	80-120	

SAMPLE DUPLICATE: 2803135

Parameter	Units	40286947001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	346	354	2	10	

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: 25224067 COLUMBIA CCR MOD 1-3

Pace Project No.: 40287027

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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: 25224067 COLUMBIA CCR MOD 1-3
Pace Project No.: 40287027

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40287027001	MW-33AR				
40287027001	MW-33AR	SM 2540C	489580		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40287027**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 138 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.5 / Corr: 1.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 11/6/24 / Initials: NK
 Labeled By Initials: SKW

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi



November 20, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067 COLUMBIA CCR MOD 4-6
Pace Project No.: 40287025

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2024. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25224067 COLUMBIA CCR MOD 4-6
Pace Project No.: 40287025

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40287025001	MW-309	Water	11/05/24 11:45	11/06/24 09:20
40287025002	MW-310	Water	11/05/24 10:50	11/06/24 09:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40287025001	MW-309	EPA 6020B	KXS	1
			AG1	7
		SM 2540C	LMB	1
			EPA 300.0	HMB
40287025002	MW-310	EPA 6020B	KXS	2
			AG1	7
		SM 2540C	LMB	1
			EPA 300.0	HMB

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40287025001	MW-309					
EPA 6020B	Boron	72.3	ug/L	10.0	11/13/24 09:45	
	Field pH	7.77	Std. Units		11/05/24 11:45	
	Field Specific Conductance	2634	umhos/cm		11/05/24 11:45	
	Oxygen, Dissolved	8.02	mg/L		11/05/24 11:45	
	REDOX	-138.7	mV		11/05/24 11:45	
	Turbidity	2.55	NTU		11/05/24 11:45	
	Static Water Level	785.66	feet		11/05/24 11:45	
	Temperature, Water (C)	13.9	deg C		11/05/24 11:45	
SM 2540C	Total Dissolved Solids	1630	mg/L	20.0	11/11/24 16:31	
EPA 300.0	Chloride	743	mg/L	100	11/18/24 12:23	
EPA 300.0	Sulfate	131	mg/L	20.0	11/17/24 14:59	
40287025002	MW-310					
EPA 6020B	Boron	78.4	ug/L	10.0	11/13/24 09:49	
EPA 6020B	Calcium	99700	ug/L	254	11/13/24 09:49	
	Field pH	7.70	Std. Units		11/05/24 10:50	
	Field Specific Conductance	1797	umhos/cm		11/05/24 10:50	
	Oxygen, Dissolved	8.78	mg/L		11/05/24 10:50	
	REDOX	-122.4	mV		11/05/24 10:50	
	Turbidity	1.40	NTU		11/05/24 10:50	
	Static Water Level	785.45	feet		11/05/24 10:50	
	Temperature, Water (C)	13.9	deg C		11/05/24 10:50	
SM 2540C	Total Dissolved Solids	1190	mg/L	20.0	11/11/24 16:31	
EPA 300.0	Chloride	435	mg/L	20.0	11/17/24 15:10	
EPA 300.0	Sulfate	194	mg/L	20.0	11/17/24 15:10	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Sample: MW-309 Lab ID: 40287025001 Collected: 11/05/24 11:45 Received: 11/06/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	72.3	ug/L	10.0	3.0	1	11/08/24 06:02	11/13/24 09:45	7440-42-8	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.77	Std. Units			1		11/05/24 11:45		
Field Specific Conductance	2634	umhos/cm			1		11/05/24 11:45		
Oxygen, Dissolved	8.02	mg/L			1		11/05/24 11:45	7782-44-7	
REDOX	-138.7	mV			1		11/05/24 11:45		
Turbidity	2.55	NTU			1		11/05/24 11:45		
Static Water Level	785.66	feet			1		11/05/24 11:45		
Temperature, Water (C)	13.9	deg C			1		11/05/24 11:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	1630	mg/L	20.0	8.7	1		11/11/24 16:31		
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	743	mg/L	100	29.6	50		11/18/24 12:23	16887-00-6	
Sulfate	131	mg/L	20.0	4.4	10		11/17/24 14:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Sample: MW-310 **Lab ID: 40287025002** Collected: 11/05/24 10:50 Received: 11/06/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	78.4	ug/L	10.0	3.0	1	11/08/24 06:02	11/13/24 09:49	7440-42-8	
Calcium	99700	ug/L	254	76.2	1	11/08/24 06:02	11/13/24 09:49	7440-70-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.70	Std. Units			1		11/05/24 10:50		
Field Specific Conductance	1797	umhos/cm			1		11/05/24 10:50		
Oxygen, Dissolved	8.78	mg/L			1		11/05/24 10:50	7782-44-7	
REDOX	-122.4	mV			1		11/05/24 10:50		
Turbidity	1.40	NTU			1		11/05/24 10:50		
Static Water Level	785.45	feet			1		11/05/24 10:50		
Temperature, Water (C)	13.9	deg C			1		11/05/24 10:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	1190	mg/L	20.0	8.7	1		11/11/24 16:31		
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	435	mg/L	20.0	5.9	10		11/17/24 15:10	16887-00-6	
Sulfate	194	mg/L	20.0	4.4	10		11/17/24 15:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

QC Batch: 489631	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40287025001, 40287025002

METHOD BLANK: 2803444 Matrix: Water

Associated Lab Samples: 40287025001, 40287025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	11/13/24 08:42	
Calcium	ug/L	<76.2	254	11/13/24 08:42	

LABORATORY CONTROL SAMPLE: 2803445

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	228	91	80-120	
Calcium	ug/L	10000	9740	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2803446 2803447

Parameter	Units	40287026001		2803447		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	ug/L	4430	250	250	4670	4700	98	110	75-125	1	20
Calcium	ug/L	87900	10000	10000	95100	97100	72	92	75-125	2	20 P6

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 DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

QC Batch: 489580	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40287025001, 40287025002

METHOD BLANK: 2803122 Matrix: Water

Associated Lab Samples: 40287025001, 40287025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/11/24 16:27	

LABORATORY CONTROL SAMPLE: 2803123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	558	91	80-120	

SAMPLE DUPLICATE: 2803135

Parameter	Units	40286947001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	346	354	2	10	

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 DATA

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

QC Batch:	490340	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40287025001, 40287025002

METHOD BLANK: 2807944 Matrix: Water

Associated Lab Samples: 40287025001, 40287025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	11/17/24 12:17	
Sulfate	mg/L	<0.44	2.0	11/17/24 12:17	

LABORATORY CONTROL SAMPLE: 2807945

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.4	102	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2807946 2807947

Parameter	Units	40286971001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	14.0J	400	400	427	476	103	116	90-110	11	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2807948 2807949

Parameter	Units	40287061004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	869	1000	1000	2040	1960	117	109	90-110	4	15	M0

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: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067 COLUMBIA CCR MOD 4-6

Pace Project No.: 40287025

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40287025001	MW-309	EPA 3010A	489631	EPA 6020B	489789
40287025002	MW-310	EPA 3010A	489631	EPA 6020B	489789
40287025001	MW-309				
40287025002	MW-310				
40287025001	MW-309	SM 2540C	489580		
40287025002	MW-310	SM 2540C	489580		
40287025001	MW-309	EPA 300.0	490340		
40287025002	MW-310	EPA 300.0	490340		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40287025**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 138 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.5 / Corr: 1.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 11/6/24 / Initials: NK
 Labeled By Initials: SKW

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: Pace Green Bay Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

C3 December 2024 Laboratory Reports



January 03, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40288568

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on December 10, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40288568

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40288568001	MW-317	Water	12/09/24 11:25	12/10/24 09:00
40288568002	MW-318	Water	12/09/24 12:07	12/10/24 09:00
40288568003	MW-319	Water	12/09/24 13:25	12/10/24 09:00
40288568004	FIELD BLANK	Water	12/09/24 12:50	12/10/24 09:00

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40288568001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40288568002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	AG1			7	PASI-G
EPA 903.1	REH1			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	TXW			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40288568003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40288568004	FIELD BLANK	EPA 6010D	SIS

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 **Lab ID: 40288568001** Collected: 12/09/24 11:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 17:59	7440-50-8	
Manganese	260	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 17:59	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 17:59	7440-22-4	
Total Hardness by 2340B	237	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 17:59		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 17:59	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:51	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 17:51	7440-38-2	
Barium	52.1	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 17:51	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 17:51	7440-41-7	
Boron	37.9	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 17:51	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:51	7440-43-9	
Calcium	50900	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 17:51	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 17:51	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 17:51	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 17:51	7439-92-1	
Lithium	4.3	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 17:51	7439-93-2	
Molybdenum	23.9	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 17:51	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 17:51	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 17:51	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:31	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.62	Std. Units			1		12/09/24 11:25		
Field Specific Conductance	440.7	umhos/cm			1		12/09/24 11:25		
Oxygen, Dissolved	1.19	mg/L			1		12/09/24 11:25	7782-44-7	
REDOX	-87.4	mV			1		12/09/24 11:25		
Turbidity	0.00	NTU			1		12/09/24 11:25		
Static Water Level	785.50	feet			1		12/09/24 11:25		
Temperature, Water (C)	10.9	deg C			1		12/09/24 11:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	280	mg/L	20.0	8.7	1		12/12/24 11:38		R1
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		12/13/24 19:28		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 **Lab ID: 40288568001** Collected: 12/09/24 11:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.6	mg/L	2.0	0.59	1		12/18/24 22:27	16887-00-6	
Fluoride	0.15J	mg/L	0.32	0.095	1		12/18/24 22:27	16984-48-8	
Sulfate	3.7	mg/L	2.0	0.44	1		12/18/24 22:27	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	256	mg/L	25.0	7.4	1		12/18/24 12:04		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	0.17J	mg/L	0.25	0.059	1		12/20/24 12:47		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-318 **Lab ID: 40288568002** Collected: 12/09/24 12:07 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:07	7440-50-8	
Manganese	19.4	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:07	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:07	7440-22-4	
Total Hardness by 2340B	507	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:07		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:07	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:59	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 17:59	7440-38-2	
Barium	27.4	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 17:59	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 17:59	7440-41-7	
Boron	16.7	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 17:59	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:59	7440-43-9	
Calcium	106000	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 17:59	7440-70-2	
Chromium	1.4J	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 17:59	7440-47-3	
Cobalt	0.17J	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 17:59	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 17:59	7439-92-1	
Lithium	0.93J	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 17:59	7439-93-2	
Molybdenum	0.48J	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 17:59	7439-98-7	
Selenium	0.90J	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 17:59	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 17:59	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.27	Std. Units			1		12/09/24 12:07		
Field Specific Conductance	919	umhos/cm			1		12/09/24 12:07		
Oxygen, Dissolved	8.38	mg/L			1		12/09/24 12:07	7782-44-7	
REDOX	32.9	mV			1		12/09/24 12:07		
Turbidity	4.33	NTU			1		12/09/24 12:07		
Static Water Level	785.64	feet			1		12/09/24 12:07		
Temperature, Water (C)	11.3	deg C			1		12/09/24 12:07		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	666	mg/L	20.0	8.7	1		12/12/24 11:38		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		12/13/24 19:34		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-318 **Lab ID: 40288568002** Collected: 12/09/24 12:07 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	65.9	mg/L	20.0	5.9	10		12/18/24 22:37	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		12/18/24 22:37	16984-48-8	D3
Sulfate	215	mg/L	20.0	4.4	10		12/18/24 22:37	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	267	mg/L	25.0	7.4	1		12/18/24 12:05		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	1.7	mg/L	0.25	0.059	1		12/20/24 12:48		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319 Lab ID: 40288568003 Collected: 12/09/24 13:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:51	7440-50-8	
Manganese	2.9J	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:51	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:51	7440-22-4	
Total Hardness by 2340B	387	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:51		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:51	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:03	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 18:03	7440-38-2	
Barium	30.0	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 18:03	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 18:03	7440-41-7	
Boron	21.7	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 18:03	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:03	7440-43-9	
Calcium	83300	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 18:03	7440-70-2	
Chromium	1.1J	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 18:03	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 18:03	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 18:03	7439-92-1	
Lithium	0.58J	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 18:03	7439-93-2	
Molybdenum	0.60J	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 18:03	7439-98-7	
Selenium	1.1	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 18:03	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 18:03	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:36	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.53	Std. Units			1		12/09/24 13:25		
Field Specific Conductance	1108	umhos/cm			1		12/09/24 13:25		
Oxygen, Dissolved	9.41	mg/L			1		12/09/24 13:25	7782-44-7	
REDOX	58.8	mV			1		12/09/24 13:25		
Turbidity	0.00	NTU			1		12/09/24 13:25		
Static Water Level	787.41	feet			1		12/09/24 13:25		
Temperature, Water (C)	11.3	deg C			1		12/09/24 13:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	1050	mg/L	20.0	8.7	1		12/12/24 11:38		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		12/13/24 19:38		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319 Lab ID: 40288568003 Collected: 12/09/24 13:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	455	mg/L	40.0	11.8	20		12/18/24 22:48	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		12/18/24 22:48	16984-48-8	D3
Sulfate	50.3	mg/L	40.0	8.9	20		12/18/24 22:48	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	330	mg/L	25.0	7.4	1		12/18/24 12:06		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	2.0	mg/L	0.25	0.059	1		12/20/24 12:49		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: **FIELD BLANK** Lab ID: **40288568004** Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:53	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:53	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:53	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:53		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:53	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:08	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 18:08	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 18:08	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 18:08	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 18:08	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:08	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 18:08	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 18:08	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 18:08	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 18:08	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 18:08	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 18:08	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 18:08	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 18:08	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:38	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	16.0J	mg/L	20.0	8.7	1		12/12/24 11:39		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		12/13/24 19:48		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		12/20/24 15:22	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		12/20/24 15:22	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		12/20/24 15:22	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		12/18/24 12:07		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: FIELD BLANK Lab ID: 40288568004 Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		12/20/24 12:49		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492068	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2817032 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	12/12/24 11:01	

LABORATORY CONTROL SAMPLE: 2817033

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2817034 2817035

Parameter	Units	2817034		2817035		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Mercury	ug/L	<0.066	5	5	5.0	5.6	101	112	85-115	10	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492560	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819868 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	12/13/24 17:40	
Manganese	ug/L	<1.5	5.0	12/13/24 17:40	
Silver	ug/L	<3.2	10.0	12/13/24 17:40	
Total Hardness by 2340B	mg/L	<1.0	5.4	12/13/24 17:40	
Zinc	ug/L	<11.6	40.0	12/13/24 17:40	

LABORATORY CONTROL SAMPLE: 2819869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	262	105	80-120	
Manganese	ug/L	250	264	105	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		67.6			
Zinc	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2819870 2819871

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		40288568001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Copper	ug/L	<3.4	250	250	257	266	103	106	75-125	3	20		
Manganese	ug/L	260	250	250	510	532	100	109	75-125	4	20		
Silver	ug/L	<3.2	125	125	125	130	100	104	75-125	4	20		
Total Hardness by 2340B	mg/L	237			298	311				4	20		
Zinc	ug/L	<11.6	250	250	252	261	101	104	75-125	4	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492422	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819070 Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	12/13/24 16:44	
Arsenic	ug/L	<0.28	1.0	12/13/24 16:44	
Barium	ug/L	<0.70	2.3	12/13/24 16:44	
Beryllium	ug/L	<0.25	1.0	12/13/24 16:44	
Boron	ug/L	<3.0	10.0	12/13/24 16:44	
Cadmium	ug/L	<0.15	1.0	12/13/24 16:44	
Calcium	ug/L	<76.2	254	12/13/24 16:44	
Chromium	ug/L	<1.0	3.4	12/13/24 16:44	
Cobalt	ug/L	<0.12	1.0	12/13/24 16:44	
Lead	ug/L	<0.24	1.0	12/13/24 16:44	
Lithium	ug/L	<0.22	1.0	12/13/24 16:44	
Molybdenum	ug/L	<0.44	1.5	12/13/24 16:44	
Selenium	ug/L	<0.32	1.1	12/13/24 16:44	
Thallium	ug/L	<0.14	1.0	12/13/24 16:44	

LABORATORY CONTROL SAMPLE: 2819071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	243	97	80-120	
Arsenic	ug/L	250	247	99	80-120	
Barium	ug/L	250	237	95	80-120	
Beryllium	ug/L	250	245	98	80-120	
Boron	ug/L	250	231	92	80-120	
Cadmium	ug/L	250	242	97	80-120	
Calcium	ug/L	10000	9700	97	80-120	
Chromium	ug/L	250	238	95	80-120	
Cobalt	ug/L	250	241	97	80-120	
Lead	ug/L	250	232	93	80-120	
Lithium	ug/L	250	247	99	80-120	
Molybdenum	ug/L	250	240	96	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	223	89	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Parameter	Units	2819072		2819073		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288370001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	240	240	96	96	75-125	0	20		
Arsenic	ug/L	0.97J	250	250	243	245	97	98	75-125	1	20		
Barium	ug/L	68.0	250	250	307	307	95	96	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	236	237	94	95	75-125	0	20		
Boron	ug/L	4000	250	250	4210	4100	83	43	75-125	2	20	P6	
Cadmium	ug/L	<0.15	250	250	237	237	95	95	75-125	0	20		
Calcium	ug/L	78500	10000	10000	90600	88000	121	95	75-125	3	20		
Chromium	ug/L	2.3J	250	250	234	231	93	92	75-125	1	20		
Cobalt	ug/L	1.0	250	250	230	230	92	91	75-125	0	20		
Lead	ug/L	0.54J	250	250	227	227	91	90	75-125	0	20		
Lithium	ug/L	64.7	250	250	303	302	95	95	75-125	0	20		
Molybdenum	ug/L	1890	250	250	2120	2110	93	90	75-125	0	20		
Selenium	ug/L	<0.32	250	250	242	244	97	97	75-125	1	20		
Thallium	ug/L	<0.14	250	250	219	220	88	88	75-125	0	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492465	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819195 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	12/12/24 11:34	

LABORATORY CONTROL SAMPLE: 2819196

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	516	582	113	80-120	

SAMPLE DUPLICATE: 2819201

Parameter	Units	40288568001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	280	252	11	10	R1

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 492657 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

SAMPLE DUPLICATE: 2820363

Parameter	Units	40288545001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.2	9.2	0	20	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492675	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003

METHOD BLANK: 2820492 Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	12/18/24 16:55	
Fluoride	mg/L	<0.095	0.32	12/18/24 16:55	
Sulfate	mg/L	<0.44	2.0	12/18/24 16:55	

LABORATORY CONTROL SAMPLE: 2820493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2820494 2820495

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288473037 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	70.9	100	100	170	169	99	98	90-110	0	15		
Fluoride	mg/L	<0.48	10	10	10.5	10.5	105	105	90-110	0	15		
Sulfate	mg/L	32.2	100	100	135	135	103	103	90-110	0	15		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492936	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568004

METHOD BLANK: 2821598 Matrix: Water

Associated Lab Samples: 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	12/20/24 14:58	
Fluoride	mg/L	<0.095	0.32	12/20/24 14:58	
Sulfate	mg/L	<0.44	2.0	12/20/24 14:58	

LABORATORY CONTROL SAMPLE: 2821599

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.7	93	90-110	
Fluoride	mg/L	2	1.8	92	90-110	
Sulfate	mg/L	20	19.1	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821600 2821601

Parameter	Units	40288572001		MSD		MSD		% Rec		Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	2480	10000	10000	13500	13000	110	105	90-110	3	15		
Fluoride	mg/L	<47.5	1000	1000	1020	996	102	100	90-110	2	15		
Sulfate	mg/L	16500	10000	10000	27100	25800	106	93	90-110	5	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821602 2821603

Parameter	Units	40288573007		MSD		MSD		% Rec		Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	537	400	400	893	896	89	90	90-110	0	15	M0	
Fluoride	mg/L	<1.9	40	40	39.6	39.8	99	99	90-110	0	15		
Sulfate	mg/L	133	400	400	541	545	102	103	90-110	1	15		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492924	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40288568001, 40288568002, 40288568003, 40288568004		

METHOD BLANK: 2821452 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	12/18/24 11:39	

LABORATORY CONTROL SAMPLE: 2821453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	104	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821454 2821455

Parameter	Units	40288378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	323	100	100	421	426	99	103	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821456 2821457

Parameter	Units	40288683003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	5910	5000	5000	11000	13700	101	156	90-110	22	20	M0,R1

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	493238	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2823312 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	12/20/24 12:41	

LABORATORY CONTROL SAMPLE: 2823313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2823314 2823315

Parameter	Units	2823314		2823315		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Nitrogen, NO2 plus NO3	mg/L	<0.59	25	25	23.9	23.9	94	94	90-110	0	20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 **Lab ID: 40288568001** Collected: 12/09/24 11:25 Received: 12/10/24 09:00 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	0.000 ± 0.381 (1.00) C:NA T:96%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.777 ± 0.467 (1.00) C:73% T:91%	pCi/L	01/02/25 15:07	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.777 ± 0.848 (2.00)	pCi/L	01/03/25 11:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-318 **Lab ID: 40288568002** Collected: 12/09/24 12:07 Received: 12/10/24 09:00 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	-0.710 ± 0.585 (1.29) C:NA T:97%	pCi/L	12/31/24 13:03	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.10 ± 0.525 (1.00) C:70% T:89%	pCi/L	01/02/25 15:08	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.10 ± 1.11 (2.29)	pCi/L	01/03/25 11:08	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319	Lab ID: 40288568003	Collected: 12/09/24 13:25	Received: 12/10/24 09:00	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	-0.562 ± 0.626 (1.35) C:NA T:92%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.837 ± 0.495 (1.00) C:75% T:88%	pCi/L	01/02/25 15:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.837 ± 1.12 (2.35)	pCi/L	01/03/25 11:08	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 40288568004 Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.369 ± 0.595 (1.03) C:NA T:97%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.336 ± 0.359 (1.00) C:75% T:91%	pCi/L	01/02/25 15:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.705 ± 0.954 (2.03)	pCi/L	01/03/25 11:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 715871

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: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 3487241

Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.287 ± 0.215 (0.111) C:NA T:95%	pCi/L	12/31/24 13:03	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 715872

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: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 3487242

Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.471 ± 0.333 (0.633) C:76% T:89%	pCi/L	01/02/25 15:08	

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QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40288568001	MW-317	EPA 3010A	492560	EPA 6010D	492661
40288568002	MW-318	EPA 3010A	492560	EPA 6010D	492661
40288568003	MW-319	EPA 3010A	492560	EPA 6010D	492661
40288568004	FIELD BLANK	EPA 3010A	492560	EPA 6010D	492661
40288568001	MW-317	EPA 3010A	492422	EPA 6020B	492583
40288568002	MW-318	EPA 3010A	492422	EPA 6020B	492583
40288568003	MW-319	EPA 3010A	492422	EPA 6020B	492583
40288568004	FIELD BLANK	EPA 3010A	492422	EPA 6020B	492583
40288568001	MW-317	EPA 7470	492068	EPA 7470	492415
40288568002	MW-318	EPA 7470	492068	EPA 7470	492415
40288568003	MW-319	EPA 7470	492068	EPA 7470	492415
40288568004	FIELD BLANK	EPA 7470	492068	EPA 7470	492415
40288568001	MW-317				
40288568002	MW-318				
40288568003	MW-319				
40288568001	MW-317	EPA 903.1	715871		
40288568002	MW-318	EPA 903.1	715871		
40288568003	MW-319	EPA 903.1	715871		
40288568004	FIELD BLANK	EPA 903.1	715871		
40288568001	MW-317	EPA 904.0	715872		
40288568002	MW-318	EPA 904.0	715872		
40288568003	MW-319	EPA 904.0	715872		
40288568004	FIELD BLANK	EPA 904.0	715872		
40288568001	MW-317	Total Radium Calculation	718999		
40288568002	MW-318	Total Radium Calculation	718999		
40288568003	MW-319	Total Radium Calculation	718999		
40288568004	FIELD BLANK	Total Radium Calculation	718999		
40288568001	MW-317	SM 2540C	492465		
40288568002	MW-318	SM 2540C	492465		
40288568003	MW-319	SM 2540C	492465		
40288568004	FIELD BLANK	SM 2540C	492465		
40288568001	MW-317	EPA 9040	492657		
40288568002	MW-318	EPA 9040	492657		
40288568003	MW-319	EPA 9040	492657		
40288568004	FIELD BLANK	EPA 9040	492657		
40288568001	MW-317	EPA 300.0	492675		
40288568002	MW-318	EPA 300.0	492675		
40288568003	MW-319	EPA 300.0	492675		
40288568004	FIELD BLANK	EPA 300.0	492936		
40288568001	MW-317	EPA 310.2	492924		
40288568002	MW-318	EPA 310.2	492924		
40288568003	MW-319	EPA 310.2	492924		
40288568004	FIELD BLANK	EPA 310.2	492924		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40288568001	MW-317	EPA 353.2	493238		
40288568002	MW-318	EPA 353.2	493238		
40288568003	MW-319	EPA 353.2	493238		
40288568004	FIELD BLANK	EPA 353.2	493238		

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40288568**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 140 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 12/10/2024 /Initials: MWS
 Labeled By Initials: KKS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



January 03, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40288568

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on December 10, 2024. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40288568001	MW-317	Water	12/09/24 11:25	12/10/24 09:00
40288568002	MW-318	Water	12/09/24 12:07	12/10/24 09:00
40288568003	MW-319	Water	12/09/24 13:25	12/10/24 09:00
40288568004	FIELD BLANK	Water	12/09/24 12:50	12/10/24 09:00

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40288568001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40288568002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	AG1			7	PASI-G
EPA 903.1	REH1			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	TXW			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40288568003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40288568004	FIELD BLANK	EPA 6010D	SIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	REH1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TXW	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 **Lab ID: 40288568001** Collected: 12/09/24 11:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 17:59	7440-50-8	
Manganese	260	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 17:59	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 17:59	7440-22-4	
Total Hardness by 2340B	237	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 17:59		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 17:59	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:51	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 17:51	7440-38-2	
Barium	52.1	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 17:51	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 17:51	7440-41-7	
Boron	37.9	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 17:51	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:51	7440-43-9	
Calcium	50900	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 17:51	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 17:51	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 17:51	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 17:51	7439-92-1	
Lithium	4.3	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 17:51	7439-93-2	
Molybdenum	23.9	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 17:51	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 17:51	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 17:51	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:31	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.62	Std. Units			1		12/09/24 11:25		
Field Specific Conductance	440.7	umhos/cm			1		12/09/24 11:25		
Oxygen, Dissolved	1.19	mg/L			1		12/09/24 11:25	7782-44-7	
REDOX	-87.4	mV			1		12/09/24 11:25		
Turbidity	0.00	NTU			1		12/09/24 11:25		
Static Water Level	785.50	feet			1		12/09/24 11:25		
Temperature, Water (C)	10.9	deg C			1		12/09/24 11:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	280	mg/L	20.0	8.7	1		12/12/24 11:38		R1
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		12/13/24 19:28		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 Lab ID: 40288568001 Collected: 12/09/24 11:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.6	mg/L	2.0	0.59	1		12/18/24 22:27	16887-00-6	
Fluoride	0.15J	mg/L	0.32	0.095	1		12/18/24 22:27	16984-48-8	
Sulfate	3.7	mg/L	2.0	0.44	1		12/18/24 22:27	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	256	mg/L	25.0	7.4	1		12/18/24 12:04		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	0.17J	mg/L	0.25	0.059	1		12/20/24 12:47		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-318 **Lab ID: 40288568002** Collected: 12/09/24 12:07 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:07	7440-50-8	
Manganese	19.4	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:07	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:07	7440-22-4	
Total Hardness by 2340B	507	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:07		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:07	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:59	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 17:59	7440-38-2	
Barium	27.4	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 17:59	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 17:59	7440-41-7	
Boron	16.7	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 17:59	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 17:59	7440-43-9	
Calcium	106000	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 17:59	7440-70-2	
Chromium	1.4J	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 17:59	7440-47-3	
Cobalt	0.17J	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 17:59	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 17:59	7439-92-1	
Lithium	0.93J	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 17:59	7439-93-2	
Molybdenum	0.48J	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 17:59	7439-98-7	
Selenium	0.90J	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 17:59	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 17:59	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.27	Std. Units			1		12/09/24 12:07		
Field Specific Conductance	919	umhos/cm			1		12/09/24 12:07		
Oxygen, Dissolved	8.38	mg/L			1		12/09/24 12:07	7782-44-7	
REDOX	32.9	mV			1		12/09/24 12:07		
Turbidity	4.33	NTU			1		12/09/24 12:07		
Static Water Level	785.64	feet			1		12/09/24 12:07		
Temperature, Water (C)	11.3	deg C			1		12/09/24 12:07		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	666	mg/L	20.0	8.7	1		12/12/24 11:38		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		12/13/24 19:34		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-318 **Lab ID: 40288568002** Collected: 12/09/24 12:07 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	65.9	mg/L	20.0	5.9	10		12/18/24 22:37	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		12/18/24 22:37	16984-48-8	D3
Sulfate	215	mg/L	20.0	4.4	10		12/18/24 22:37	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	267	mg/L	25.0	7.4	1		12/18/24 12:05		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	1.7	mg/L	0.25	0.059	1		12/20/24 12:48		

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**ANALYTICAL RESULTS**

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319 **Lab ID: 40288568003** Collected: 12/09/24 13:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:51	7440-50-8	
Manganese	2.9J	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:51	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:51	7440-22-4	
Total Hardness by 2340B	387	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:51		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:51	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:03	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 18:03	7440-38-2	
Barium	30.0	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 18:03	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 18:03	7440-41-7	
Boron	21.7	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 18:03	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:03	7440-43-9	
Calcium	83300	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 18:03	7440-70-2	
Chromium	1.1J	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 18:03	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 18:03	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 18:03	7439-92-1	
Lithium	0.58J	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 18:03	7439-93-2	
Molybdenum	0.60J	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 18:03	7439-98-7	
Selenium	1.1	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 18:03	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 18:03	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:36	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.53	Std. Units			1		12/09/24 13:25		
Field Specific Conductance	1108	umhos/cm			1		12/09/24 13:25		
Oxygen, Dissolved	9.41	mg/L			1		12/09/24 13:25	7782-44-7	
REDOX	58.8	mV			1		12/09/24 13:25		
Turbidity	0.00	NTU			1		12/09/24 13:25		
Static Water Level	787.41	feet			1		12/09/24 13:25		
Temperature, Water (C)	11.3	deg C			1		12/09/24 13:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	1050	mg/L	20.0	8.7	1		12/12/24 11:38		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		12/13/24 19:38		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319 Lab ID: 40288568003 Collected: 12/09/24 13:25 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	455	mg/L	40.0	11.8	20		12/18/24 22:48	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		12/18/24 22:48	16984-48-8	D3
Sulfate	50.3	mg/L	40.0	8.9	20		12/18/24 22:48	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	330	mg/L	25.0	7.4	1		12/18/24 12:06		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	2.0	mg/L	0.25	0.059	1		12/20/24 12:49		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: **FIELD BLANK** Lab ID: **40288568004** Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	12/13/24 06:52	12/13/24 18:53	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	12/13/24 06:52	12/13/24 18:53	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	12/13/24 06:52	12/13/24 18:53	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	12/13/24 06:52	12/13/24 18:53		
Zinc	<11.6	ug/L	40.0	11.6	1	12/13/24 06:52	12/13/24 18:53	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:08	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/12/24 07:40	12/13/24 18:08	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	12/12/24 07:40	12/13/24 18:08	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/12/24 07:40	12/13/24 18:08	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	12/12/24 07:40	12/13/24 18:08	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/12/24 07:40	12/13/24 18:08	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	12/12/24 07:40	12/13/24 18:08	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/12/24 07:40	12/13/24 18:08	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/12/24 07:40	12/13/24 18:08	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/12/24 07:40	12/13/24 18:08	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	12/12/24 07:40	12/13/24 18:08	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	12/12/24 07:40	12/13/24 18:08	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	12/12/24 07:40	12/13/24 18:08	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/12/24 07:40	12/13/24 18:08	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	12/11/24 14:07	12/12/24 11:38	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	16.0J	mg/L	20.0	8.7	1		12/12/24 11:39		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		12/13/24 19:48		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		12/20/24 15:22	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		12/20/24 15:22	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		12/20/24 15:22	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		12/18/24 12:07		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: FIELD BLANK Lab ID: 40288568004 Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		12/20/24 12:49		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492068	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2817032 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	12/12/24 11:01	

LABORATORY CONTROL SAMPLE: 2817033

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2817034 2817035

Parameter	Units	2817034		2817035		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40288370001	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Mercury	ug/L	<0.066	5	5	5.0	5.6	101	112	85-115	10	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492560	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819868 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	12/13/24 17:40	
Manganese	ug/L	<1.5	5.0	12/13/24 17:40	
Silver	ug/L	<3.2	10.0	12/13/24 17:40	
Total Hardness by 2340B	mg/L	<1.0	5.4	12/13/24 17:40	
Zinc	ug/L	<11.6	40.0	12/13/24 17:40	

LABORATORY CONTROL SAMPLE: 2819869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	262	105	80-120	
Manganese	ug/L	250	264	105	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		67.6			
Zinc	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2819870 2819871

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288568001 Result	Spike Conc.	Spike Conc.	Conc.								
Copper	ug/L	<3.4	250	250	250	257	266	103	106	75-125	3	20	
Manganese	ug/L	260	250	250	250	510	532	100	109	75-125	4	20	
Silver	ug/L	<3.2	125	125	125	125	130	100	104	75-125	4	20	
Total Hardness by 2340B	mg/L	237				298	311				4	20	
Zinc	ug/L	<11.6	250	250	250	252	261	101	104	75-125	4	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 492422

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020B MET

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819070

Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	12/13/24 16:44	
Arsenic	ug/L	<0.28	1.0	12/13/24 16:44	
Barium	ug/L	<0.70	2.3	12/13/24 16:44	
Beryllium	ug/L	<0.25	1.0	12/13/24 16:44	
Boron	ug/L	<3.0	10.0	12/13/24 16:44	
Cadmium	ug/L	<0.15	1.0	12/13/24 16:44	
Calcium	ug/L	<76.2	254	12/13/24 16:44	
Chromium	ug/L	<1.0	3.4	12/13/24 16:44	
Cobalt	ug/L	<0.12	1.0	12/13/24 16:44	
Lead	ug/L	<0.24	1.0	12/13/24 16:44	
Lithium	ug/L	<0.22	1.0	12/13/24 16:44	
Molybdenum	ug/L	<0.44	1.5	12/13/24 16:44	
Selenium	ug/L	<0.32	1.1	12/13/24 16:44	
Thallium	ug/L	<0.14	1.0	12/13/24 16:44	

LABORATORY CONTROL SAMPLE: 2819071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	243	97	80-120	
Arsenic	ug/L	250	247	99	80-120	
Barium	ug/L	250	237	95	80-120	
Beryllium	ug/L	250	245	98	80-120	
Boron	ug/L	250	231	92	80-120	
Cadmium	ug/L	250	242	97	80-120	
Calcium	ug/L	10000	9700	97	80-120	
Chromium	ug/L	250	238	95	80-120	
Cobalt	ug/L	250	241	97	80-120	
Lead	ug/L	250	232	93	80-120	
Lithium	ug/L	250	247	99	80-120	
Molybdenum	ug/L	250	240	96	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	223	89	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Parameter	Units	2819072		2819073		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288370001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	240	240	96	96	75-125	0	20		
Arsenic	ug/L	0.97J	250	250	243	245	97	98	75-125	1	20		
Barium	ug/L	68.0	250	250	307	307	95	96	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	236	237	94	95	75-125	0	20		
Boron	ug/L	4000	250	250	4210	4100	83	43	75-125	2	20	P6	
Cadmium	ug/L	<0.15	250	250	237	237	95	95	75-125	0	20		
Calcium	ug/L	78500	10000	10000	90600	88000	121	95	75-125	3	20		
Chromium	ug/L	2.3J	250	250	234	231	93	92	75-125	1	20		
Cobalt	ug/L	1.0	250	250	230	230	92	91	75-125	0	20		
Lead	ug/L	0.54J	250	250	227	227	91	90	75-125	0	20		
Lithium	ug/L	64.7	250	250	303	302	95	95	75-125	0	20		
Molybdenum	ug/L	1890	250	250	2120	2110	93	90	75-125	0	20		
Selenium	ug/L	<0.32	250	250	242	244	97	97	75-125	1	20		
Thallium	ug/L	<0.14	250	250	219	220	88	88	75-125	0	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492465	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2819195 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	12/12/24 11:34	

LABORATORY CONTROL SAMPLE: 2819196

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	516	582	113	80-120	

SAMPLE DUPLICATE: 2819201

Parameter	Units	40288568001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	280	252	11	10	R1

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 492657 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

SAMPLE DUPLICATE: 2820363

Parameter	Units	40288545001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.2	9.2	0	20	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492675	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003

METHOD BLANK: 2820492 Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	12/18/24 16:55	
Fluoride	mg/L	<0.095	0.32	12/18/24 16:55	
Sulfate	mg/L	<0.44	2.0	12/18/24 16:55	

LABORATORY CONTROL SAMPLE: 2820493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2820494 2820495

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40288473037 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	70.9	100	100	170	169	99	98	90-110	0	15		
Fluoride	mg/L	<0.48	10	10	10.5	10.5	105	105	90-110	0	15		
Sulfate	mg/L	32.2	100	100	135	135	103	103	90-110	0	15		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492936	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568004

METHOD BLANK: 2821598 Matrix: Water

Associated Lab Samples: 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	12/20/24 14:58	
Fluoride	mg/L	<0.095	0.32	12/20/24 14:58	
Sulfate	mg/L	<0.44	2.0	12/20/24 14:58	

LABORATORY CONTROL SAMPLE: 2821599

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.7	93	90-110	
Fluoride	mg/L	2	1.8	92	90-110	
Sulfate	mg/L	20	19.1	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821600 2821601

Parameter	Units	40288572001		MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result						
Chloride	mg/L	2480	10000	10000	13500	13000	110	105	90-110	3	15		
Fluoride	mg/L	<47.5	1000	1000	1020	996	102	100	90-110	2	15		
Sulfate	mg/L	16500	10000	10000	27100	25800	106	93	90-110	5	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821602 2821603

Parameter	Units	40288573007		MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result						
Chloride	mg/L	537	400	400	893	896	89	90	90-110	0	15	M0	
Fluoride	mg/L	<1.9	40	40	39.6	39.8	99	99	90-110	0	15		
Sulfate	mg/L	133	400	400	541	545	102	103	90-110	1	15		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	492924	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2821452 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	12/18/24 11:39	

LABORATORY CONTROL SAMPLE: 2821453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	104	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821454 2821455

Parameter	Units	40288378001		2821454		2821455		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.					
Alkalinity, Total as CaCO3	mg/L	323	100	100	421	426	99	103	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821456 2821457

Parameter	Units	40288683003		2821456		2821457		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.					
Alkalinity, Total as CaCO3	mg/L	5910	5000	5000	11000	13700	101	156	90-110	22	20 M0,R1	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch:	493238	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 2823312 Matrix: Water
 Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	12/20/24 12:41	

LABORATORY CONTROL SAMPLE: 2823313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2823314 2823315

Parameter	Units	2823314		2823315		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Nitrogen, NO2 plus NO3	mg/L	<0.59	25	25	23.9	23.9	94	94	90-110	0	20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-317 **Lab ID: 40288568001** Collected: 12/09/24 11:25 Received: 12/10/24 09:00 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	0.000 ± 0.381 (1.00) C:NA T:96%	pCi/L	12/31/24 13:03	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.777 ± 0.467 (1.00) C:73% T:91%	pCi/L	01/02/25 15:07	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.777 ± 0.848 (2.00)	pCi/L	01/03/25 11:08	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-318 Lab ID: 40288568002 Collected: 12/09/24 12:07 Received: 12/10/24 09:00 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.710 ± 0.585 (1.29) C:NA T:97%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.10 ± 0.525 (1.00) C:70% T:89%	pCi/L	01/02/25 15:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.10 ± 1.11 (2.29)	pCi/L	01/03/25 11:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Sample: MW-319	Lab ID: 40288568003	Collected: 12/09/24 13:25	Received: 12/10/24 09:00	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	-0.562 ± 0.626 (1.35) C:NA T:92%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.837 ± 0.495 (1.00) C:75% T:88%	pCi/L	01/02/25 15:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.837 ± 1.12 (2.35)	pCi/L	01/03/25 11:08	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 40288568004 Collected: 12/09/24 12:50 Received: 12/10/24 09:00 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.369 ± 0.595 (1.03) C:NA T:97%	pCi/L	12/31/24 13:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.336 ± 0.359 (1.00) C:75% T:91%	pCi/L	01/02/25 15:08	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.705 ± 0.954 (2.03)	pCi/L	01/03/25 11:08	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 715871

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: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 3487241

Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.287 ± 0.215 (0.111) C:NA T:95%	pCi/L	12/31/24 13:03	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

QC Batch: 715872

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: 40288568001, 40288568002, 40288568003, 40288568004

METHOD BLANK: 3487242

Matrix: Water

Associated Lab Samples: 40288568001, 40288568002, 40288568003, 40288568004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.471 ± 0.333 (0.633) C:76% T:89%	pCi/L	01/02/25 15:08	

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.

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QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40288568001	MW-317	EPA 3010A	492560	EPA 6010D	492661
40288568002	MW-318	EPA 3010A	492560	EPA 6010D	492661
40288568003	MW-319	EPA 3010A	492560	EPA 6010D	492661
40288568004	FIELD BLANK	EPA 3010A	492560	EPA 6010D	492661
40288568001	MW-317	EPA 3010A	492422	EPA 6020B	492583
40288568002	MW-318	EPA 3010A	492422	EPA 6020B	492583
40288568003	MW-319	EPA 3010A	492422	EPA 6020B	492583
40288568004	FIELD BLANK	EPA 3010A	492422	EPA 6020B	492583
40288568001	MW-317	EPA 7470	492068	EPA 7470	492415
40288568002	MW-318	EPA 7470	492068	EPA 7470	492415
40288568003	MW-319	EPA 7470	492068	EPA 7470	492415
40288568004	FIELD BLANK	EPA 7470	492068	EPA 7470	492415
40288568001	MW-317				
40288568002	MW-318				
40288568003	MW-319				
40288568001	MW-317	EPA 903.1	715871		
40288568002	MW-318	EPA 903.1	715871		
40288568003	MW-319	EPA 903.1	715871		
40288568004	FIELD BLANK	EPA 903.1	715871		
40288568001	MW-317	EPA 904.0	715872		
40288568002	MW-318	EPA 904.0	715872		
40288568003	MW-319	EPA 904.0	715872		
40288568004	FIELD BLANK	EPA 904.0	715872		
40288568001	MW-317	Total Radium Calculation	718999		
40288568002	MW-318	Total Radium Calculation	718999		
40288568003	MW-319	Total Radium Calculation	718999		
40288568004	FIELD BLANK	Total Radium Calculation	718999		
40288568001	MW-317	SM 2540C	492465		
40288568002	MW-318	SM 2540C	492465		
40288568003	MW-319	SM 2540C	492465		
40288568004	FIELD BLANK	SM 2540C	492465		
40288568001	MW-317	EPA 9040	492657		
40288568002	MW-318	EPA 9040	492657		
40288568003	MW-319	EPA 9040	492657		
40288568004	FIELD BLANK	EPA 9040	492657		
40288568001	MW-317	EPA 300.0	492675		
40288568002	MW-318	EPA 300.0	492675		
40288568003	MW-319	EPA 300.0	492675		
40288568004	FIELD BLANK	EPA 300.0	492936		
40288568001	MW-317	EPA 310.2	492924		
40288568002	MW-318	EPA 310.2	492924		
40288568003	MW-319	EPA 310.2	492924		
40288568004	FIELD BLANK	EPA 310.2	492924		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40288568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40288568001	MW-317	EPA 353.2	493238		
40288568002	MW-318	EPA 353.2	493238		
40288568003	MW-319	EPA 353.2	493238		
40288568004	FIELD BLANK	EPA 353.2	493238		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40288568**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 140 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 12/10/2024 /Initials: MWS
 Labeled By Initials: KKS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

C4 January 2025 Laboratory Reports



February 04, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA CCRMOD 12-13
Pace Project No.: 40289668

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 11, 2025. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burriss, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA CCRMOD 12-13
Pace Project No.: 40289668

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40289668001	MW-317	Water	01/10/25 11:30	01/11/25 09:05
40289668002	MW-319	Water	01/10/25 13:00	01/11/25 09:05
40289668003	FIELD BLANK	Water	01/10/25 13:10	01/11/25 09:05

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40289668001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40289668002	MW-319	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	AG1			7	PASI-G
EPA 903.1	CLM			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	LMB			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40289668003	FIELD BLANK			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: MW-317 **Lab ID: 40289668001** Collected: 01/10/25 11:30 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	01/14/25 07:38	01/14/25 18:11	7440-50-8	
Manganese	217	ug/L	5.0	1.5	1	01/14/25 07:38	01/14/25 18:11	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	01/14/25 07:38	01/14/25 18:11	7440-22-4	
Total Hardness by 2340B	246	mg/L	5.4	1.0	1	01/14/25 07:38	01/14/25 18:11		
Zinc	<11.6	ug/L	40.0	11.6	1	01/14/25 07:38	01/14/25 18:11	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 12:38	7440-36-0	
Arsenic	0.87J	ug/L	1.0	0.28	1	01/15/25 08:50	01/20/25 12:38	7440-38-2	
Barium	48.0	ug/L	2.3	0.70	1	01/15/25 08:50	01/20/25 12:38	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/15/25 08:50	01/20/25 12:38	7440-41-7	
Boron	31.0	ug/L	10.0	3.0	1	01/15/25 08:50	01/20/25 12:38	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 12:38	7440-43-9	
Calcium	50500	ug/L	254	76.2	1	01/15/25 08:50	01/20/25 12:38	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	01/15/25 08:50	01/20/25 12:38	7440-47-3	
Cobalt	0.12J	ug/L	1.0	0.12	1	01/15/25 08:50	01/20/25 12:38	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	01/15/25 08:50	01/20/25 12:38	7439-92-1	
Lithium	4.3	ug/L	1.0	0.22	1	01/15/25 08:50	01/20/25 12:38	7439-93-2	
Molybdenum	15.3	ug/L	1.5	0.44	1	01/15/25 08:50	01/20/25 12:38	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	01/15/25 08:50	01/20/25 12:38	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	01/15/25 08:50	01/20/25 12:38	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	01/14/25 13:26	01/15/25 11:56	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.33	Std. Units			1		01/10/25 11:30		
Field Specific Conductance	425.6	umhos/cm			1		01/10/25 11:30		
Oxygen, Dissolved	2.73	mg/L			1		01/10/25 11:30	7782-44-7	
REDOX	-13.1	mV			1		01/10/25 11:30		
Turbidity	0.00	NTU			1		01/10/25 11:30		
Static Water Level	785.22	feet			1		01/10/25 11:30		
Temperature, Water (C)	10.5	deg C			1		01/10/25 11:30		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	128	mg/L	20.0	8.7	1		01/14/25 10:58		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		01/13/25 13:02		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: MW-317 Lab ID: 40289668001 Collected: 01/10/25 11:30 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	2.7	mg/L	2.0	0.59	1		01/21/25 14:54	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		01/22/25 13:13	16984-48-8	
Sulfate	3.8	mg/L	2.0	0.44	1		01/21/25 14:54	14808-79-8	B
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	251	mg/L	25.0	7.4	1		01/16/25 07:10		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	0.55	mg/L	0.25	0.059	1		01/14/25 12:01		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: MW-319 **Lab ID: 40289668002** Collected: 01/10/25 13:00 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	01/14/25 07:38	01/14/25 18:13	7440-50-8	
Manganese	2.1J	ug/L	5.0	1.5	1	01/14/25 07:38	01/14/25 18:13	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	01/14/25 07:38	01/14/25 18:13	7440-22-4	
Total Hardness by 2340B	440	mg/L	5.4	1.0	1	01/14/25 07:38	01/14/25 18:13		
Zinc	<11.6	ug/L	40.0	11.6	1	01/14/25 07:38	01/14/25 18:13	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 12:55	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	01/15/25 08:50	01/20/25 12:55	7440-38-2	
Barium	33.5	ug/L	2.3	0.70	1	01/15/25 08:50	01/20/25 12:55	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/15/25 08:50	01/20/25 12:55	7440-41-7	
Boron	21.2	ug/L	10.0	3.0	1	01/15/25 08:50	01/20/25 12:55	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 12:55	7440-43-9	
Calcium	101000	ug/L	254	76.2	1	01/15/25 08:50	01/20/25 12:55	7440-70-2	
Chromium	1.4J	ug/L	3.4	1.0	1	01/15/25 08:50	01/20/25 12:55	7440-47-3	
Cobalt	0.28J	ug/L	1.0	0.12	1	01/15/25 08:50	01/20/25 12:55	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	01/15/25 08:50	01/20/25 12:55	7439-92-1	
Lithium	0.84J	ug/L	1.0	0.22	1	01/15/25 08:50	01/20/25 12:55	7439-93-2	
Molybdenum	0.56J	ug/L	1.5	0.44	1	01/15/25 08:50	01/20/25 12:55	7439-98-7	
Selenium	1.4	ug/L	1.1	0.32	1	01/15/25 08:50	01/20/25 12:55	7782-49-2	
Thallium	0.28J	ug/L	1.0	0.14	1	01/15/25 08:50	01/20/25 12:55	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	01/14/25 13:26	01/15/25 11:59	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.38	Std. Units			1		01/10/25 13:00		
Field Specific Conductance	1732	umhos/cm			1		01/10/25 13:00		
Oxygen, Dissolved	8.23	mg/L			1		01/10/25 13:00	7782-44-7	
REDOX	15.4	mV			1		01/10/25 13:00		
Turbidity	0.00	NTU			1		01/10/25 13:00		
Static Water Level	787.12	feet			1		01/10/25 13:00		
Temperature, Water (C)	10.4	deg C			1		01/10/25 13:00		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	647	mg/L	33.3	14.5	1		01/14/25 10:58		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		01/13/25 13:04		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: MW-319 Lab ID: 40289668002 Collected: 01/10/25 13:00 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	409	mg/L	20.0	5.9	10		01/21/25 15:12	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		01/22/25 13:24	16984-48-8	D3
Sulfate	51.2	mg/L	20.0	4.4	10		01/21/25 15:12	14808-79-8	B
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	358	mg/L	25.0	7.4	1		01/16/25 07:16		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	2.0	mg/L	0.25	0.059	1		01/14/25 12:01		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: FIELD BLANK **Lab ID: 40289668003** Collected: 01/10/25 13:10 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	01/14/25 07:38	01/14/25 18:15	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	01/14/25 07:38	01/14/25 18:15	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	01/14/25 07:38	01/14/25 18:15	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	01/14/25 07:38	01/14/25 18:15		
Zinc	<11.6	ug/L	40.0	11.6	1	01/14/25 07:38	01/14/25 18:15	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 11:52	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	01/15/25 08:50	01/20/25 11:52	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	01/15/25 08:50	01/20/25 11:52	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/15/25 08:50	01/20/25 11:52	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	01/15/25 08:50	01/20/25 11:52	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	01/15/25 08:50	01/20/25 11:52	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	01/15/25 08:50	01/20/25 11:52	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	01/15/25 08:50	01/20/25 11:52	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	01/15/25 08:50	01/20/25 11:52	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	01/15/25 08:50	01/20/25 11:52	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	01/15/25 08:50	01/20/25 11:52	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	01/15/25 08:50	01/20/25 11:52	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	01/15/25 08:50	01/20/25 11:52	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	01/15/25 08:50	01/20/25 11:52	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	01/14/25 13:26	01/15/25 12:01	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		01/17/25 11:27		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.9	Std. Units	0.10	0.010	1		01/13/25 13:16		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		01/22/25 13:35	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		01/22/25 13:35	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		01/22/25 13:35	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		01/16/25 07:17		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: FIELD BLANK Lab ID: 40289668003 Collected: 01/10/25 13:10 Received: 01/11/25 09:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		01/14/25 12:02		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	494861	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

METHOD BLANK: 2830183 Matrix: Water

Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	01/14/25 17:42	
Manganese	ug/L	<1.5	5.0	01/14/25 17:42	
Silver	ug/L	<3.2	10.0	01/14/25 17:42	
Total Hardness by 2340B	mg/L	<1.0	5.4	01/14/25 17:42	
Zinc	ug/L	<11.6	40.0	01/14/25 17:42	

LABORATORY CONTROL SAMPLE: 2830184

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	262	105	80-120	
Manganese	ug/L	250	265	106	80-120	
Silver	ug/L	125	128	102	80-120	
Total Hardness by 2340B	mg/L		68.3			
Zinc	ug/L	250	259	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2830185 2830186

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40289649001 Result	Spike Conc.	Spike Conc.	Conc.								
Copper	ug/L	28.6	250	250	290	285	105	103	75-125	2	20		
Manganese	ug/L	491	250	250	743	746	101	102	75-125	0	20		
Silver	ug/L	<3.2	125	125	125	124	100	100	75-125	1	20		
Total Hardness by 2340B	mg/L	292000			355	354				0	20		
Zinc	ug/L	35.0J	250	250	289	286	102	101	75-125	1	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	494826	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

METHOD BLANK: 2830069 Matrix: Water

Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	01/20/25 11:48	
Arsenic	ug/L	<0.28	1.0	01/20/25 11:48	
Barium	ug/L	<0.70	2.3	01/20/25 11:48	
Beryllium	ug/L	<0.25	1.0	01/20/25 11:48	
Boron	ug/L	<3.0	10.0	01/20/25 11:48	
Cadmium	ug/L	<0.15	1.0	01/20/25 11:48	
Calcium	ug/L	<76.2	254	01/20/25 11:48	
Chromium	ug/L	<1.0	3.4	01/20/25 11:48	
Cobalt	ug/L	<0.12	1.0	01/20/25 11:48	
Lead	ug/L	<0.24	1.0	01/20/25 11:48	
Lithium	ug/L	<0.22	1.0	01/20/25 11:48	
Molybdenum	ug/L	<0.44	1.5	01/20/25 11:48	
Selenium	ug/L	<0.32	1.1	01/20/25 11:48	
Thallium	ug/L	<0.14	1.0	01/20/25 11:48	

LABORATORY CONTROL SAMPLE: 2830070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	241	96	80-120	
Arsenic	ug/L	250	242	97	80-120	
Barium	ug/L	250	236	94	80-120	
Beryllium	ug/L	250	239	96	80-120	
Boron	ug/L	250	230	92	80-120	
Cadmium	ug/L	250	240	96	80-120	
Calcium	ug/L	10000	9880	99	80-120	
Chromium	ug/L	250	237	95	80-120	
Cobalt	ug/L	250	240	96	80-120	
Lead	ug/L	250	233	93	80-120	
Lithium	ug/L	250	236	94	80-120	
Molybdenum	ug/L	250	242	97	80-120	
Selenium	ug/L	250	250	100	80-120	
Thallium	ug/L	250	231	92	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Parameter	Units	2830071		2830072		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40289668001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	241	240	96	96	75-125	0	20		
Arsenic	ug/L	0.87J	250	250	241	241	96	96	75-125	0	20		
Barium	ug/L	48.0	250	250	287	287	96	96	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	241	244	97	97	75-125	1	20		
Boron	ug/L	31.0	250	250	269	268	95	95	75-125	0	20		
Cadmium	ug/L	<0.15	250	250	234	235	94	94	75-125	0	20		
Calcium	ug/L	50500	10000	10000	60300	60800	98	103	75-125	1	20		
Chromium	ug/L	<1.0	250	250	234	234	93	93	75-125	0	20		
Cobalt	ug/L	0.12J	250	250	229	229	92	91	75-125	0	20		
Lead	ug/L	<0.24	250	250	235	238	94	95	75-125	1	20		
Lithium	ug/L	4.3	250	250	244	246	96	97	75-125	1	20		
Molybdenum	ug/L	15.3	250	250	255	256	96	96	75-125	0	20		
Selenium	ug/L	<0.32	250	250	251	250	100	100	75-125	0	20		
Thallium	ug/L	<0.14	250	250	239	241	96	96	75-125	1	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch: 494883	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002

METHOD BLANK: 2830271 Matrix: Water

Associated Lab Samples: 40289668001, 40289668002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	01/14/25 10:54	

LABORATORY CONTROL SAMPLE: 2830272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	516	556	108	80-120	

SAMPLE DUPLICATE: 2830273

Parameter	Units	40289582001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	730	722	1	10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch: 495162	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668003

METHOD BLANK: 2831645 Matrix: Water

Associated Lab Samples: 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	01/17/25 11:27	

LABORATORY CONTROL SAMPLE: 2831646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	516	538	104	80-120	

SAMPLE DUPLICATE: 2831654

Parameter	Units	40289719001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	462	438	5	10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	494755	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

SAMPLE DUPLICATE: 2829887

Parameter	Units	40289627001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.3	2	20	H6,PI

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	495306	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

METHOD BLANK: 2832338 Matrix: Water
 Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	01/21/25 13:27	
Fluoride	mg/L	<0.095	0.32	01/22/25 12:19	
Sulfate	mg/L	0.52J	2.0	01/21/25 13:27	

LABORATORY CONTROL SAMPLE: 2832339

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.2	96	90-110	
Fluoride	mg/L	2	1.9	96	90-110	
Sulfate	mg/L	20	19.3	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2832340 2832341

Parameter	Units	40289499001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.8J	200	200	218	229	99	105	90-110	5	15	
Fluoride	mg/L	<0.95	20	20	20.9	21.1	105	106	90-110	1	15	
Sulfate	mg/L	182	200	200	375	399	96	108	90-110	6	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	495021	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

METHOD BLANK: 2830925 Matrix: Water
 Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	01/16/25 07:08	

LABORATORY CONTROL SAMPLE: 2830926

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	99.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2830927 2830928

Parameter	Units	2830927		2830928		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	251	100	345	348	94	96	90-110	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	494791	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40289668001, 40289668002, 40289668003

METHOD BLANK: 2829980 Matrix: Water
 Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	01/14/25 11:53	

LABORATORY CONTROL SAMPLE: 2829981

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2829982 2829983

Parameter	Units	2829982		2829983		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40289525002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Nitrogen, NO2 plus NO3	mg/L	12.0	5	5	16.8	16.7	95	94	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2829984 2829985

Parameter	Units	2829984		2829985		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40289612014 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Nitrogen, NO2 plus NO3	mg/L	14.3	5	5	19.2	19.2	98	97	90-110	0	20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Sample: MW-317	Lab ID: 40289668001	Collected: 01/10/25 11:30	Received: 01/11/25 09:05	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	-0.362 ± 0.765 (1.58) C:NA T:96%	pCi/L	01/21/25 15:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.436 ± 0.389 (1.00) C:79% T:88%	pCi/L	01/20/25 12:46	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.436 ± 1.15 (2.58)	pCi/L	01/22/25 10:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-319 Lab ID: 40289668002 Collected: 01/10/25 13:00 Received: 01/11/25 09:05 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.682 ± 0.747 (1.66) C:NA T:92%	pCi/L	01/21/25 15:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.02 ± 0.460 (1.00) C:77% T:88%	pCi/L	01/20/25 12:46	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.02 ± 1.21 (2.66)	pCi/L	01/22/25 10:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK						
Lab ID: 40289668003						
Collected: 01/10/25 13:10						
Received: 01/11/25 09:05						
Matrix: Water						
PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.365 ± 0.592 (1.32) C:NA T:97%	pCi/L	01/21/25 15:03	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.246 ± 0.335 (1.00) C:76% T:89%	pCi/L	01/20/25 12:46	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.246 ± 0.927 (2.32)	pCi/L	01/22/25 10:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	720770	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: 40289668001, 40289668002, 40289668003

METHOD BLANK: 3509357 Matrix: Water

Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.462 ± 0.407 (0.823) C:69% T:87%	pCi/L	01/20/25 12:45	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

QC Batch:	720769	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: 40289668001, 40289668002, 40289668003

METHOD BLANK: 3509356 Matrix: Water

Associated Lab Samples: 40289668001, 40289668002, 40289668003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0575 ± 0.338 (0.753) C:NA T:92%	pCi/L	01/21/25 15:03	

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QUALIFIERS

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

PI The precision between the sample and the duplicate sample exceeded laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA CCRMOD 12-13

Pace Project No.: 40289668

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40289668001	MW-317	EPA 3010A	494861	EPA 6010D	494925
40289668002	MW-319	EPA 3010A	494861	EPA 6010D	494925
40289668003	FIELD BLANK	EPA 3010A	494861	EPA 6010D	494925
40289668001	MW-317	EPA 3010A	494826	EPA 6020B	495067
40289668002	MW-319	EPA 3010A	494826	EPA 6020B	495067
40289668003	FIELD BLANK	EPA 3010A	494826	EPA 6020B	495067
40289668001	MW-317	EPA 7470	494899	EPA 7470	494939
40289668002	MW-319	EPA 7470	494899	EPA 7470	494939
40289668003	FIELD BLANK	EPA 7470	494899	EPA 7470	494939
40289668001	MW-317				
40289668002	MW-319				
40289668001	MW-317	EPA 903.1	720769		
40289668002	MW-319	EPA 903.1	720769		
40289668003	FIELD BLANK	EPA 903.1	720769		
40289668001	MW-317	EPA 904.0	720770		
40289668002	MW-319	EPA 904.0	720770		
40289668003	FIELD BLANK	EPA 904.0	720770		
40289668001	MW-317	Total Radium Calculation	722251		
40289668002	MW-319	Total Radium Calculation	722251		
40289668003	FIELD BLANK	Total Radium Calculation	722251		
40289668001	MW-317	SM 2540C	494883		
40289668002	MW-319	SM 2540C	494883		
40289668003	FIELD BLANK	SM 2540C	495162		
40289668001	MW-317	EPA 9040	494755		
40289668002	MW-319	EPA 9040	494755		
40289668003	FIELD BLANK	EPA 9040	494755		
40289668001	MW-317	EPA 300.0	495306		
40289668002	MW-319	EPA 300.0	495306		
40289668003	FIELD BLANK	EPA 300.0	495306		
40289668001	MW-317	EPA 310.2	495021		
40289668002	MW-319	EPA 310.2	495021		
40289668003	FIELD BLANK	EPA 310.2	495021		
40289668001	MW-317	EPA 353.2	494791		
40289668002	MW-319	EPA 353.2	494791		
40289668003	FIELD BLANK	EPA 353.2	494791		

REPORT OF LABORATORY ANALYSIS

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INTER_LABORATORY WORK ORDER # 92773100

(To be completed by sending lab)

Ship To:
Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436

Table with 2 columns: Field Name and Value. Fields include Sending Project No, Receiving Project No, Check Box for Consolidated Invoice, Date Prepared, and REQUESTED COMPLETION DATE.

Table with 4 columns: Field Name, Value 1, Value 2, Value 3. Fields include Sending Region, Receiving Region, State of Sample Origin, Sending Project Mgr., External Client, QC Deliverable, and STD REPORT.

All questions should be addressed to sending project manager.

Requested Reportable Units Report Wet or Dry Weight? Dry weight, if IRWO Lab Need to run? Cert. Needed

Table titled 'WORK REQUESTED' with columns: Method Description, Container Type, Quantity of containers, Preservative, Quantity of Samples, Acode, and Acode Desc.

Special Requirements: Report D, QC Limits, MDLs (D), Arcadis Equis 5 (28)

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Return Samples to Sending Region: Yes No

DISPOSITION of FORM

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.



DC#_Title: ENV-FRM-GBAY-0017 v01_Regulated Domestic and Foreign Soils Checklist

Effective Date: 04/28/2022

Regulated Domestic and Foreign Soils Checklist

Project #: 40289688	Time: 1730
Initials: mt	Date: 11/13/25
Origin (Circle One): Domestic	Foreign
Domestic State of Origin (Circle One): AL AR AZ CA FL GA ID LA MS NC NM NY OK OR SC TN TX	
Foreign Country of Origin:	

Note: Soils from Hawaii and Puerto Rico are of Foreign Origin

Sample analysis will take place at (Circle all that apply):

Green Bay	Subcontract Laboratory
Name of Subcontract Laboratory:	

1) Did "Regulated" sticker get placed on samples?	Regulated sticker must be placed onto each sample container.	Yes / No
2) If samples are being subcontracted, do they hold a valid Soil Permit and Compliance Agreement?	Subcontract laboratories are required to hold a valid Soil Permit and Compliance Agreement before we send a soil sample. Verify with USDA/APHIS.	Yes / No / NA
3) Were samples placed in regulated bin in soil cooler?	Regulated samples retained in the Green Bay Laboratory must be stored in regulated bins in designated coolers.	Yes / No
4) Were there signs of sample breakage/leakage?	Check for broken glass or loose soil in the cooler.	Yes / No
5) If NO breakage/leakage, was ice and melt water disposed of properly?	Foreign and Domestic sources: Ice and melt water can be disposed of by dumping down the sink.	Yes / No / NA
6) If YES, there were signs of breakage/leakage, were ice, melt water, and soil disposed of properly?	Foreign and Domestic sources: Ice and melt water must be baked at 140°C, cooled, and dumped down the sink. Soils must be baked and put in RCRA waste barrel.	Yes / No / NA
7) Was the cooler decontaminated?	Spray cooler with 1:10 bleach solution and let soak for 30 minutes. Rinse/drain down sink and let cooler air dry.	Yes / No / NA

Comments: _____



40289688

United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection & Quarantine
4700 River Road
Riverdale, MD 20737

**Permit to Receive Soil
Regulated by 7 CFR 330**

APPLICATION NUMBER:	A-00316048	DATE ISSUED:	01/03/2024
PERMIT NUMBER:	525-24-3-36355	EFFECTIVE:	01/03/2024 – 01/03/2027

APPLICANT NAME:	Jill Duranceau	PERMITTEE NAME:	Jill Duranceau
ORGANIZATION:	Pace Analytical Services	ORGANIZATION:	Pace Analytical Services
ADDRESS:	1241 Bellevue Street, Green Bay, Wisconsin, 54302	ADDRESS:	1241 Bellevue Street, Green Bay, Wisconsin, 54302
MAILING ADDRESS:	1241 Bellevue Street, Green Bay, Wisconsin, 54302	MAILING ADDRESS:	1241 Bellevue Street, Green Bay, Wisconsin, 54302
PHONE:	7153473714	PHONE:	7153473714
ALTERNATE PHONE:		ALTERNATE PHONE:	
EMAIL:	jill.duranceau@pacelabs.com	EMAIL:	jill.duranceau@pacelabs.com
ALTERNATE EMAIL:	jill.duranceau@pacelabs.com	ALTERNATE EMAIL:	jill.duranceau@pacelabs.com
APPROVED FOR HAND CARRY:	Not Authorized		
PORTS OF ARRIVAL/PLANT INSPECTION STATIONS:	Various Ports of Entry, ;		

Destination Location

Name: Pace Analytical Services - Green Bay
Facility Number: PPQ-WI-318484
Type: Laboratory
Address: 1241 Bellevue Street Suite 9
City, State, ZIP Code: Green Bay, WI 54302
County: Brown
Latitude and Longitude: 44.487446, -87.99498

Primary Contact

Name: Jill Duranceau
Email: jill.duranceau@pacelabs.com
Alternate Email: jill.duranceau@pacelabs.com
Phone: 7153473714
Alternate Phone: 9204692436

Intended Use: Chemical or physical analysis

Are you importing 3 lbs (1.39 kg) or more of soil, excluding packaging? Yes

Can a Plant Inspection Station sterilize the soil in its packaging at 250°F (121°C) by dry or steam heat? No

Mode(s) of Transport Air freight; Air mail; Express delivery; Land freight; Maritime freight

Permit Number: 525-24-3-36355

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EFILE APHIS eFile Automatic Issued Permit Regulated by 7 CFR 330	DATE 01/03/2024
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WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)



40289688

Under the conditions specified, this permit authorizes the following:

Movement Type: Import

Shipments

1. Africa;Asia;Australia and Oceania;Europe;North America (excluding USA) includes Central America and Caribbean Islands;South America;Caribbean Islands;U.S. - American Samoa;U.S. - Guam;U.S. - Hawaii;U.S. - Puerto Rico;U.S. - Virgin Islands;U.S. - Northern Mariana Islands

SPECIAL INSTRUCTIONS TO INSPECTORS

INSTRUCTIONS TO DHS CBP INSPECTORS FOR IMPORTED SOIL SHIPMENTS ROUTED TO RECEIVING FACILITY:

For hand carry of soil, an official of CBP Agricultural Programs and Trade Liaison (APTL) would have been notified to document and facilitate the entry of the soil (See hand carry conditions below if stipulated).

Otherwise:

- 1) Confirm that the shipment under this USDA PPQ P330 permit is under bond to the point of entry.
- 2) Validate the permit in CBP's ACE/DIS system.
- 3) Confirm that the imported shipment has a valid USDA PPQ Form 550 Black/White label.
- 4) For questions or concerns, contact the USDA-APHIS-PPQ Permit Unit in Riverdale, MD, at 866-524-5421 and ask to speak with a compliance officer.

See permit conditions below

PERMIT GUIDANCE

1) Receipt or use of foreign isolates or samples from countries under sanctions requires specific permission from the U.S. Department of Treasury; please refer to <https://www.treasury.gov/resource-center/sanctions/Programs/Pages/Programs.aspx>

2) This permit does not authorize importation, interstate movement, possession, and/or use of strains of genetically engineered regulated materials/organisms (created by the use of recombinant DNA technology).

3) If an animal pathogen is identified in your shipment, to ensure appropriate safeguarding, please refer to http://www.aphis.usda.gov/import_export/animals/animal_import/animal_imports_anproducts.shtml

4) If a human pathogen is identified, please refer to the CDC Etiologic Agent Import Permit Program at <http://www.cdc.gov/od/eaipp/>

5) This permit does not fulfill the requirements of other federal or state regulatory authorities. Please contact the appropriate agencies, such as the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service,

Permit Number: 525-24-3-36355

<p>THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EFILE</p> <p>APHIS eFile Automatic Issued Permit Regulated by 7 CFR 330</p>	<p>DATE</p> <p>01/03/2024</p>
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WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)



C/O 289688

the U.S. Food and Drug Administration, the Centers for Disease Control and Prevention, the APHIS Veterinary Services unit, the APHIS Biotechnology Regulatory Services, or your State's Department of Agriculture to ensure proper permitting.

6) If you are considering renewal of this permit, an application should be submitted at least 90 days prior to the expiration date of this permit to ensure continued coverage. Permits requiring containment facilities may take a longer period of time to process.

PERMIT CONDITIONS

USDA APHIS issues this Permit to Jill Duranceau, Pace Analytical Services in Green Bay, Wisconsin. This permit authorizes the importation of soil from all foreign sources (except countries with sanctions or embargoes by U.S. State Department) only for chemical/physical analysis in a controlled laboratory environment at the named facility on the permit.

1. This permit is issued by the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). It conveys APHIS regulations and requirements for the material(s) listed on this permit. It does not reduce or eliminate your legal duty and responsibility to comply with all other applicable Federal and State regulatory requirements.

- A copy of the permit or the permit number must accompany the shipment.
- You must be an individual at least 18 years old, or legal entity such as partnership, corporation, association, or joint venture.
- You are legally responsible for complying with all permit requirements and permit conditions.
- The regulated material and shipping container(s) are subject to inspection by officials of U.S. Customs and Border Protection (CBP) and APHIS. CBP or APHIS officials may require the shipment to be treated, seized, re-exported, or destroyed (in part or whole). You will be responsible for any associated expenses.
- If you violate any applicable laws associated with this permit, you may face substantial civil or criminal penalties. We may cancel all current permits and deny future permit applications.

Permit Number: 525-24-3-36355

<p>THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EFILE</p> <p>APHIS eFile Automatic Issued Permit Regulated by 7 CFR 330</p>	<p>DATE</p> <p>01/03/2024</p>
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WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)



C/O 2896ff

- Without prior notice and during reasonable hours, authorized Federal and State Regulators must be allowed to inspect the conditions associated with the regulated materials/organisms authorized under this permit.
2. The Permit holder must comply with all the items listed below. In cases where notification is required, the notification must be made to the PPQ Pest Permit Staff at 866-524-5421 or pest.permits@usda.gov within one business day of the event triggering a notification. You must also notify the PPQ State Plant Health Director (SPHD) in your State. Access the list of SPHDs at https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/ct_sphd.
- Maintain a valid PPQ 330 permit as long as any portion of the regulated soil has not been treated or disposed of in accordance with these permit conditions
 - Maintain an official permanent work assignment or affiliation at the address on this permit
 - Notify PPQ of any change in the permit holder's work assignment, place of business, or affiliation
 - Not assign or transfer this permit to other persons without prior PPQ authorization
 - Notify PPQ of the receipt of an unauthorized and/or misdirected shipment of regulated soil and hold it until further instruction from PPQ
 - Notify PPQ if the shipment includes any unusual/unexpected contents (including live insects and snails) and take all prudent measures to contain them until further instruction from PPQ
 - Notify PPQ of any unauthorized or accidental release of the regulated soil and adequately mitigate the resulting environmental impacts
 - Notify PPQ if the facility or equipment is damaged, destroyed, or otherwise compromised
 - Notify PPQ if you intend to let your permit expire and you will no longer receive, handle, and/or dispose of regulated soil
3. **Prohibitions/Limitations: Regulated soil must not be used:**
- In field research or for other release into the environment before sterilization.

Permit Number: 525-24-3-36355

<p>THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EFILE</p> <p>APHIS eFile Automatic Issued Permit Regulated by 7 CFR 330</p>	<p>DATE</p> <p>01/03/2024</p>
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WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to \$250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)



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- For isolating, culturing, extracting, or concentrating live organisms.
- As a growing medium, unless specifically authorized in this permit.

4. **Shipping/Movement:**

1) All packages for transport must minimally consist of inner/primary and outer/secondary package, both in a securely sealed tertiary container so that all are effective barriers to prevent escape or unauthorized dissemination of the listed regulated materials. The inner/primary package will contain all regulated materials and must be cushioned and sealed inside a secondary container in such a way that both remain sealed during shock, impact, and pressure changes that may occur. The outermost/tertiary shipping container must be rigid, strong enough, and sealed to withstand typical shipping conditions(dropping, stacking, impact from other freight, etc.) without opening.

2) For soil that originates in Hawaii and Puerto Rico, a copy of this permit or permit number and the shipment must be presented to APHIS-Plant Protection and Quarantine(PPQ) for inspection and clearance prior to departure. For soil that originates in the U.S. Virgin Islands, a copy of this permit or the permit number and the shipment must be presented to APHIS-PPQ in Puerto Rico for inspection and clearance prior to arrival in mainland U.S. For more information on how to ship your package to APHIS-PPQ in Puerto Rico, please visit our website at:

https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/plant-pests/sa_soil/soil-shipping-requirements. Following inspection, soil shipments from Hawaii, Puerto Rico, and the U.S. Virgin Islands are authorized to enter at any arrival point on the mainland U.S.

3) Unless the regulated soil is hand carried by an individual specifically authorized in this permit, it must be shipped by bonded carrier to the port of entry. Following release by CBP, further movement to the APHIS-PPQ approved facility must occur by means of a generally recognized commercial carrier.

4) The shipment must be free from foreign matter or debris, plants and plant parts, and other macro-organisms, such as insects, cyst nematodes, mollusks and acari. Regulated material commingled with unauthorized material will be treated, seized, re-exported, or destroyed (in part or whole).

5) All solid wood packing material (SWPM) accompanying the shipment must be in compliance with ISPM 15 treatment regulations and IPPC stamp requirements and enforcement. Noncompliant shipments will be treated, re-exported or destroyed at the consignee's expense.

Permit Number: 525-24-3-36355

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6) Further distribution or movement of the regulated soil is not allowed unless the destination location is an APHIS-approved containment facility under a valid PPQ 525a permit. For such movements, you must follow the packaging standards described in these permit conditions, except that the use of black and white labels is not required.

7) Certain domestic mainland soil is regulated separately under 7 CFR 301. This permit does NOT authorize the movement of such soil. For further information on the movement of domestic mainland soil visit: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/plant-pests/sa_soil/domestic-soil.

5. **Shipping Labels/Labeling:**

- To request Black/White (PPQ Form 550), log into APHIS eFile, navigate to My Activity and search for your permit. On the permit details page, view and download your labels in the Labels section.
- If you submitted a paper application, or need additional assistance for black and white labels, please email: BlackWhiteGreenYellowlabelrequest@aphis.usda.gov.
- If you are not using the self-serve feature in APHIS eFile to obtain your labels, your request may take up to a week to be processed.
- All email requests must come from the permit holder or applicant. Note: If requested by the designee, the permit holder must be copied on all requests. Specify the approved port as listed on the permit and the total number of labels needed. You may request additional labels the same way.
- A label must be attached with clear tape to the exterior of each package being imported under this permit. (It is NOT necessary to provide a shipping label for every sample contained within one package e. g. 5 bottles/bags/vials within one box needs only ONE label, not five).
- The labels have detailed instructions. You are responsible for instructing your shipper to carefully follow these instructions. Failure to do so may result in refused entry or destruction of your package.
- Enclose the following supplemental information in each shipment:
 - Permittee Name - Permit number

Permit Number: 525-24-3-36355

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- o Underlying packaging/wrapping must carry the address, billing, and any other information required to direct the shipment to its final destination (i.e., the permit holder's address)
- USDA APHIS does not defray any additional shipping costs incurred for transiting the shipment through an inspection station as the initial US destination.
- **NOTE:** the PPQ Form 550 Black/White label is NOT required on shipments of soil that originate in Hawaii and U.S. Territories.

6. Facility (Storage/Handling):

- All regulated soil must be safeguarded at all times during movement, handling, and storage, until sterilized by one of the treatment methods specified in this permit. Upon arrival at the APHIS-PPQ approved facility, the regulated soil must be stored in two levels of secured containment until transferred or sterilized. As long as regulated soil is present, the containment and all other affected areas of the facility must be restricted to access by authorized personnel only.
- All containers and storage areas will be labeled: "Regulated Soil – Sterilize before Disposal" (or an acceptable equivalent). The secured containment area must store only regulated material or, if the area also houses unregulated material, the regulated material must be clearly segregated from the unregulated material as well as being appropriately labeled.
- The permit holder is responsible for the activities of those individuals working with the regulated soil. Everyone handling the regulated soil must read and agree to the permit conditions. which must be documented and readily accessible in the event of an inspection and presented upon request.
- Modifications to the facility or any procedural changes that affect the handling of the regulated soil must be approved by APHIS-PPQ prior to making changes. Please contact the PPQ Pest Permit Staff (email: pest.permits@usda.gov; phone: 866-524-5421; address: 4700 River Road, Unit 133, Riverdale, MD 20737; fax: 301-734-8700).

7. Treatment/Disposal:

- All decontamination, sterilization, and disposal must comply with one of the methods authorized by the permit conditions. Prior to disposal, all regulated soil must be sterilized by one of the following methods: **No other sterilization methods are allowed without prior review and approval from PPQ Pest Permit Unit Staff.**

Permit Number: 525-24-3-36355

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EFILE APHIS eFile Automatic Issued Permit Regulated by 7 CFR 330	DATE 01/03/2024
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• Autoclave

- Autoclave at 121 Celsius (250 Fahrenheit) for a minimum of 30 minutes at 15 psi.
- Place autoclave tape or other indicators on each load prior to treatment. Check the autoclave tape or other indicator on each container to verify color change before disposal.
- Calibrate annually according to the manufacturer’s instructions and maintain written records.
- Use a commercially available biological indicator kit every 3 months, containing bacterial spores (e. g. *Geobacillus stearothermophilus* species) that are rendered unviable at 121 Celsius (250 Fahrenheit). Follow the manufacturer’s instructions. Service and retest the autoclave if any growth is observed.

• Dry Heat

- Use one of the following minimum temperature ranges and minimum exposure time combinations:
 - 110 – 120.5 Celsius (230 – 249 Fahrenheit) for 16 hours
 - 121 – 154 Celsius (250 – 309 Fahrenheit) for 2 hours
 - 154.4 – 192.5 Celsius (310 – 379 Fahrenheit) for 30 minutes
 - 193 – 220 Celsius (380 – 429 Fahrenheit) for 4 minutes
 - 221 – 232 Celsius (430 – 450 Fahrenheit) for 2 minutes
- NOTE: Time starts when the entire sample reaches the required temperature, and you must utilize a suitable temperature probe or currently calibrated thermometer for verification. The soil must be spread evenly throughout the chamber and not exceed 6 inches in depth.

• Hydroclave

- Hydroclave at a minimum of 121 Celsius (250 Fahrenheit) for a minimum of 30 minutes, or at a minimum of 132 Celsius (267 Fahrenheit) for a minimum of 15 minutes.
- Observe the temperature sensor to ensure that the hydroclave maintains its required temperature.
- Calibrate the hydroclave annually according to the manufacturer’s instructions and maintain written records.

• Incineration

- With exception of metal and glass containers, all regulated and associated material must be reduced completely to ash at the end of the incineration cycle.

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• Bulk Disposal

- As an alternative to the sterilization requirements listed above, disposal of regulated soil and any material contaminated with regulated soil may be conducted off site by a Disposal Facility holding a current PPQ Permit for Soil Bulk Disposal or a PPQ issued Compliance Agreement for Disposal of Regulated Material. Vendor may or may not be in the same state.
- All regulated soil and any material contaminated with regulated soil must be double contained during transport to the Disposal Facility to prevent any unauthorized dissemination of the regulated soil.

8. Decontamination: surfaces, tools, equipment, supplies and related materials

- Unless other disposal arrangements have been approved in advance by PPQ Pest Permit Staff, all items coming in direct contact with, or exposed to, the regulated soil--including but not limited to glassware, countertops, equipment, waste material, effluent, and shipping materials -- must be sterilized/sanitized/decontaminated prior to re-use or removal from the APHIS-PPQ approved facility, and prior to the expiration of this permit.
- Use any of the following, either alone or in combination:
 - immerse in minimum of 0.525 percent sodium hypochlorite (household bleach from the bottle is a minimum of 5 percent) for at least 20 minutes,
 - immerse in 70 percent alcohol or ethanol for at least 30 minutes,
 - treat with quaternary ammonium compounds per manufacturer's specifications,
 - one of the soil sterilization methods above.
- Hydroclave or autoclave effluent as stipulated above, if required.

9. SOPs/Training/Records:

- Standard Operating Procedures (SOPs)
 - SOPs must be filed with, and approved by, the PPQ Pest Permit Staff at: email: pest.permits@usda.gov; phone: 866-524-5421; fax: 301-734-8700; address: River Road, Unit 133, Riverdale, MD 20737.
 - All contact information must be kept current and the SOPs must be dated.
 - At a minimum, the SOP should describe how you will maintain compliance with APHIS-PPQ regulations. It must include how you plan to: transport, handle/process, store, safeguard, treat, and dispose of the regulated soil, effluent, and anything else contacting with the regulated soil.
 - The SOP must also contain instructions regarding the cleanup of potential spillage of regulated soil and must be posted in areas where soil is stored and processed.
 - APHIS-PPQ must approve any changes to the SOPs before implementation.

Permit Number: 525-24-3-36355

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- A current copy of the SOP must be available at the time of facility inspection.
- If requirements in the permit conditions are more restrictive than the SOPs, the permit conditions take precedence.

- Training
 - All employees working with the regulated soil must complete annual training.
 - The training must cover the requirements on this permit and the Standard Operating Procedures submitted to APHIS-PPQ.

- Record Keeping
 - Training records of each employee working with regulated soil in the APHIS-PPQ approved facility, records of all shipments received and samples processed under this must be maintained.
 - If soil is transferred between approved facilities, its identity must be maintained for traceability. The records must include:
 - a. Date of arrival of each shipment.
 - b. Origin of the regulated soil.
 - c. Total weight of regulated soil in each shipment.
 - d. Date and weight of disposed or transferred amounts of regulated soil.
 - e. Method of disposal or location where the regulated soil was transferred to.
 - All records must be retained for a period of three (3) years after disposal of the soil, or (3) years after its transfer to another APHIS-PPQ approved facility.
 - All records retained under this permit must be made available to Federal and State regulators upon request it.

END OF PERMIT CONDITIONS

Permit Number: 525-24-3-36355

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Pace Huntersville

WO#: **40289688**

Courier: CS Logistics Fed Ex Speedee UPS Walto
 Client Pace Other: _____

Tracking #: 7442 3290 7752

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 144 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 10 /Corr: 10

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 8/14/25 /Initials: mtt
 Labeled By Initials: KKS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	4. <u>IRMO mtt 8/14/25</u>
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: Pace Green Bay, <u>Pace IR</u> , Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample log



INTER_LABORATORY WORK ORDER # 92773100

(To be completed by sending lab)

Ship To:
Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436

Table with 2 columns: Field Name, Value. Fields include Sending Project No, Receiving Project No, Check Box for Consolidated Invoice, Date Prepared, and REQUESTED COMPLETION DATE.

Summary table with 4 columns: Field Name, Value 1, Value 2, Value 3. Fields include Sending Region, Receiving Region, State of Sample Origin, and Sending Project Mgr.

All questions should be addressed to sending project manager.

Requested Reportable Units Report Wet or Dry Weight? Dry weight, if IRWO Lab Need to run? Cert. Needed

WORK REQUESTED table with 7 columns: Method Description, Container Type, Quantity of containers, Preservative, Quantity of Samples, Acode, Acode Desc.

Special Requirements: Report D, QC Limits, MDLs (D), Arcadis Equis 5 (28)

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Return Samples to Sending Region: Yes No

DISPOSITION of FORM

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.



DC#_Title: ENV-FRM-GBAY-0017 v01_Regulated Domestic and Foreign Soils Checklist

Effective Date: 04/28/2022

Regulated Domestic and Foreign Soils Checklist

Project #: 40289688	Time: 1000
Initials: SKW	Date: 01/15/25
Origin (Circle One): Domestic	Foreign
Domestic State of Origin (Circle One): AL AR AZ CA FL GA ID LA MS NC NM NY OK OR SC TN TX	
Foreign Country of Origin:	

Note: Soils from Hawaii and Puerto Rico are of Foreign Origin

Sample analysis will take place at (Circle all that apply):

Green Bay	Subcontract Laboratory
Name of Subcontract Laboratory:	

1) Did "Regulated" sticker get placed on samples?	Regulated sticker must be placed onto each sample container.	Yes / No
2) If samples are being subcontracted, do they hold a valid Soil Permit and Compliance Agreement?	Subcontract laboratories are required to hold a valid Soil Permit and Compliance Agreement before we send a soil sample. Verify with USDA/APHIS.	Yes / No / NA
3) Were samples placed in regulated bin in soil cooler?	Regulated samples retained in the Green Bay Laboratory must be stored in regulated bins in designated coolers.	Yes / No
4) Were there signs of sample breakage/leakage?	Check for broken glass or loose soil in the cooler.	Yes / No
5) If NO breakage/leakage, was ice and melt water disposed of properly?	Foreign and Domestic sources: Ice and melt water can be disposed of by dumping down the sink.	Yes / No / NA
6) If YES, there were signs of breakage/leakage, were ice, melt water, and soil disposed of properly?	Foreign and Domestic sources: Ice and melt water must be baked at 140°C, cooled, and dumped down the sink. Soils must be baked and put in RCRA waste barrel.	Yes / No / NA
7) Was the cooler decontaminated?	Spray cooler with 1:10 bleach solution and let soak for 30 minutes. Rinse/drain down sink and let cooler air dry.	Yes / No / NA

Comments: _____

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace, NC

Project #:

WO#: 40289688



Courier: CS Logistics Fed Ex Speedee UPS Walto
 Client Pace Other: _____

Tracking #: 744 23296 7763

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 136 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 18.0 /ICorr: 18.0

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 08/17/22 /Initials: SKU
 Labeled By Initials: KKS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	4. <u>IRWO</u> <u>alistar</u>
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: Pace Green Bay, <u>Pace IR</u> , Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



February 04, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40289959

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 21, 2025. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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



CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40289959

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40289959001	MW-318	Water	01/17/25 15:30	01/21/25 08:50

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40289959001	MW-318	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			SLV	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2320B	TMK	1	PASI-G
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Sample: MW-318 **Lab ID: 40289959001** Collected: 01/17/25 15:30 Received: 01/21/25 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	01/24/25 08:30	01/24/25 17:27	7440-50-8	
Manganese	33.4	ug/L	5.0	1.5	1	01/24/25 08:30	01/24/25 17:27	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	01/24/25 08:30	01/24/25 17:27	7440-22-4	
Total Hardness by 2340B	544	mg/L	54.0	10.0	10	01/24/25 08:30	01/24/25 17:14		
Zinc	<11.6	ug/L	40.0	11.6	1	01/24/25 08:30	01/24/25 17:27	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Lithium	1.3	ug/L	1.0	0.22	1	01/23/25 07:49	01/23/25 15:17	7439-93-2	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/23/25 07:49	01/23/25 15:17	7440-41-7	
Boron	18.2	ug/L	10.0	3.0	1	01/23/25 07:49	01/23/25 15:17	7440-42-8	
Calcium	102000	ug/L	254	76.2	1	01/23/25 07:49	01/23/25 15:17	7440-70-2	P6
Chromium	2.1J	ug/L	3.4	1.0	1	01/23/25 07:49	01/23/25 15:17	7440-47-3	
Cobalt	0.34J	ug/L	1.0	0.12	1	01/23/25 07:49	01/23/25 15:17	7440-48-4	
Arsenic	0.31J	ug/L	1.0	0.28	1	01/23/25 07:49	01/23/25 15:17	7440-38-2	
Selenium	0.76J	ug/L	1.1	0.32	1	01/23/25 07:49	01/23/25 15:17	7782-49-2	
Molybdenum	0.68J	ug/L	1.5	0.44	1	01/23/25 07:49	01/23/25 15:17	7439-98-7	
Cadmium	<0.15	ug/L	1.0	0.15	1	01/23/25 07:49	01/23/25 15:17	7440-43-9	
Antimony	<0.15	ug/L	1.0	0.15	1	01/23/25 07:49	01/23/25 15:17	7440-36-0	
Barium	29.0	ug/L	2.3	0.70	1	01/23/25 07:49	01/23/25 15:17	7440-39-3	
Thallium	<0.14	ug/L	1.0	0.14	1	01/23/25 07:49	01/23/25 15:17	7440-28-0	
Lead	0.29J	ug/L	1.0	0.24	1	01/23/25 07:49	01/23/25 15:17	7439-92-1	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	01/28/25 10:55	01/29/25 09:55	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.45	Std. Units			1		01/17/25 15:30		
Field Specific Conductance	829	umhos/cm			1		01/17/25 15:30		
Oxygen, Dissolved	6.66	mg/L			1		01/17/25 15:30	7782-44-7	
REDOX	105.1	mV			1		01/17/25 15:30		
Turbidity	20.70	NTU			1		01/17/25 15:30		
Static Water Level	785.35	feet			1		01/17/25 15:30		
Temperature, Water (C)	11.2	deg C			1		01/17/25 15:30		
2320B Alkalinity									
Analytical Method: SM 2320B									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	303	mg/L	10.0	5.0	1		01/22/25 10:36		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	628	mg/L	20.0	8.7	1		01/23/25 17:11		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Sample: MW-318 Lab ID: 40289959001 Collected: 01/17/25 15:30 Received: 01/21/25 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric									
Analytical Method: SM 4500-H+B									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		01/27/25 13:50		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	39.4	mg/L	20.0	5.9	10		01/27/25 13:31	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		01/27/25 13:31	16984-48-8	D3
Sulfate	187	mg/L	20.0	4.4	10		01/27/25 13:31	14808-79-8	
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	2.1	mg/L	0.25	0.059	1		01/22/25 10:00		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495875	Analysis Method: EPA 7470
QC Batch Method: EPA 7470	Analysis Description: 7470 Mercury
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2834699 Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	01/29/25 08:40	

LABORATORY CONTROL SAMPLE: 2834700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2834701 2834702

Parameter	Units	40290130004		2834701		2834702		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Mercury	ug/L	<0.000066 mg/L	5	5	4.9	4.9	98	97	85-115	0	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495650	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	Analysis Description: 6010D MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2833627 Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	01/24/25 17:10	
Manganese	ug/L	<1.5	5.0	01/24/25 17:10	
Silver	ug/L	<3.2	10.0	01/24/25 17:10	
Total Hardness by 2340B	mg/L	<1.0	5.4	01/24/25 17:10	
Zinc	ug/L	<11.6	40.0	01/24/25 17:10	

LABORATORY CONTROL SAMPLE: 2833628

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	252	101	80-120	
Manganese	ug/L	250	254	102	80-120	
Silver	ug/L	125	126	100	80-120	
Total Hardness by 2340B	mg/L		67.1			
Zinc	ug/L	250	244	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2833629 2833630

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40289959001 Result	Spike Conc.	Spike Conc.	Result						
Copper	ug/L	<3.4	250	250	251	257	99	102	75-125	2	20
Manganese	ug/L	33.4	250	250	285	287	101	102	75-125	1	20
Silver	ug/L	<3.2	125	125	124	126	99	101	75-125	2	20
Total Hardness by 2340B	mg/L	544			595	601				1	20
Zinc	ug/L	<11.6	250	250	239	245	95	97	75-125	2	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495546

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020B MET

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2833147

Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	01/23/25 14:51	
Arsenic	ug/L	<0.28	1.0	01/23/25 14:51	
Barium	ug/L	<0.70	2.3	01/23/25 14:51	
Beryllium	ug/L	<0.25	1.0	01/23/25 14:51	
Boron	ug/L	<3.0	10.0	01/23/25 14:51	
Cadmium	ug/L	<0.15	1.0	01/23/25 14:51	
Calcium	ug/L	<76.2	254	01/23/25 14:51	
Chromium	ug/L	<1.0	3.4	01/23/25 14:51	
Cobalt	ug/L	<0.12	1.0	01/23/25 14:51	
Lead	ug/L	<0.24	1.0	01/23/25 14:51	
Lithium	ug/L	<0.22	1.0	01/23/25 14:51	
Molybdenum	ug/L	<0.44	1.5	01/23/25 14:51	
Selenium	ug/L	<0.32	1.1	01/23/25 14:51	
Thallium	ug/L	<0.14	1.0	01/23/25 14:51	

LABORATORY CONTROL SAMPLE: 2833148

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	247	99	80-120	
Arsenic	ug/L	250	246	98	80-120	
Barium	ug/L	250	237	95	80-120	
Beryllium	ug/L	250	249	100	80-120	
Boron	ug/L	250	229	92	80-120	
Cadmium	ug/L	250	250	100	80-120	
Calcium	ug/L	10000	9660	97	80-120	
Chromium	ug/L	250	243	97	80-120	
Cobalt	ug/L	250	238	95	80-120	
Lead	ug/L	250	238	95	80-120	
Lithium	ug/L	250	243	97	80-120	
Molybdenum	ug/L	250	238	95	80-120	
Selenium	ug/L	250	257	103	80-120	
Thallium	ug/L	250	238	95	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Parameter	Units	2833149		2833150		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40289959001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	251	252	101	101	75-125	0	20		
Arsenic	ug/L	0.31J	250	250	251	251	100	100	75-125	0	20		
Barium	ug/L	29.0	250	250	266	269	95	96	75-125	1	20		
Beryllium	ug/L	<0.25	250	250	249	248	100	99	75-125	1	20		
Boron	ug/L	18.2	250	250	257	258	96	96	75-125	0	20		
Cadmium	ug/L	<0.15	250	250	248	248	99	99	75-125	0	20		
Calcium	ug/L	102000	10000	10000	115000	117000	132	150	75-125	2	20	P6	
Chromium	ug/L	2.1J	250	250	243	244	96	97	75-125	1	20		
Cobalt	ug/L	0.34J	250	250	233	237	93	94	75-125	1	20		
Lead	ug/L	0.29J	250	250	242	244	97	98	75-125	1	20		
Lithium	ug/L	1.3	250	250	247	249	98	99	75-125	1	20		
Molybdenum	ug/L	0.68J	250	250	246	249	98	99	75-125	1	20		
Selenium	ug/L	0.76J	250	250	257	258	103	103	75-125	0	20		
Thallium	ug/L	<0.14	250	250	244	246	97	98	75-125	1	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495460

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2832770

Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<5.0	10.0	01/22/25 09:36	

LABORATORY CONTROL SAMPLE: 2832771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	200	209	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2832772 2832773

Parameter	Units	2832772		2832773		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40289907001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Alkalinity, Total as CaCO3	mg/L	89.1	200	200	293	293	102	102	80-120	0	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495589

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2833377

Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	01/23/25 17:10	

LABORATORY CONTROL SAMPLE: 2833378

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	516	602	117	80-120	

SAMPLE DUPLICATE: 2833391

Parameter	Units	40289961001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	448	438	2	10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495777

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

SAMPLE DUPLICATE: 2834238

Parameter	Units	40289959001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.2	1	5	H6

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495609	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2833532 Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	01/27/25 12:04	
Fluoride	mg/L	<0.095	0.32	01/27/25 12:04	
Sulfate	mg/L	<0.44	2.0	01/27/25 12:04	

LABORATORY CONTROL SAMPLE: 2833533

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.3	96	90-110	
Fluoride	mg/L	2	1.9	95	90-110	
Sulfate	mg/L	20	20.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2833534 2833535

Parameter	Units	40289959001		2833535		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Chloride	mg/L	39.4	200	243	260	102	110	90-110	7	15	
Fluoride	mg/L	<0.95	20	20.0	21.6	100	108	90-110	8	15	
Sulfate	mg/L	187	200	389	404	101	109	90-110	4	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2833536 2833537

Parameter	Units	40290032001		2833537		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Chloride	mg/L	274	400	686	685	103	103	90-110	0	15	
Fluoride	mg/L	<1.9	40	40.9	40.7	102	102	90-110	0	15	
Sulfate	mg/L	252	400	684	683	108	108	90-110	0	15	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 495451	Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2	Analysis Description: 353.2 Nitrate + Nitrite, preserved
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40289959001

METHOD BLANK: 2832743 Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	01/22/25 09:47	

LABORATORY CONTROL SAMPLE: 2832744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2832745 2832746

Parameter	Units	2832745		2832746		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40289912008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Nitrogen, NO2 plus NO3	mg/L	1.3	2.5	2.5	3.6	3.6	92	93	90-110	1	20

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Sample: MW-318	Lab ID: 40289959001	Collected: 01/17/25 15:30	Received: 01/21/25 08:50	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	0.183 ± 0.728 (1.00) C:NA T:96%	pCi/L	01/30/25 15:05	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.717 ± 0.389 (1.00) C:78% T:89%	pCi/L	01/29/25 14:48	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.900 ± 1.12 (2.00)	pCi/L	01/31/25 15:40	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 722616

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: 40289959001

METHOD BLANK: 3517894

Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.364 ± 0.370 (0.560) C:NA T:90%	pCi/L	01/30/25 14:53	

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: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

QC Batch: 722617

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: 40289959001

METHOD BLANK: 3517895

Matrix: Water

Associated Lab Samples: 40289959001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.751 ± 0.356 (0.580) C:74% T:87%	pCi/L	01/29/25 14:46	

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: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40289959

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40289959001	MW-318	EPA 3010A	495650	EPA 6010D	495722
40289959001	MW-318	EPA 3010A	495546	EPA 6020B	495618
40289959001	MW-318	EPA 7470	495875	EPA 7470	495917
40289959001	MW-318				
40289959001	MW-318	EPA 903.1	722616		
40289959001	MW-318	EPA 904.0	722617		
40289959001	MW-318	Total Radium Calculation	724307		
40289959001	MW-318	SM 2320B	495460		
40289959001	MW-318	SM 2540C	495589		
40289959001	MW-318	SM 4500-H+B	495777		
40289959001	MW-318	EPA 300.0	495609		
40289959001	MW-318	EPA 353.2	495451		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: **40289959**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 144 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0 / Corr: 0.0

Person examining contents:
 Date: 12/15 / Initials: mit
 Labeled By Initials: KKS

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , <u>Pace IR</u> , <u>Non-Pace</u>		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

C5 February 2025 Laboratory Reports



March 20, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40291340

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on February 26, 2025. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40291340

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40291340001	MW-317	Water	02/25/25 12:25	02/26/25 09:45
40291340002	MW-318	Water	02/25/25 11:45	02/26/25 09:45
40291340003	MW-319	Water	02/25/25 13:20	02/26/25 09:45
40291340004	FIELD BLANK	Water	02/25/25 12:55	02/26/25 09:45

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40291340001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	TXW	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40291340002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	AG1			7	PASI-G
EPA 903.1	CLM			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	LMB			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	TXW			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40291340003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	TXW	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40291340004	FIELD BLANK	EPA 6010D	SIS

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SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	TXW	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-317 **Lab ID: 40291340001** Collected: 02/25/25 12:25 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	02/27/25 07:33	02/27/25 19:11	7440-50-8	
Manganese	201	ug/L	5.0	1.5	1	02/27/25 07:33	02/27/25 19:11	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	02/27/25 07:33	02/27/25 19:11	7440-22-4	
Total Hardness by 2340B	263	mg/L	5.4	1.0	1	02/27/25 07:33	02/27/25 19:11		
Zinc	<11.6	ug/L	40.0	11.6	1	02/27/25 07:33	02/27/25 19:11	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:23	7440-36-0	
Arsenic	0.80J	ug/L	1.0	0.28	1	02/28/25 06:26	03/05/25 03:23	7440-38-2	
Barium	45.5	ug/L	2.3	0.70	1	02/28/25 06:26	03/05/25 03:23	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	02/28/25 06:26	03/05/25 03:23	7440-41-7	
Boron	30.0	ug/L	10.0	3.0	1	02/28/25 06:26	03/06/25 13:59	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:23	7440-43-9	
Calcium	54200	ug/L	254	76.2	1	02/28/25 06:26	03/05/25 03:23	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	02/28/25 06:26	03/05/25 03:23	7440-47-3	
Cobalt	0.13J	ug/L	1.0	0.12	1	02/28/25 06:26	03/05/25 03:23	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	02/28/25 06:26	03/05/25 03:23	7439-92-1	
Lithium	3.6	ug/L	1.0	0.22	1	02/28/25 06:26	03/05/25 03:23	7439-93-2	
Molybdenum	13.6	ug/L	1.5	0.44	1	02/28/25 06:26	03/05/25 03:23	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	02/28/25 06:26	03/05/25 03:23	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/28/25 06:26	03/05/25 03:23	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	03/07/25 13:09	03/11/25 12:43	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.83	Std. Units			1		02/25/25 12:25		
Field Specific Conductance	417.9	umhos/cm			1		02/25/25 12:25		
Oxygen, Dissolved	3.65	mg/L			1		02/25/25 12:25	7782-44-7	
REDOX	-63.8	mV			1		02/25/25 12:25		
Turbidity	0.00	NTU			1		02/25/25 12:25		
Static Water Level	784.36	feet			1		02/25/25 12:25		
Temperature, Water (C)	11.1	deg C			1		02/25/25 12:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	248	mg/L	20.0	8.7	1		02/27/25 13:53		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		02/27/25 14:47		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-317 Lab ID: 40291340001 Collected: 02/25/25 12:25 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.1	mg/L	2.0	0.59	1		03/11/25 13:24	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		03/11/25 13:24	16984-48-8	M0
Sulfate	3.8	mg/L	2.0	0.44	1		03/11/25 13:24	14808-79-8	M0
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	262	mg/L	25.0	7.4	1		02/27/25 10:22		M0
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	0.78	mg/L	0.25	0.059	1		02/27/25 12:20		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Project No.: 40291340

Sample: MW-318 **Lab ID: 40291340002** Collected: 02/25/25 11:45 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	3.4J	ug/L	10.0	3.4	1	02/27/25 07:33	02/27/25 19:22	7440-50-8	
Manganese	17.9	ug/L	5.0	1.5	1	02/27/25 07:33	02/27/25 19:22	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	02/27/25 07:33	02/27/25 19:22	7440-22-4	
Total Hardness by 2340B	565	mg/L	5.4	1.0	1	02/27/25 07:33	02/27/25 19:22		
Zinc	<11.6	ug/L	40.0	11.6	1	02/27/25 07:33	02/27/25 19:22	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 02:57	7440-36-0	
Arsenic	0.34J	ug/L	1.0	0.28	1	02/28/25 06:26	03/05/25 02:57	7440-38-2	
Barium	35.7	ug/L	2.3	0.70	1	02/28/25 06:26	03/05/25 02:57	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	02/28/25 06:26	03/05/25 02:57	7440-41-7	
Boron	18.6	ug/L	10.0	3.0	1	02/28/25 06:26	03/06/25 13:42	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 02:57	7440-43-9	
Calcium	119000	ug/L	5080	1520	20	02/28/25 06:26	03/05/25 02:41	7440-70-2	P6
Chromium	2.1J	ug/L	3.4	1.0	1	02/28/25 06:26	03/05/25 02:57	7440-47-3	
Cobalt	0.26J	ug/L	1.0	0.12	1	02/28/25 06:26	03/05/25 02:57	7440-48-4	
Lead	0.28J	ug/L	1.0	0.24	1	02/28/25 06:26	03/05/25 02:57	7439-92-1	
Lithium	1.4	ug/L	1.0	0.22	1	02/28/25 06:26	03/05/25 02:57	7439-93-2	
Molybdenum	0.71J	ug/L	1.5	0.44	1	02/28/25 06:26	03/05/25 02:57	7439-98-7	
Selenium	0.99J	ug/L	1.1	0.32	1	02/28/25 06:26	03/05/25 02:57	7782-49-2	
Thallium	0.18J	ug/L	1.0	0.14	1	02/28/25 06:26	03/05/25 02:57	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	03/07/25 13:09	03/11/25 12:46	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.47	Std. Units			1		02/25/25 11:45		
Field Specific Conductance	897	umhos/cm			1		02/25/25 11:45		
Oxygen, Dissolved	6.69	mg/L			1		02/25/25 11:45	7782-44-7	
REDOX	80.7	mV			1		02/25/25 11:45		
Turbidity	22.79	NTU			1		02/25/25 11:45		
Static Water Level	784.53	feet			1		02/25/25 11:45		
Temperature, Water (C)	11.4	deg C			1		02/25/25 11:45		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	692	mg/L	20.0	8.7	1		02/27/25 13:53		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		02/27/25 14:54		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-318 Lab ID: 40291340002 Collected: 02/25/25 11:45 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	37.0	mg/L	20.0	5.9	10		03/11/25 13:57	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		03/11/25 13:57	16984-48-8	D3
Sulfate	186	mg/L	20.0	4.4	10		03/11/25 13:57	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	324	mg/L	25.0	7.4	1		02/27/25 10:25		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	2.4	mg/L	0.25	0.059	1		02/27/25 12:21		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-319 Lab ID: 40291340003 Collected: 02/25/25 13:20 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	02/27/25 07:33	02/27/25 19:26	7440-50-8	
Manganese	1.8J	ug/L	5.0	1.5	1	02/27/25 07:33	02/27/25 19:26	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	02/27/25 07:33	02/27/25 19:26	7440-22-4	
Total Hardness by 2340B	414	mg/L	5.4	1.0	1	02/27/25 07:33	02/27/25 19:26		
Zinc	<11.6	ug/L	40.0	11.6	1	02/27/25 07:33	02/27/25 19:26	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:31	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	02/28/25 06:26	03/05/25 03:31	7440-38-2	
Barium	27.3	ug/L	2.3	0.70	1	02/28/25 06:26	03/05/25 03:31	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	02/28/25 06:26	03/05/25 03:31	7440-41-7	
Boron	19.9	ug/L	10.0	3.0	1	02/28/25 06:26	03/06/25 14:08	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:31	7440-43-9	
Calcium	91700	ug/L	254	76.2	1	02/28/25 06:26	03/05/25 03:31	7440-70-2	
Chromium	1.2J	ug/L	3.4	1.0	1	02/28/25 06:26	03/05/25 03:31	7440-47-3	
Cobalt	0.22J	ug/L	1.0	0.12	1	02/28/25 06:26	03/05/25 03:31	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	02/28/25 06:26	03/05/25 03:31	7439-92-1	
Lithium	0.68J	ug/L	1.0	0.22	1	02/28/25 06:26	03/05/25 03:31	7439-93-2	
Molybdenum	0.86J	ug/L	1.5	0.44	1	02/28/25 06:26	03/05/25 03:31	7439-98-7	
Selenium	1.0J	ug/L	1.1	0.32	1	02/28/25 06:26	03/05/25 03:31	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/28/25 06:26	03/05/25 03:31	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	03/07/25 13:09	03/11/25 12:48	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.60	Std. Units			1		02/25/25 13:20		
Field Specific Conductance	1560	umhos/cm			1		02/25/25 13:20		
Oxygen, Dissolved	8.87	mg/L			1		02/25/25 13:20	7782-44-7	
REDOX	40.8	mV			1		02/25/25 13:20		
Turbidity	0.00	NTU			1		02/25/25 13:20		
Static Water Level	786.59	feet			1		02/25/25 13:20		
Temperature, Water (C)	11.2	deg C			1		02/25/25 13:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	986	mg/L	20.0	8.7	1		03/03/25 16:23		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.4	Std. Units	0.10	0.010	1		02/27/25 14:56		H6

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-319 Lab ID: 40291340003 Collected: 02/25/25 13:20 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	355	mg/L	40.0	11.8	20		03/11/25 14:08	16887-00-6	
Fluoride	<1.9	mg/L	6.3	1.9	20		03/11/25 14:08	16984-48-8	D3
Sulfate	44.4	mg/L	40.0	8.9	20		03/11/25 14:08	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	371	mg/L	25.0	7.4	1		02/27/25 10:26		
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay							
Nitrogen, NO2 plus NO3	1.4	mg/L	0.25	0.059	1		02/27/25 12:22		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: **FIELD BLANK** Lab ID: **40291340004** Collected: 02/25/25 12:55 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	02/27/25 07:33	02/27/25 19:28	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	02/27/25 07:33	02/27/25 19:28	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	02/27/25 07:33	02/27/25 19:28	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	02/27/25 07:33	02/27/25 19:28		
Zinc	<11.6	ug/L	40.0	11.6	1	02/27/25 07:33	02/27/25 19:28	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:35	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	02/28/25 06:26	03/05/25 03:35	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	02/28/25 06:26	03/05/25 03:35	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	02/28/25 06:26	03/05/25 03:35	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	02/28/25 06:26	03/06/25 13:34	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	02/28/25 06:26	03/05/25 03:35	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	02/28/25 06:26	03/05/25 03:35	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	02/28/25 06:26	03/05/25 03:35	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	02/28/25 06:26	03/05/25 03:35	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	02/28/25 06:26	03/05/25 03:35	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	02/28/25 06:26	03/05/25 03:35	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	02/28/25 06:26	03/05/25 03:35	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	02/28/25 06:26	03/05/25 03:35	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/28/25 06:26	03/05/25 03:35	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	03/07/25 13:09	03/11/25 12:51	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		03/03/25 16:23		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.6	Std. Units	0.10	0.010	1		02/27/25 15:06		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		03/11/25 14:18	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		03/11/25 14:18	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		03/11/25 14:18	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		02/27/25 10:30		

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ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: FIELD BLANK Lab ID: 40291340004 Collected: 02/25/25 12:55 Received: 02/26/25 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		02/27/25 12:22		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498721	Analysis Method: EPA 7470
QC Batch Method: EPA 7470	Analysis Description: 7470 Mercury
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2848666 Matrix: Water
 Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	03/11/25 12:01	

LABORATORY CONTROL SAMPLE: 2848667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.5	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2848668 2848669

Parameter	Units	40291235002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	5.7	5.7	115	113	85-115	1	20	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498066	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	Analysis Description: 6010D MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2845278 Matrix: Water

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	02/27/25 18:59	
Manganese	ug/L	<1.5	5.0	02/27/25 18:59	
Silver	ug/L	<3.2	10.0	02/27/25 18:59	
Total Hardness by 2340B	mg/L	<1.0	5.4	02/27/25 18:59	
Zinc	ug/L	<11.6	40.0	02/27/25 18:59	

LABORATORY CONTROL SAMPLE: 2845279

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	271	108	80-120	
Manganese	ug/L	250	271	108	80-120	
Silver	ug/L	125	131	105	80-120	
Total Hardness by 2340B	mg/L		69.1			
Zinc	ug/L	250	262	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2845280 2845281

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40291340001 Result	Spike Conc.	Spike Conc.	Result						
Copper	ug/L	<3.4	250	250	274	270	109	108	75-125	1	20
Manganese	ug/L	201	250	250	476	465	110	106	75-125	2	20
Silver	ug/L	<3.2	125	125	133	131	106	105	75-125	1	20
Total Hardness by 2340B	mg/L	263			341	323				5	20
Zinc	ug/L	<11.6	250	250	262	260	105	104	75-125	1	20

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch:	498168	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2845790 Matrix: Water

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	03/05/25 02:32	
Arsenic	ug/L	<0.28	1.0	03/05/25 02:32	
Barium	ug/L	<0.70	2.3	03/05/25 02:32	
Beryllium	ug/L	<0.25	1.0	03/05/25 02:32	
Boron	ug/L	<3.0	10.0	03/06/25 13:30	
Cadmium	ug/L	<0.15	1.0	03/05/25 02:32	
Calcium	ug/L	<76.2	254	03/05/25 02:32	
Chromium	ug/L	<1.0	3.4	03/05/25 02:32	
Cobalt	ug/L	<0.12	1.0	03/05/25 02:32	
Lead	ug/L	<0.24	1.0	03/05/25 02:32	
Lithium	ug/L	<0.22	1.0	03/05/25 02:32	
Molybdenum	ug/L	<0.44	1.5	03/05/25 02:32	
Selenium	ug/L	<0.32	1.1	03/05/25 02:32	
Thallium	ug/L	<0.14	1.0	03/05/25 02:32	

LABORATORY CONTROL SAMPLE: 2845791

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	241	96	80-120	
Arsenic	ug/L	250	241	96	80-120	
Barium	ug/L	250	236	94	80-120	
Beryllium	ug/L	250	239	96	80-120	
Boron	ug/L	250	223	89	80-120	
Cadmium	ug/L	250	243	97	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	250	235	94	80-120	
Cobalt	ug/L	250	238	95	80-120	
Lead	ug/L	250	237	95	80-120	
Lithium	ug/L	250	242	97	80-120	
Molybdenum	ug/L	250	246	98	80-120	
Selenium	ug/L	250	239	96	80-120	
Thallium	ug/L	250	238	95	80-120	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Parameter	Units	2845792		2845793		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40291340002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	250	248	100	99	75-125	1	20		
Arsenic	ug/L	0.34J	250	250	255	253	102	101	75-125	1	20		
Barium	ug/L	35.7	250	250	278	279	97	97	75-125	0	20		
Beryllium	ug/L	<0.25	250	250	242	244	97	98	75-125	1	20		
Boron	ug/L	18.6	250	250	251	247	93	91	75-125	1	20		
Cadmium	ug/L	<0.15	250	250	248	248	99	99	75-125	0	20		
Calcium	ug/L	119000	10000	10000	126000	125000	66	61	75-125	0	20	P6	
Chromium	ug/L	2.1J	250	250	243	244	96	97	75-125	1	20		
Cobalt	ug/L	0.26J	250	250	245	245	98	98	75-125	0	20		
Lead	ug/L	0.28J	250	250	249	251	99	100	75-125	1	20		
Lithium	ug/L	1.4	250	250	250	252	99	100	75-125	1	20		
Molybdenum	ug/L	0.71J	250	250	262	262	105	104	75-125	0	20		
Selenium	ug/L	0.99J	250	250	251	246	100	98	75-125	2	20		
Thallium	ug/L	0.18J	250	250	233	235	93	94	75-125	1	20		

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498101

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002

METHOD BLANK: 2845433

Matrix: Water

Associated Lab Samples: 40291340001, 40291340002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	02/27/25 13:49	

LABORATORY CONTROL SAMPLE: 2845434

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	584	550	94	80-120	

SAMPLE DUPLICATE: 2845450

Parameter	Units	40291254001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	432	450	4	10	

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498298

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340003, 40291340004

METHOD BLANK: 2846479

Matrix: Water

Associated Lab Samples: 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	03/03/25 16:22	

LABORATORY CONTROL SAMPLE: 2846480

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	584	544	93	80-120	

SAMPLE DUPLICATE: 2846482

Parameter	Units	40291337001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	634	634	0	10	

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 DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498110

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

SAMPLE DUPLICATE: 2845469

Parameter	Units	40291325001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	4.9	4.9	0	20	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch:	498946	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2850048 Matrix: Water
 Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	03/11/25 13:02	
Fluoride	mg/L	<0.095	0.32	03/11/25 13:02	
Sulfate	mg/L	<0.44	2.0	03/11/25 13:02	

LABORATORY CONTROL SAMPLE: 2850049

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	104	90-110	
Fluoride	mg/L	2	2.1	103	90-110	
Sulfate	mg/L	20	20.9	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2850050 2850051

Parameter	Units	40291340001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result							
Chloride	mg/L	3.1	20	20	23.9	24.8	104	108	90-110	3	15			
Fluoride	mg/L	<0.095	2	2	2.3	2.3	114	116	90-110	3	15	M0		
Sulfate	mg/L	3.8	20	20	25.7	26.9	109	115	90-110	5	15	M0		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2850052 2850053

Parameter	Units	40291420001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result							
Chloride	mg/L	14.4	100	100	120	124	106	109	90-110	3	15			
Fluoride	mg/L	0.63J	10	10	11.4	11.6	107	110	90-110	2	15			
Sulfate	mg/L	93.5	100	100	203	204	110	111	90-110	0	15	M0		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 498061	Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2	Analysis Description: 310.2 Alkalinity
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2845262 Matrix: Water
 Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	02/27/25 10:17	

LABORATORY CONTROL SAMPLE: 2845263

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	104	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2845264 2845265

Parameter	Units	2845264		2845265		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40291340001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Alkalinity, Total as CaCO3	mg/L	262	100	100	363	352	101	89	90-110	3	20 M0

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch:	498100	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

METHOD BLANK: 2845427 Matrix: Water
 Associated Lab Samples: 40291340001, 40291340002, 40291340003, 40291340004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	02/27/25 12:10	

LABORATORY CONTROL SAMPLE: 2845428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2845429 2845430

Parameter	Units	2845429		2845430		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Nitrogen, NO2 plus NO3	mg/L	21.1	12.5	33.1	33.0	96	96	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2845431 2845432

Parameter	Units	2845431		2845432		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Nitrogen, NO2 plus NO3	mg/L	0.38	2.5	2.8	2.8	95	96	90-110	0	20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-317 **Lab ID: 40291340001** Collected: 02/25/25 12:25 Received: 02/26/25 09:45 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	-0.204 ± 0.894 (1.73) C:NA T:93%	pCi/L	03/10/25 13:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.14 ± 0.501 (1.00) C:82% T:90%	pCi/L	03/11/25 11:23	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.14 ± 1.40 (2.73)	pCi/L	03/12/25 11:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-318 **Lab ID: 40291340002** Collected: 02/25/25 11:45 Received: 02/26/25 09:45 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 ± 0.739 (1.58) C:NA T:93%	pCi/L	03/10/25 13:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.85 ± 0.648 (1.00) C:74% T:79%	pCi/L	03/11/25 11:24	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.85 ± 1.39 (2.58)	pCi/L	03/12/25 11:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Sample: MW-319	Lab ID: 40291340003	Collected: 02/25/25 13:20	Received: 02/26/25 09:45	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	0.0700 ± 0.598 (1.17) C:NA T:95%	pCi/L	03/10/25 13:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.75 ± 0.571 (1.00) C:76% T:88%	pCi/L	03/11/25 11:24	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.82 ± 1.17 (2.17)	pCi/L	03/12/25 11:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 730072

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: 40291340001, 40291340002, 40291340003

METHOD BLANK: 3553691

Matrix: Water

Associated Lab Samples: 40291340001, 40291340002, 40291340003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.545 ± 0.378 (0.730) C:78% T:89%	pCi/L	03/11/25 11:21	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

QC Batch: 730071

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: 40291340001, 40291340002, 40291340003

METHOD BLANK: 3553690

Matrix: Water

Associated Lab Samples: 40291340001, 40291340002, 40291340003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.955 ± 0.535 (0.554) C:NA T:90%	pCi/L	03/10/25 13:15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13

Pace Project No.: 40291340

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40291340001	MW-317	EPA 3010A	498066	EPA 6010D	498158
40291340002	MW-318	EPA 3010A	498066	EPA 6010D	498158
40291340003	MW-319	EPA 3010A	498066	EPA 6010D	498158
40291340004	FIELD BLANK	EPA 3010A	498066	EPA 6010D	498158
40291340001	MW-317	EPA 3010A	498168	EPA 6020B	498267
40291340002	MW-318	EPA 3010A	498168	EPA 6020B	498267
40291340003	MW-319	EPA 3010A	498168	EPA 6020B	498267
40291340004	FIELD BLANK	EPA 3010A	498168	EPA 6020B	498267
40291340001	MW-317	EPA 7470	498721	EPA 7470	498770
40291340002	MW-318	EPA 7470	498721	EPA 7470	498770
40291340003	MW-319	EPA 7470	498721	EPA 7470	498770
40291340004	FIELD BLANK	EPA 7470	498721	EPA 7470	498770
40291340001	MW-317				
40291340002	MW-318				
40291340003	MW-319				
40291340001	MW-317	EPA 903.1	730071		
40291340002	MW-318	EPA 903.1	730071		
40291340003	MW-319	EPA 903.1	730071		
40291340001	MW-317	EPA 904.0	730072		
40291340002	MW-318	EPA 904.0	730072		
40291340003	MW-319	EPA 904.0	730072		
40291340001	MW-317	Total Radium Calculation	732295		
40291340002	MW-318	Total Radium Calculation	732295		
40291340003	MW-319	Total Radium Calculation	732295		
40291340001	MW-317	SM 2540C	498101		
40291340002	MW-318	SM 2540C	498101		
40291340003	MW-319	SM 2540C	498298		
40291340004	FIELD BLANK	SM 2540C	498298		
40291340001	MW-317	EPA 9040	498110		
40291340002	MW-318	EPA 9040	498110		
40291340003	MW-319	EPA 9040	498110		
40291340004	FIELD BLANK	EPA 9040	498110		
40291340001	MW-317	EPA 300.0	498946		
40291340002	MW-318	EPA 300.0	498946		
40291340003	MW-319	EPA 300.0	498946		
40291340004	FIELD BLANK	EPA 300.0	498946		
40291340001	MW-317	EPA 310.2	498061		
40291340002	MW-318	EPA 310.2	498061		
40291340003	MW-319	EPA 310.2	498061		
40291340004	FIELD BLANK	EPA 310.2	498061		
40291340001	MW-317	EPA 353.2	498100		
40291340002	MW-318	EPA 353.2	498100		
40291340003	MW-319	EPA 353.2	498100		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40291340

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40291340004	FIELD BLANK	EPA 353.2	498100		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40291340**

Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0 / Corr: 0.5

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 2/20/25 Initials: KKS
 Labeled By Initials: [Signature]

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

C6 March 2025 Laboratory Reports



April 21, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067 COLUMBIA LF MOD 12-13
Pace Project No.: 40292945

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on March 29, 2025. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40292945001	MW-317	Water	03/27/25 12:00	03/29/25 08:45
40292945002	MW-318	Water	03/27/25 14:25	03/29/25 08:45
40292945003	MW-319	Water	03/27/25 16:05	03/29/25 08:45
40292945004	FIELD BLANK	Water	03/27/25 15:40	03/29/25 08:45

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40292945001	MW-317	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	AJS1	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40292945002	MW-318	EPA 6010D	SIS
EPA 6020B	KXS			14	PASI-G
EPA 7470	AF			1	PASI-G
	AG1			7	PASI-G
EPA 903.1	CLM			1	PASI-PA
EPA 904.0	ZPC			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	LMB			1	PASI-G
EPA 9040	HML			1	PASI-G
EPA 300.0	AJS1			3	PASI-G
EPA 310.2	MT			1	PASI-G
EPA 353.2	MT			1	PASI-G
40292945003	MW-319			EPA 6010D	SIS
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	AJS1	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
		40292945004	FIELD BLANK	EPA 6010D	SIS

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SAMPLE ANALYTE COUNT

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	AJS1	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-317 Lab ID: 40292945001 Collected: 03/27/25 12:00 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	04/01/25 07:59	04/01/25 17:55	7440-50-8	
Manganese	218	ug/L	5.0	1.5	1	04/01/25 07:59	04/01/25 17:55	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	04/01/25 07:59	04/01/25 17:55	7440-22-4	
Total Hardness by 2340B	267	mg/L	5.4	1.0	1	04/01/25 07:59	04/01/25 17:55		
Zinc	<11.6	ug/L	40.0	11.6	1	04/01/25 07:59	04/01/25 17:55	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 21:51	7440-36-0	
Arsenic	0.77J	ug/L	1.0	0.28	1	04/01/25 05:49	04/07/25 21:51	7440-38-2	
Barium	50.2	ug/L	2.3	0.70	1	04/01/25 05:49	04/07/25 21:51	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/01/25 05:49	04/07/25 21:51	7440-41-7	
Boron	30.6	ug/L	10.0	3.0	1	04/01/25 05:49	04/07/25 21:51	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 21:51	7440-43-9	
Calcium	53700	ug/L	254	76.2	1	04/01/25 05:49	04/07/25 21:51	7440-70-2	P6
Chromium	<1.0	ug/L	3.4	1.0	1	04/01/25 05:49	04/07/25 21:51	7440-47-3	
Cobalt	0.16J	ug/L	1.0	0.12	1	04/01/25 05:49	04/07/25 21:51	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	04/01/25 05:49	04/07/25 21:51	7439-92-1	
Lithium	2.8	ug/L	1.0	0.22	1	04/01/25 05:49	04/07/25 21:51	7439-93-2	B
Molybdenum	18.0	ug/L	1.5	0.44	1	04/01/25 05:49	04/07/25 21:51	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/01/25 05:49	04/07/25 21:51	7782-49-2	
Thallium	0.20J	ug/L	1.0	0.14	1	04/01/25 05:49	04/07/25 21:51	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/03/25 10:26	04/07/25 11:56	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.77	Std. Units			1		03/27/25 12:00		
Field Specific Conductance	458.8	umhos/cm			1		03/27/25 12:00		
Oxygen, Dissolved	2.07	mg/L			1		03/27/25 12:00	7782-44-7	
REDOX	-74.7	mV			1		03/27/25 12:00		
Turbidity	3.94	NTU			1		03/27/25 12:00		
Static Water Level	784.26	feet			1		03/27/25 12:00		
Temperature, Water (C)	11.3	deg C			1		03/27/25 12:00		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	240	mg/L	20.0	8.7	1		04/03/25 10:02		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		03/31/25 17:32		H6

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-317 Lab ID: 40292945001 Collected: 03/27/25 12:00 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.0	mg/L	2.0	0.59	1		04/03/25 09:19	16887-00-6	
Fluoride	0.12J	mg/L	0.32	0.095	1		04/03/25 09:19	16984-48-8	
Sulfate	5.4	mg/L	2.0	0.44	1		04/03/25 09:19	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	274	mg/L	25.0	7.4	1		04/03/25 10:58		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	0.60	mg/L	0.25	0.059	1		04/07/25 13:07		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-318 Lab ID: 40292945002 Collected: 03/27/25 14:25 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	04/01/25 07:59	04/01/25 17:57	7440-50-8	
Manganese	14.8	ug/L	5.0	1.5	1	04/01/25 07:59	04/01/25 17:57	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	04/01/25 07:59	04/01/25 17:57	7440-22-4	
Total Hardness by 2340B	562	mg/L	5.4	1.0	1	04/01/25 07:59	04/01/25 17:57		
Zinc	<11.6	ug/L	40.0	11.6	1	04/01/25 07:59	04/01/25 17:57	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:23	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/01/25 05:49	04/07/25 22:23	7440-38-2	
Barium	35.2	ug/L	2.3	0.70	1	04/01/25 05:49	04/07/25 22:23	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/01/25 05:49	04/07/25 22:23	7440-41-7	
Boron	15.9	ug/L	10.0	3.0	1	04/01/25 05:49	04/07/25 22:23	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:23	7440-43-9	
Calcium	113000	ug/L	254	76.2	1	04/01/25 05:49	04/07/25 22:23	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	04/01/25 05:49	04/07/25 22:23	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.12	1	04/01/25 05:49	04/07/25 22:23	7440-48-4	
Lead	0.24J	ug/L	1.0	0.24	1	04/01/25 05:49	04/07/25 22:23	7439-92-1	
Lithium	1.5	ug/L	1.0	0.22	1	04/01/25 05:49	04/07/25 22:23	7439-93-2	B
Molybdenum	0.57J	ug/L	1.5	0.44	1	04/01/25 05:49	04/07/25 22:23	7439-98-7	
Selenium	1.0J	ug/L	1.1	0.32	1	04/01/25 05:49	04/07/25 22:23	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/01/25 05:49	04/07/25 22:23	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/03/25 10:26	04/07/25 11:59	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.37	Std. Units			1		03/27/25 14:25		
Field Specific Conductance	955	umhos/cm			1		03/27/25 14:25		
Oxygen, Dissolved	7.33	mg/L			1		03/27/25 14:25	7782-44-7	
REDOX	173.5	mV			1		03/27/25 14:25		
Turbidity	5.54	NTU			1		03/27/25 14:25		
Static Water Level	784.44	feet			1		03/27/25 14:25		
Temperature, Water (C)	11.6	deg C			1		03/27/25 14:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	666	mg/L	20.0	8.7	1		04/03/25 10:03		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		03/31/25 17:35		H6

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Date: 04/21/2025 09:26 AM

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02/27/2026 - Classification: Internal - ECRM13684587



ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-318 Lab ID: 40292945002 Collected: 03/27/25 14:25 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	39.3	mg/L	10.0	3.0	5		04/03/25 09:29	16887-00-6	
Fluoride	<0.48	mg/L	1.6	0.48	5		04/03/25 09:29	16984-48-8	D3
Sulfate	207	mg/L	10.0	2.2	5		04/03/25 09:29	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	319	mg/L	25.0	7.4	1		04/03/25 10:59		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	2.2	mg/L	0.25	0.059	1		04/07/25 13:09		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-319 Lab ID: 40292945003 Collected: 03/27/25 16:05 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	04/01/25 07:59	04/01/25 17:59	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	04/01/25 07:59	04/01/25 17:59	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	04/01/25 07:59	04/01/25 17:59	7440-22-4	
Total Hardness by 2340B	294	mg/L	5.4	1.0	1	04/01/25 07:59	04/01/25 17:59		
Zinc	<11.6	ug/L	40.0	11.6	1	04/01/25 07:59	04/01/25 17:59	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:32	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/01/25 05:49	04/07/25 22:32	7440-38-2	
Barium	17.1	ug/L	2.3	0.70	1	04/01/25 05:49	04/07/25 22:32	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/01/25 05:49	04/07/25 22:32	7440-41-7	
Boron	16.4	ug/L	10.0	3.0	1	04/01/25 05:49	04/07/25 22:32	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:32	7440-43-9	
Calcium	64600	ug/L	254	76.2	1	04/01/25 05:49	04/07/25 22:32	7440-70-2	
Chromium	1.2J	ug/L	3.4	1.0	1	04/01/25 05:49	04/07/25 22:32	7440-47-3	
Cobalt	0.16J	ug/L	1.0	0.12	1	04/01/25 05:49	04/07/25 22:32	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	04/01/25 05:49	04/07/25 22:32	7439-92-1	
Lithium	0.79J	ug/L	1.0	0.22	1	04/01/25 05:49	04/07/25 22:32	7439-93-2	B
Molybdenum	1.1J	ug/L	1.5	0.44	1	04/01/25 05:49	04/07/25 22:32	7439-98-7	
Selenium	0.78J	ug/L	1.1	0.32	1	04/01/25 05:49	04/07/25 22:32	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/01/25 05:49	04/07/25 22:32	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/03/25 10:26	04/07/25 12:01	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.61	Std. Units			1		03/27/25 16:05		
Field Specific Conductance	1054	umhos/cm			1		03/27/25 16:05		
Oxygen, Dissolved	9.16	mg/L			1		03/27/25 16:05	7782-44-7	
REDOX	169.7	mV			1		03/27/25 16:05		
Turbidity	0.00	NTU			1		03/27/25 16:05		
Static Water Level	786.25	feet			1		03/27/25 16:05		
Temperature, Water (C)	11.2	deg C			1		03/27/25 16:05		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	623	mg/L	33.3	14.5	1		04/03/25 10:03		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	8.5	Std. Units	0.10	0.010	1		03/31/25 17:40		H6

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-319 **Lab ID: 40292945003** Collected: 03/27/25 16:05 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	173	mg/L	20.0	5.9	10		04/03/25 10:24	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		04/03/25 10:24	16984-48-8	D3
Sulfate	33.1	mg/L	20.0	4.4	10		04/03/25 10:24	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	363	mg/L	25.0	7.4	1		04/03/25 11:00		
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	1.5	mg/L	0.25	0.059	1		04/07/25 13:10		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: **FIELD BLANK** Lab ID: **40292945004** Collected: 03/27/25 15:40 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Copper	<3.4	ug/L	10.0	3.4	1	04/01/25 07:59	04/01/25 18:01	7440-50-8	
Manganese	<1.5	ug/L	5.0	1.5	1	04/01/25 07:59	04/01/25 18:01	7439-96-5	
Silver	<3.2	ug/L	10.0	3.2	1	04/01/25 07:59	04/01/25 18:01	7440-22-4	
Total Hardness by 2340B	<1.0	mg/L	5.4	1.0	1	04/01/25 07:59	04/01/25 18:01		
Zinc	<11.6	ug/L	40.0	11.6	1	04/01/25 07:59	04/01/25 18:01	7440-66-6	
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:18	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/01/25 05:49	04/07/25 22:18	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	04/01/25 05:49	04/07/25 22:18	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/01/25 05:49	04/07/25 22:18	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	04/01/25 05:49	04/07/25 22:18	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/01/25 05:49	04/07/25 22:18	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	04/01/25 05:49	04/07/25 22:18	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	04/01/25 05:49	04/07/25 22:18	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	04/01/25 05:49	04/07/25 22:18	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	04/01/25 05:49	04/07/25 22:18	7439-92-1	
Lithium	0.27J	ug/L	1.0	0.22	1	04/01/25 05:49	04/07/25 22:18	7439-93-2	B
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/01/25 05:49	04/07/25 22:18	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/01/25 05:49	04/07/25 22:18	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/01/25 05:49	04/07/25 22:18	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/03/25 10:26	04/07/25 12:04	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	10.0J	mg/L	20.0	8.7	1		04/03/25 10:03		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.9	Std. Units	0.10	0.010	1		03/31/25 17:59		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		04/03/25 10:35	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		04/03/25 10:35	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		04/03/25 10:35	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		04/03/25 11:01		

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ANALYTICAL RESULTS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: FIELD BLANK Lab ID: 40292945004 Collected: 03/27/25 15:40 Received: 03/29/25 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay									
Nitrogen, NO2 plus NO3	<0.059	mg/L	0.25	0.059	1		04/07/25 13:11		

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	501035	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2861402 Matrix: Water
 Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	04/07/25 11:23	

LABORATORY CONTROL SAMPLE: 2861403

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2861404 2861405

Parameter	Units	2861404		2861405		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40292971001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.000066 mg/L	5	5	5.0	5.1	100	103	85-115	2	20

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	500774	Analysis Method:	EPA 6010D
QC Batch Method:	EPA 3010A	Analysis Description:	6010D MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2860099 Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	04/01/25 17:04	
Manganese	ug/L	<1.5	5.0	04/01/25 17:04	
Silver	ug/L	<3.2	10.0	04/01/25 17:04	
Total Hardness by 2340B	mg/L	<1.0	5.4	04/01/25 17:04	
Zinc	ug/L	<11.6	40.0	04/01/25 17:04	

LABORATORY CONTROL SAMPLE: 2860100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	263	105	80-120	
Manganese	ug/L	250	265	106	80-120	
Silver	ug/L	125	129	103	80-120	
Total Hardness by 2340B	mg/L		69.5			
Zinc	ug/L	250	258	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860101 2860102

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40292851001 Result	Spike Conc.	Spike Conc.	Result						
Copper	ug/L	209	250	250	465	462	103	101	75-125	1	20
Manganese	ug/L	89.9	250	250	347	347	103	103	75-125	0	20
Silver	ug/L	<16.0	125	125	133	133	105	105	75-125	0	20
Total Hardness by 2340B	mg/L	208000			273	273				0	20
Zinc	ug/L	1090	250	250	1320	1310	90	86	75-125	1	20

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	500746	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2860020 Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	04/07/25 21:24	
Arsenic	ug/L	<0.28	1.0	04/07/25 21:24	
Barium	ug/L	<0.70	2.3	04/07/25 21:24	
Beryllium	ug/L	<0.25	1.0	04/07/25 21:24	
Boron	ug/L	<3.0	10.0	04/07/25 21:24	
Cadmium	ug/L	<0.15	1.0	04/07/25 21:24	
Calcium	ug/L	<76.2	254	04/07/25 21:24	
Chromium	ug/L	<1.0	3.4	04/07/25 21:24	
Cobalt	ug/L	<0.12	1.0	04/07/25 21:24	
Lead	ug/L	<0.24	1.0	04/07/25 21:24	
Lithium	ug/L	0.29J	1.0	04/07/25 21:24	
Molybdenum	ug/L	<0.44	1.5	04/07/25 21:24	
Selenium	ug/L	<0.32	1.1	04/07/25 21:24	
Thallium	ug/L	<0.14	1.0	04/07/25 21:24	

LABORATORY CONTROL SAMPLE: 2860021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	245	98	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	249	100	80-120	
Beryllium	ug/L	250	245	98	80-120	
Boron	ug/L	250	246	98	80-120	
Cadmium	ug/L	250	254	102	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	250	252	101	80-120	
Cobalt	ug/L	250	258	103	80-120	
Lead	ug/L	250	251	100	80-120	
Lithium	ug/L	250	255	102	80-120	
Molybdenum	ug/L	250	249	100	80-120	
Selenium	ug/L	250	262	105	80-120	
Thallium	ug/L	250	248	99	80-120	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860022 2860023												
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40292945001 Result	Spike Conc.	Spike Conc.	MS Result							
Antimony	ug/L	<0.15	250	250	250	257	100	103	75-125	2	20	
Arsenic	ug/L	0.77J	250	250	254	259	101	103	75-125	2	20	
Barium	ug/L	50.2	250	250	299	302	100	101	75-125	1	20	
Beryllium	ug/L	<0.25	250	250	252	253	101	101	75-125	1	20	
Boron	ug/L	30.6	250	250	281	276	100	98	75-125	2	20	
Cadmium	ug/L	<0.15	250	250	255	258	102	103	75-125	1	20	
Calcium	ug/L	53700	10000	10000	65700	66600	120	129	75-125	1	20	P6
Chromium	ug/L	<1.0	250	250	248	251	99	100	75-125	1	20	
Cobalt	ug/L	0.16J	250	250	248	251	99	100	75-125	1	20	
Lead	ug/L	<0.24	250	250	250	252	100	101	75-125	1	20	
Lithium	ug/L	2.8	250	250	256	254	101	100	75-125	1	20	
Molybdenum	ug/L	18.0	250	250	269	273	101	102	75-125	1	20	
Selenium	ug/L	<0.32	250	250	258	260	103	104	75-125	0	20	
Thallium	ug/L	0.20J	250	250	248	250	99	100	75-125	1	20	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	500931	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2860764 Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/03/25 10:00	

LABORATORY CONTROL SAMPLE: 2860765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	584	542	93	80-120	

SAMPLE DUPLICATE: 2860766

Parameter	Units	40292945004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	10.0J	10.0J		10	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch: 500656

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

SAMPLE DUPLICATE: 2859708

Parameter	Units	40292849001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	10.1	10.1	0	20	H6

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	500894	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2860617 Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	04/03/25 05:31	
Fluoride	mg/L	<0.095	0.32	04/03/25 05:31	
Sulfate	mg/L	<0.44	2.0	04/03/25 05:31	

LABORATORY CONTROL SAMPLE: 2860618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.6	103	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860619 2860620

Parameter	Units	40292800001		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	5.1	20	20	25.5	25.8	102	104	90-110	1	15		
Fluoride	mg/L	<0.095	2	2	2.3	2.3	114	117	90-110	2	15	M0	
Sulfate	mg/L	16.4	20	20	37.1	37.5	103	106	90-110	1	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860621 2860622

Parameter	Units	40292911001		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	49.0	100	100	150	152	101	103	90-110	1	15		
Fluoride	mg/L	<0.48	10	10	10.8	11.1	108	111	90-110	3	15	M0	
Sulfate	mg/L	16.3	100	100	118	120	102	104	90-110	2	15		

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	500979	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2860961 Matrix: Water
 Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	04/03/25 10:43	

LABORATORY CONTROL SAMPLE: 2860962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	103	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860963 2860964

Parameter	Units	40292807032 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	93.0	100	100	197	199	104	106	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860965 2860966

Parameter	Units	40292973001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	362	100	100	467	467	105	105	90-110	0	20	

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QUALITY CONTROL DATA

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch:	501247	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, preserved
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 2862491 Matrix: Water
 Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	04/07/25 13:03	

LABORATORY CONTROL SAMPLE: 2862492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2862493 2862494

Parameter	Units	40292945001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.60	2.5	2.5	3.2	3.1	102	101	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2862495 2862496

Parameter	Units	40293138002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.26	2.5	2.5	2.7	2.7	98	98	90-110	0	20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-317	Lab ID: 40292945001	Collected: 03/27/25 12:00	Received: 03/29/25 08:45	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	1.17U ± 0.601 (1.17) C:NA T:95%	pCi/L	04/13/25 16:00	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.01 ± 0.447 (0.764) C:82% T:94%	pCi/L	04/10/25 11:55	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.93U ± 1.05 (1.93)	pCi/L	04/21/25 09:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-318 **Lab ID: 40292945002** Collected: 03/27/25 14:25 Received: 03/29/25 08:45 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	1.01U ± 0.568 (1.01) C:NA T:96%	pCi/L	04/13/25 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.24 ± 0.502 (0.819) C:79% T:87%	pCi/L	04/10/25 11:55	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.83U ± 1.07 (1.83)	pCi/L	04/21/25 09:37	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Sample: MW-319 **Lab ID: 40292945003** Collected: 03/27/25 16:05 Received: 03/29/25 08:45 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	1.34U ± 0.662 (1.34) C:NA T:99%	pCi/L	04/13/25 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.741U ± 0.409 (0.741) C:76% T:89%	pCi/L	04/10/25 11:55	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	2.08U ± 1.07 (2.08)	pCi/L	04/21/25 09:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK						
Lab ID: 40292945004						
Collected: 03/27/25 15:40						
Received: 03/29/25 08:45						
Matrix: Water						
PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.879U ± 0.476 (0.879) C:NA T:99%	pCi/L	04/13/25 16:13	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.725U ± 0.345 (0.725) C:79% T:92%	pCi/L	04/10/25 11:55	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.60U ± 0.821 (1.60)	pCi/L	04/21/25 09:37	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch: 736780

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: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 3586129

Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.117 ± 0.253 (0.467) C:NA T:95%	pCi/L	04/13/25 15:47	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

QC Batch: 736782

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: 40292945001, 40292945002, 40292945003, 40292945004

METHOD BLANK: 3586137

Matrix: Water

Associated Lab Samples: 40292945001, 40292945002, 40292945003, 40292945004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0972 ± 0.317 (0.715) C:77% T:85%	pCi/L	04/10/25 11:55	

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.

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QUALIFIERS

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067 COLUMBIA LF MOD 12-13

Pace Project No.: 40292945

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40292945001	MW-317	EPA 3010A	500774	EPA 6010D	500861
40292945002	MW-318	EPA 3010A	500774	EPA 6010D	500861
40292945003	MW-319	EPA 3010A	500774	EPA 6010D	500861
40292945004	FIELD BLANK	EPA 3010A	500774	EPA 6010D	500861
40292945001	MW-317	EPA 3010A	500746	EPA 6020B	500841
40292945002	MW-318	EPA 3010A	500746	EPA 6020B	500841
40292945003	MW-319	EPA 3010A	500746	EPA 6020B	500841
40292945004	FIELD BLANK	EPA 3010A	500746	EPA 6020B	500841
40292945001	MW-317	EPA 7470	501035	EPA 7470	501107
40292945002	MW-318	EPA 7470	501035	EPA 7470	501107
40292945003	MW-319	EPA 7470	501035	EPA 7470	501107
40292945004	FIELD BLANK	EPA 7470	501035	EPA 7470	501107
40292945001	MW-317				
40292945002	MW-318				
40292945003	MW-319				
40292945001	MW-317	EPA 903.1	736780		
40292945002	MW-318	EPA 903.1	736780		
40292945003	MW-319	EPA 903.1	736780		
40292945004	FIELD BLANK	EPA 903.1	736780		
40292945001	MW-317	EPA 904.0	736782		
40292945002	MW-318	EPA 904.0	736782		
40292945003	MW-319	EPA 904.0	736782		
40292945004	FIELD BLANK	EPA 904.0	736782		
40292945001	MW-317	Total Radium Calculation	739485		
40292945002	MW-318	Total Radium Calculation	739485		
40292945003	MW-319	Total Radium Calculation	739485		
40292945004	FIELD BLANK	Total Radium Calculation	739485		
40292945001	MW-317	SM 2540C	500931		
40292945002	MW-318	SM 2540C	500931		
40292945003	MW-319	SM 2540C	500931		
40292945004	FIELD BLANK	SM 2540C	500931		
40292945001	MW-317	EPA 9040	500656		
40292945002	MW-318	EPA 9040	500656		
40292945003	MW-319	EPA 9040	500656		
40292945004	FIELD BLANK	EPA 9040	500656		
40292945001	MW-317	EPA 300.0	500894		
40292945002	MW-318	EPA 300.0	500894		
40292945003	MW-319	EPA 300.0	500894		
40292945004	FIELD BLANK	EPA 300.0	500894		
40292945001	MW-317	EPA 310.2	500979		
40292945002	MW-318	EPA 310.2	500979		
40292945003	MW-319	EPA 310.2	500979		
40292945004	FIELD BLANK	EPA 310.2	500979		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067 COLUMBIA LF MOD 12-13
Pace Project No.: 40292945

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40292945001	MW-317	EPA 353.2	501247		
40292945002	MW-318	EPA 353.2	501247		
40292945003	MW-319	EPA 353.2	501247		
40292945004	FIELD BLANK	EPA 353.2	501247		

REPORT OF LABORATORY ANALYSIS

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Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 40292945

All containers needing preservation have been checked and noted below:

Yes No N/A

Lab Lot# of pH paper:

Lab Std #/ID of preservation (if pH adjusted):

Initial when completed: MWS Date/Time:

Pace Lab #	Glass						Plastic						Vials					Jars				General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)					
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T								ZPLC	GN 1	GN 2		
001							2		4	1																									2.5 / 5
002							2		4	1																									2.5 / 5
003							2		4	1																									2.5 / 5
004							2		4	1																									2.5 / 5
005																																			2.5 / 5
006																																			2.5 / 5
007																																			2.5 / 5
008																																			2.5 / 5
009																																			2.5 / 5
010																																			2.5 / 5
011																																			2.5 / 5
012																																			2.5 / 5
013																																			2.5 / 5
014																																			2.5 / 5
015																																			2.5 / 5
016																																			2.5 / 5
017																																			2.5 / 5
018																																			2.5 / 5
019																																			2.5 / 5
020																																			2.5 / 5

MWS
03/29/2025

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : Yes No N/A *If yes look in headspace column

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	VG9C 40 mL clear ascorbic w/ HCL	JGFU 4 oz amber jar unpres
BG1U 1 liter clear glass	BP3U 250 mL plastic unpres	DG9T 40 mL amber Na Thio	JG9U 9 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP3B 250 mL plastic NaOH	VG9U 40 mL clear vial unpres	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9H 40 mL clear vial HCL	WPFU 4 oz plastic jar unpres
AG5U 100 mL amber glass unpres	BP3S 250 mL plastic H2SO4	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG2S 500 mL amber glass H2SO4	BP2Z 500 mL plastic NaOH + Zn	VG9D 40 mL clear vial DI	ZPLC ziploc bag
BG3U 250 mL clear glass unpres			GN 1 <i>Water clear plastic HNO3</i>
			GN 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40292945**

Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____



Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - 145 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.5 / Corr: 0.0

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 03/29/2025 Initials: MP
 Labeled By Initials: MP

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMS. By releasing the project, the PM acknowledges they have reviewed the sample logir

C7 April 2025 Laboratory Reports



May 22, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25225067 COLUMBIA CCR LF MODS
Pace Project No.: 40294083

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory between April 23, 2025 and April 24, 2025. 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 - Green Bay

Report revised to correct the field data for MW-311. This replaces the report generated on May 9, 2025.

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40294083001	MW-302	Water	04/22/25 12:50	04/23/25 10:30
40294083002	MW-33AR	Water	04/21/25 13:50	04/23/25 10:30
40294083003	MW-34A	Water	04/21/25 14:40	04/23/25 10:30
40294083004	MW-309	Water	04/21/25 10:45	04/23/25 10:30
40294083005	MW-310	Water	04/21/25 11:30	04/23/25 10:30
40294083006	MW-311	Water	04/21/25 12:45	04/23/25 10:30
40294083007	FIELD BLANK	Water	04/22/25 13:15	04/24/25 11:45

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40294083001	MW-302	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	AJS1	3
		EPA 310.2	MT	1
40294083002	MW-33AR	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	AJS1	3
		EPA 310.2	MT	1
40294083003	MW-34A	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	AJS1	3
		EPA 310.2	MT	1
40294083004	MW-309	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294083005	MW-310	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294083006	MW-311	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294083007	FIELD BLANK	EPA 6020B	KXS	3

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR LF MODS
Pace Project No.: 40294083

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-302 **Lab ID: 40294083001** Collected: 04/22/25 12:50 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	379	ug/L	10.0	3.0	1	04/25/25 07:50	04/29/25 23:57	7440-42-8	
Calcium	66700	ug/L	254	76.2	1	04/25/25 07:50	04/29/25 23:57	7440-70-2	
Total Hardness by 2340B	313	mg/L	17.0	3.2	10	04/25/25 07:50	04/29/25 23:30		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.18	Std. Units			1		04/22/25 12:50		
Field Specific Conductance	554.8	umhos/cm			1		04/22/25 12:50		
Oxygen, Dissolved	7.35	mg/L			1		04/22/25 12:50	7782-44-7	
REDOX	103.6	mV			1		04/22/25 12:50		
Turbidity	17.15	NTU			1		04/22/25 12:50		
Static Water Level	787.05	feet			1		04/22/25 12:50		
Temperature, Water (C)	10.6	deg C			1		04/22/25 12:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	338	mg/L	20.0	8.7	1		04/24/25 14:55		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.1	Std. Units	0.10	0.010	1		04/24/25 13:31		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	0.83J	mg/L	2.0	0.59	1		05/01/25 18:02	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/01/25 18:02	16984-48-8	
Sulfate	30.0	mg/L	2.0	0.44	1		05/01/25 18:02	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	288	mg/L	25.0	7.4	1		05/02/25 10:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-33AR Lab ID: 40294083002 Collected: 04/21/25 13:50 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	468	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:15	7440-42-8	
Calcium	85300	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:15	7440-70-2	
Total Hardness by 2340B	374	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:15		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.81	Std. Units			1		04/21/25 13:50		
Field Specific Conductance	856	umhos/cm			1		04/21/25 13:50		
Oxygen, Dissolved	86.6	mg/L			1		04/21/25 13:50	7782-44-7	
REDOX	49.6	mV			1		04/21/25 13:50		
Turbidity	3.74	NTU			1		04/21/25 13:50		
Static Water Level	783.71	feet			1		04/21/25 13:50		
Temperature, Water (C)	10.2	deg C			1		04/21/25 13:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	542	mg/L	20.0	8.7	1		04/24/25 13:38		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		04/24/25 13:36		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	47.7	mg/L	10.0	3.0	5		05/01/25 18:13	16887-00-6	
Fluoride	<0.48	mg/L	1.6	0.48	5		05/01/25 18:13	16984-48-8	D3
Sulfate	236	mg/L	10.0	2.2	5		05/01/25 18:13	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	190	mg/L	25.0	7.4	1		05/02/25 10:47		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-34A Lab ID: 40294083003 Collected: 04/21/25 14:40 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	224	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:24	7440-42-8	
Calcium	59400	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:24	7440-70-2	
Total Hardness by 2340B	265	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:24		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.80	Std. Units			1		04/21/25 14:40		
Field Specific Conductance	522.5	umhos/cm			1		04/21/25 14:40		
Oxygen, Dissolved	94.2	mg/L			1		04/21/25 14:40	7782-44-7	
REDOX	50.3	mV			1		04/21/25 14:40		
Turbidity	1.09	NTU			1		04/21/25 14:40		
Static Water Level	783.15	feet			1		04/21/25 14:40		
Temperature, Water (C)	11.3	deg C			1		04/21/25 14:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	300	mg/L	20.0	8.7	1		04/24/25 13:38		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		04/24/25 13:38		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	8.7	mg/L	2.0	0.59	1		05/01/25 19:07	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/01/25 19:07	16984-48-8	
Sulfate	78.7	mg/L	4.0	0.89	2		05/01/25 18:24	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	229	mg/L	25.0	7.4	1		05/02/25 10:48		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-309 Lab ID: 40294083004 Collected: 04/21/25 10:45 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	102	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:28	7440-42-8	
Calcium	35900	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:28	7440-70-2	
Total Hardness by 2340B	156	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:28		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.55	Std. Units			1		04/21/25 10:45		
Field Specific Conductance	2021	umhos/cm			1		04/21/25 10:45		
Oxygen, Dissolved	10.07	mg/L			1		04/21/25 10:45	7782-44-7	
REDOX	105.7	mV			1		04/21/25 10:45		
Turbidity	0.01	NTU			1		04/21/25 10:45		
Static Water Level	785.17	feet			1		04/21/25 10:45		
Temperature, Water (C)	10.2	deg C			1		04/21/25 10:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	1160	mg/L	20.0	8.7	1		04/24/25 13:39		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		04/24/25 13:39		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	386	mg/L	20.0	5.9	10		05/03/25 11:49	16887-00-6	M0
Fluoride	<0.95	mg/L	3.2	0.95	10		05/03/25 11:49	16984-48-8	D3
Sulfate	75.7	mg/L	20.0	4.4	10		05/03/25 11:49	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	502	mg/L	50.0	14.9	2		05/02/25 13:34		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-310 Lab ID: 40294083005 Collected: 04/21/25 11:30 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	86.4	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:33	7440-42-8	
Calcium	45900	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:33	7440-70-2	
Total Hardness by 2340B	291	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:33		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.69	Std. Units			1		04/21/25 11:30		
Field Specific Conductance	1097	umhos/cm			1		04/21/25 11:30		
Oxygen, Dissolved	11.46	mg/L			1		04/21/25 11:30	7782-44-7	
REDOX	92.1	mV			1		04/21/25 11:30		
Turbidity	0.00	NTU			1		04/21/25 11:30		
Static Water Level	785.09	feet			1		04/21/25 11:30		
Temperature, Water (C)	10.6	deg C			1		04/21/25 11:30		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	692	mg/L	20.0	8.7	1		04/24/25 13:39		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		04/24/25 13:41		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	110	mg/L	10.0	3.0	5		05/03/25 12:21	16887-00-6	
Fluoride	<0.48	mg/L	1.6	0.48	5		05/03/25 12:21	16984-48-8	D3
Sulfate	170	mg/L	10.0	2.2	5		05/03/25 12:21	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	334	mg/L	25.0	7.4	1		05/02/25 10:50		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: MW-311 Lab ID: 40294083006 Collected: 04/21/25 12:45 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	24.8	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:51	7440-42-8	
Calcium	51300	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:51	7440-70-2	
Total Hardness by 2340B	245	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:51		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.54	Std. Units			1		04/21/25 12:45		
Field Specific Conductance	453.4	umhos/cm			1		04/21/25 12:45		
Oxygen, Dissolved	10.06	mg/L			1		04/21/25 12:45	7782-44-7	
REDOX	115.5	mV			1		04/21/25 12:45		
Turbidity	0.00	NTU			1		04/21/25 12:45		
Static Water Level	785.23	feet			1		04/21/25 12:45		
Temperature, Water (C)	9.4	deg C			1		04/21/25 12:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	254	mg/L	20.0	8.7	1		04/24/25 13:39		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		04/24/25 13:48		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	2.1	mg/L	2.0	0.59	1		05/03/25 12:32	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/03/25 12:32	16984-48-8	
Sulfate	10.5	mg/L	2.0	0.44	1		05/03/25 12:32	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	261	mg/L	25.0	7.4	1		05/02/25 10:54		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Sample: FIELD BLANK **Lab ID: 40294083007** Collected: 04/22/25 13:15 Received: 04/24/25 11:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	05/01/25 08:34	05/02/25 15:23	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	05/01/25 08:34	05/02/25 15:23	7440-70-2	
Total Hardness by 2340B	<0.32	mg/L	1.7	0.32	1	05/01/25 08:34	05/02/25 15:23		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	12.0J	mg/L	20.0	8.7	1		04/29/25 16:32		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		04/25/25 16:05		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.59	mg/L	2.0	0.59	1		05/03/25 13:15	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/03/25 13:15	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		05/03/25 13:15	14808-79-8	
310.2 Alkalinity									
Analytical Method: EPA 310.2									
Pace Analytical Services - Green Bay									
Alkalinity, Total as CaCO3	<7.4	mg/L	25.0	7.4	1		05/02/25 10:55		

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch:	502897	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083001, 40294083002, 40294083003, 40294083004, 40294083005, 40294083006

METHOD BLANK: 2871558 Matrix: Water
 Associated Lab Samples: 40294083001, 40294083002, 40294083003, 40294083004, 40294083005, 40294083006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	04/29/25 22:58	
Calcium	ug/L	<76.2	254	04/29/25 22:58	
Total Hardness by 2340B	mg/L	<0.32	1.7	04/29/25 22:58	

LABORATORY CONTROL SAMPLE: 2871559

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	230	92	80-120	
Calcium	ug/L	10000	9450	94	80-120	
Total Hardness by 2340B	mg/L		62.7			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871560 2871561

Parameter	Units	40294083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	379	250	250	618	611	96	93	75-125	1	20	
Calcium	ug/L	66700	10000	10000	76100	75000	94	82	75-125	1	20	
Total Hardness by 2340B	mg/L	313			375	372				1	20	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch: 503371	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083007

METHOD BLANK: 2874357 Matrix: Water

Associated Lab Samples: 40294083007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	05/02/25 14:29	
Calcium	ug/L	<76.2	254	05/02/25 14:29	
Total Hardness by 2340B	mg/L	<0.32	1.7	05/02/25 14:29	

LABORATORY CONTROL SAMPLE: 2874358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	222	89	80-120	
Calcium	ug/L	10000	9970	100	80-120	
Total Hardness by 2340B	mg/L		65.7			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874434 2874435

Parameter	Units	40294315001		2874434		2874435		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Boron	ug/L	30.6	30.6	250	250	256	256	90	90	75-125	0	20
Calcium	ug/L	101000	101000	10000	10000	111000	109000	101	81	75-125	2	20
Total Hardness by 2340B	mg/L	443000	443000			512	497				3	20

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch:	502813	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083002, 40294083003, 40294083004, 40294083005, 40294083006

METHOD BLANK: 2870847 Matrix: Water
 Associated Lab Samples: 40294083002, 40294083003, 40294083004, 40294083005, 40294083006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/24/25 13:36	

LABORATORY CONTROL SAMPLE: 2870848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	578	566	98	80-120	

SAMPLE DUPLICATE: 2870849

Parameter	Units	40293965001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	240	236	2	10	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS
 Pace Project No.: 40294083

QC Batch: 502870 Analysis Method: SM 2540C
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
 Laboratory: Pace Analytical Services - Green Bay
 Associated Lab Samples: 40294083001

METHOD BLANK: 2871186 Matrix: Water
 Associated Lab Samples: 40294083001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/24/25 14:54	

LABORATORY CONTROL SAMPLE: 2871187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	578	560	97	80-120	

SAMPLE DUPLICATE: 2871188

Parameter	Units	40294036001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	578	600	4	10	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch: 503019

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083007

METHOD BLANK: 2872613

Matrix: Water

Associated Lab Samples: 40294083007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/29/25 16:31	

LABORATORY CONTROL SAMPLE: 2872614

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	578	514	89	80-120	

SAMPLE DUPLICATE: 2872615

Parameter	Units	40294119001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	534	524	2	10	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch: 502833

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083001, 40294083002, 40294083003, 40294083004, 40294083005, 40294083006

SAMPLE DUPLICATE: 2870947

Parameter	Units	40294083001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.1	8.2	1	20	H6

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch: 502916

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083007

SAMPLE DUPLICATE: 2871639

Parameter	Units	40294152022 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0	20	H6

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch:	503402	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083001, 40294083002, 40294083003

METHOD BLANK: 2874455 Matrix: Water
 Associated Lab Samples: 40294083001, 40294083002, 40294083003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/01/25 14:19	
Fluoride	mg/L	<0.095	0.32	05/01/25 14:19	
Sulfate	mg/L	<0.44	2.0	05/01/25 14:19	

LABORATORY CONTROL SAMPLE: 2874456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	21.5	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874457 2874458

Parameter	Units	40294055002		MSD		MSD		% Rec		Limits	RPD	Max	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	221	1000	1000	1210	1180	99	96	90-110	3	15		
Fluoride	mg/L	<4.8	100	100	101	97.2	101	97	90-110	4	15		
Sulfate	mg/L	939	1000	1000	1890	1860	95	92	90-110	2	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874461 2874462

Parameter	Units	40294463001		MSD		MSD		% Rec		Limits	RPD	Max	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	173	100	100	259	258	87	85	90-110	0	15	M0	
Fluoride	mg/L	<0.48	10	10	10.8	10.8	108	108	90-110	1	15		
Sulfate	mg/L	139	100	100	240	240	101	101	90-110	0	15		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch:	503541	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294083004, 40294083005, 40294083006, 40294083007

METHOD BLANK: 2875114 Matrix: Water
 Associated Lab Samples: 40294083004, 40294083005, 40294083006, 40294083007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/03/25 10:54	
Fluoride	mg/L	<0.095	0.32	05/03/25 10:54	
Sulfate	mg/L	<0.44	2.0	05/03/25 10:54	

LABORATORY CONTROL SAMPLE: 2875115

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	21.1	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875116 2875117

Parameter	Units	40294083004		MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result						
Chloride	mg/L	386	200	200	562	558	88	86	90-110	1	15	M0	
Fluoride	mg/L	<0.95	20	20	20.1	20.2	100	101	90-110	1	15		
Sulfate	mg/L	75.7	200	200	294	293	109	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875118 2875119

Parameter	Units	40294198001		MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result						
Chloride	mg/L	101	200	200	307	308	103	104	90-110	0	15		
Fluoride	mg/L	<0.95	20	20	21.0	21.2	105	106	90-110	1	15		
Sulfate	mg/L	104	200	200	323	323	109	110	90-110	0	15		

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

QC Batch:	503496	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay
Associated Lab Samples:	40294083001, 40294083002, 40294083003, 40294083004, 40294083005, 40294083006, 40294083007		

METHOD BLANK:	2874894	Matrix:	Water
Associated Lab Samples:	40294083001, 40294083002, 40294083003, 40294083004, 40294083005, 40294083006, 40294083007		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	05/02/25 09:34	

LABORATORY CONTROL SAMPLE: 2874895						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	104	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874896												2874897	
Parameter	Units	40293987001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Alkalinity, Total as CaCO3	mg/L	176	100	100	277	279	101	103	90-110	1	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874898												2874899	
Parameter	Units	40294084002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Alkalinity, Total as CaCO3	mg/L	359	100	100	463	467	104	108	90-110	1	20		

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QUALIFIERS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40294083

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40294083001	MW-302	EPA 3010A	502897	EPA 6020B	502977
40294083002	MW-33AR	EPA 3010A	502897	EPA 6020B	502977
40294083003	MW-34A	EPA 3010A	502897	EPA 6020B	502977
40294083004	MW-309	EPA 3010A	502897	EPA 6020B	502977
40294083005	MW-310	EPA 3010A	502897	EPA 6020B	502977
40294083006	MW-311	EPA 3010A	502897	EPA 6020B	502977
40294083007	FIELD BLANK	EPA 3010A	503371	EPA 6020B	503515
40294083001	MW-302				
40294083002	MW-33AR				
40294083003	MW-34A				
40294083004	MW-309				
40294083005	MW-310				
40294083006	MW-311				
40294083001	MW-302	SM 2540C	502870		
40294083002	MW-33AR	SM 2540C	502813		
40294083003	MW-34A	SM 2540C	502813		
40294083004	MW-309	SM 2540C	502813		
40294083005	MW-310	SM 2540C	502813		
40294083006	MW-311	SM 2540C	502813		
40294083007	FIELD BLANK	SM 2540C	503019		
40294083001	MW-302	EPA 9040	502833		
40294083002	MW-33AR	EPA 9040	502833		
40294083003	MW-34A	EPA 9040	502833		
40294083004	MW-309	EPA 9040	502833		
40294083005	MW-310	EPA 9040	502833		
40294083006	MW-311	EPA 9040	502833		
40294083007	FIELD BLANK	EPA 9040	502916		
40294083001	MW-302	EPA 300.0	503402		
40294083002	MW-33AR	EPA 300.0	503402		
40294083003	MW-34A	EPA 300.0	503402		
40294083004	MW-309	EPA 300.0	503541		
40294083005	MW-310	EPA 300.0	503541		
40294083006	MW-311	EPA 300.0	503541		
40294083007	FIELD BLANK	EPA 300.0	503541		
40294083001	MW-302	EPA 310.2	503496		
40294083002	MW-33AR	EPA 310.2	503496		
40294083003	MW-34A	EPA 310.2	503496		
40294083004	MW-309	EPA 310.2	503496		
40294083005	MW-310	EPA 310.2	503496		
40294083006	MW-311	EPA 310.2	503496		
40294083007	FIELD BLANK	EPA 310.2	503496		

REPORT OF LABORATORY ANALYSIS

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Effective Date: 8/16/2022

Client Name: SCS

Sample Preservation Receipt Form

Project # 40294083

All containers needing preservation have been checked and noted below:

Yes No N/A

Lab Lot# of pH paper: 10 D 3742 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: MCH Date/Time:

Pace Lab #	Glass						Plastic						Vials					Jars				General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)					
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JG9U	JG9U	WGFU	WPFU	SP5T								ZPLC	GN 1	GN 2		
001							2																												2.5 / 5
002							2																												2.5 / 5
003							2																												2.5 / 5
004							2																												2.5 / 5
005							2																												2.5 / 5
006							2																												2.5 / 5
007																																			2.5 / 5
008																																			2.5 / 5
009																																			2.5 / 5
010																																			2.5 / 5
011																																			2.5 / 5
012																																			2.5 / 5
013																																			2.5 / 5
014																																			2.5 / 5
015																																			2.5 / 5
016																																			2.5 / 5
017																																			2.5 / 5
018																																			2.5 / 5
019																																			2.5 / 5
020																																			2.5 / 5

MCH 4/23/25

Exceptions to preservation check: VOA, Colliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : Yes No N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	<i>1 L plastic HNO3</i>
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS
 Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Project #:

WO#: **40294083**



40294083

Tracking #: _____
 Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
 Custody Seal on Samples Present: yes no Seals intact: yes no
 Packing Material: Bubble Wrap Bubble Bags MCH 4/23/25 None Other
 Thermometer Used SR - 148 Type of Ice: Wet Blue Dry None Meltwater Only
 Cooler Temperature Uncorr: 0.0/20/30 corr: 0.0/20/30
 Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/23/25 Initials: MCH
 Labeled By Initials: MCH

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: Sample ID 'Field Blank - Landfill Modules' not received in coders. PM notified MCH 4/23/25

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



May 07, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25225067 COLUMBIA CCR BACKGRND
Pace Project No.: 40294084

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2025. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25225067 COLUMBIA CCR BACKGRND
Pace Project No.: 40294084

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40294084001	MW-301	Water	04/22/25 12:15	04/23/25 10:30
40294084002	MW-84A	Water	04/22/25 10:25	04/23/25 10:30

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40294084001	MW-301	EPA 6020B	KXS	3
			AG1	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294084002	MW-84A	EPA 6020B	KXS	3
			AG1	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

Sample: MW-301 **Lab ID: 40294084001** Collected: 04/22/25 12:15 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	25.5	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 00:56	7440-42-8	
Calcium	108000	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 00:56	7440-70-2	
Total Hardness by 2340B	475	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 00:56		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	6.59	Std. Units			1		04/22/25 12:15		
Field Specific Conductance	827	umhos/cm			1		04/22/25 12:15		
Oxygen, Dissolved	3.11	mg/L			1		04/22/25 12:15	7782-44-7	
REDOX	106.7	mV			1		04/22/25 12:15		
Turbidity	8.64	NTU			1		04/22/25 12:15		
Static Water Level	787.41	feet			1		04/22/25 12:15		
Temperature, Water (C)	8.0	deg C			1		04/22/25 12:15		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	468	mg/L	20.0	8.7	1		04/24/25 14:55		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	7.7	Std. Units	0.10	0.010	1		04/24/25 13:55		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	1.4J	mg/L	2.0	0.59	1		05/03/25 13:37	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/03/25 13:37	16984-48-8	
Sulfate	8.2	mg/L	2.0	0.44	1		05/03/25 13:37	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	502	mg/L	50.0	14.9	2		05/02/25 13:35		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

Sample: MW-84A Lab ID: 40294084002 Collected: 04/22/25 10:25 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	10.0	ug/L	10.0	3.0	1	04/25/25 07:50	04/30/25 01:00	7440-42-8	
Calcium	70000	ug/L	254	76.2	1	04/25/25 07:50	04/30/25 01:00	7440-70-2	
Total Hardness by 2340B	329	mg/L	1.7	0.32	1	04/25/25 07:50	04/30/25 01:00		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.07	Std. Units			1		04/22/25 10:25		
Field Specific Conductance	587.6	umhos/cm			1		04/22/25 10:25		
Oxygen, Dissolved	7.42	mg/L			1		04/22/25 10:25	7782-44-7	
REDOX	93.8	mV			1		04/22/25 10:25		
Turbidity	0.00	NTU			1		04/22/25 10:25		
Static Water Level	786.33	feet			1		04/22/25 10:25		
Temperature, Water (C)	10.8	deg C			1		04/22/25 10:25		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	324	mg/L	20.0	8.7	1		04/24/25 14:55		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.0	Std. Units	0.10	0.010	1		04/24/25 13:57		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	3.0	mg/L	2.0	0.59	1		05/03/25 13:48	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/03/25 13:48	16984-48-8	
Sulfate	1.7J	mg/L	2.0	0.44	1		05/03/25 13:48	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	359	mg/L	25.0	7.4	1		05/02/25 10:57		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

QC Batch: 502897	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294084001, 40294084002

METHOD BLANK: 2871558 Matrix: Water

Associated Lab Samples: 40294084001, 40294084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	04/29/25 22:58	
Calcium	ug/L	<76.2	254	04/29/25 22:58	
Total Hardness by 2340B	mg/L	<0.32	1.7	04/29/25 22:58	

LABORATORY CONTROL SAMPLE: 2871559

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	230	92	80-120	
Calcium	ug/L	10000	9450	94	80-120	
Total Hardness by 2340B	mg/L		62.7			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871560 2871561

Parameter	Units	40294083001		2871560		2871561		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Boron	ug/L	379	250	250	618	611	96	93	75-125	1	20		
Calcium	ug/L	66700	10000	10000	76100	75000	94	82	75-125	1	20		
Total Hardness by 2340B	mg/L	313			375	372				1	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 DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

QC Batch:	502870	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294084001, 40294084002

METHOD BLANK: 2871186 Matrix: Water
 Associated Lab Samples: 40294084001, 40294084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/24/25 14:54	

LABORATORY CONTROL SAMPLE: 2871187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	578	560	97	80-120	

SAMPLE DUPLICATE: 2871188

Parameter	Units	40294036001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	578	600	4	10	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

QC Batch: 502833

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294084001, 40294084002

SAMPLE DUPLICATE: 2870947

Parameter	Units	40294083001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.1	8.2	1	20	H6

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

QC Batch:	503541	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294084001, 40294084002

METHOD BLANK: 2875114 Matrix: Water

Associated Lab Samples: 40294084001, 40294084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/03/25 10:54	
Fluoride	mg/L	<0.095	0.32	05/03/25 10:54	
Sulfate	mg/L	<0.44	2.0	05/03/25 10:54	

LABORATORY CONTROL SAMPLE: 2875115

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	21.1	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875116 2875117

Parameter	Units	40294083004		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	386	200	200	200	562	558	88	86	90-110	1	15	M0	
Fluoride	mg/L	<0.95	20	20	20	20.1	20.2	100	101	90-110	1	15		
Sulfate	mg/L	75.7	200	200	200	294	293	109	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875118 2875119

Parameter	Units	40294198001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	101	200	200	200	307	308	103	104	90-110	0	15		
Fluoride	mg/L	<0.95	20	20	20	21.0	21.2	105	106	90-110	1	15		
Sulfate	mg/L	104	200	200	200	323	323	109	110	90-110	0	15		

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

QC Batch: 503496

Analysis Method: EPA 310.2

QC Batch Method: EPA 310.2

Analysis Description: 310.2 Alkalinity

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294084001, 40294084002

METHOD BLANK: 2874894

Matrix: Water

Associated Lab Samples: 40294084001, 40294084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	05/02/25 09:34	

LABORATORY CONTROL SAMPLE: 2874895

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	104	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874896 2874897

Parameter	Units	40293987001		2874897		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	176	100	100	277	279	101	103	90-110	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874898 2874899

Parameter	Units	40294084002		2874899		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Alkalinity, Total as CaCO3	mg/L	359	100	100	463	467	104	108	90-110	1	20

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QUALIFIERS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294084

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40294084001	MW-301	EPA 3010A	502897	EPA 6020B	502977
40294084002	MW-84A	EPA 3010A	502897	EPA 6020B	502977
40294084001	MW-301				
40294084002	MW-84A				
40294084001	MW-301	SM 2540C	502870		
40294084002	MW-84A	SM 2540C	502870		
40294084001	MW-301	EPA 9040	502833		
40294084002	MW-84A	EPA 9040	502833		
40294084001	MW-301	EPA 300.0	503541		
40294084002	MW-84A	EPA 300.0	503541		
40294084001	MW-301	EPA 310.2	503496		
40294084002	MW-84A	EPA 310.2	503496		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #: _____

WO# : 40294084



40294084

Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Custody Seal on Samples Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 148 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0/20/30 Corr: 0.0/20/30

Temp Blank Present: Yes No Biological Tissue is Frozen: Yes No

Person examining contents:
 Date: 4/23/25 Initials: MCH
 Labeled By Initials: EL

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #:

WO#: **40294084**



40294084

Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR-148 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0/20/30 corr: 0.0/20/30

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/23/25 Initials: MCH
 Labeled By Initials: EL

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	8.	
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



May 15, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25225067 COLUMBIA CCR BACKGRND
Pace Project No.: 40294114

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2025. 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 - Green Bay
- Pace Analytical Services - Greensburg

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burriss, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Pace Analytical Services Pennsylvania

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

ANAB DOD-ELAP Rad Accreditation #: L2417

ANABISO/IEC 17025:2017 Rad Cert#: L24170

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 2950

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA010

Louisiana DEQ/TNI Certification #: 04086

Maine Certification #: 2023021

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 #: PA014572023-03

New Hampshire/TNI Certification #: 297622

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 #: PA200002-015

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN02867

Texas/TNI Certification #: T104704188-22-18

Utah/TNI Certification #: PA014572223-14

USDA Soil Permit #: 525-23-67-77263

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

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25225067 COLUMBIA CCR BACKGRND
Pace Project No.: 40294114

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40294114001	MW-301	Water	04/22/25 12:15	04/23/25 10:30
40294114002	MW-84A	Water	04/22/25 10:25	04/23/25 10:30

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40294114001	MW-301	EPA 6020B	KXS	12	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
40294114002	MW-84A	EPA 6020B	KXS	12	PASI-G
		EPA 7470	AF	1	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Sample: MW-301 Lab ID: 40294114001 Collected: 04/22/25 12:15 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/25/25 07:50	04/29/25 18:36	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/25/25 07:50	04/29/25 18:36	7440-38-2	
Barium	10.2	ug/L	2.3	0.70	1	04/25/25 07:50	04/29/25 18:36	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/25/25 07:50	04/29/25 18:36	7440-41-7	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/25/25 07:50	04/29/25 18:36	7440-43-9	
Chromium	<1.0	ug/L	3.4	1.0	1	04/25/25 07:50	04/29/25 18:36	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	04/25/25 07:50	04/29/25 18:36	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	04/25/25 07:50	04/29/25 18:36	7439-92-1	
Lithium	0.57J	ug/L	1.0	0.22	1	04/25/25 07:50	04/29/25 18:36	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/25/25 07:50	04/29/25 18:36	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/25/25 07:50	04/29/25 18:36	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/25/25 07:50	04/29/25 18:36	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/25/25 13:39	04/28/25 14:53	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Sample: MW-84A Lab ID: 40294114002 Collected: 04/22/25 10:25 Received: 04/23/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Green Bay									
Antimony	<0.15	ug/L	1.0	0.15	1	04/25/25 07:50	04/29/25 18:40	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/25/25 07:50	04/29/25 18:40	7440-38-2	
Barium	13.5	ug/L	2.3	0.70	1	04/25/25 07:50	04/29/25 18:40	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	04/25/25 07:50	04/29/25 18:40	7440-41-7	
Cadmium	<0.15	ug/L	1.0	0.15	1	04/25/25 07:50	04/29/25 18:40	7440-43-9	
Chromium	1.9J	ug/L	3.4	1.0	1	04/25/25 07:50	04/29/25 18:40	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	04/25/25 07:50	04/29/25 18:40	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	04/25/25 07:50	04/29/25 18:40	7439-92-1	
Lithium	0.41J	ug/L	1.0	0.22	1	04/25/25 07:50	04/29/25 18:40	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/25/25 07:50	04/29/25 18:40	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/25/25 07:50	04/29/25 18:40	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/25/25 07:50	04/29/25 18:40	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Green Bay									
Mercury	<0.066	ug/L	0.20	0.066	1	04/25/25 13:39	04/28/25 14:56	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

QC Batch: 502929	Analysis Method: EPA 7470
QC Batch Method: EPA 7470	Analysis Description: 7470 Mercury
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294114001, 40294114002

METHOD BLANK: 2871750 Matrix: Water

Associated Lab Samples: 40294114001, 40294114002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	04/28/25 13:28	

LABORATORY CONTROL SAMPLE: 2871751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.6	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871752 2871753

Parameter	Units	2871752		2871753		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40294024001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Mercury	ug/L	<0.066	5	5	5.6	5.7	111	112	85-115	1	20	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

QC Batch:	502899	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294114001, 40294114002

METHOD BLANK: 2871567 Matrix: Water

Associated Lab Samples: 40294114001, 40294114002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	04/29/25 17:06	
Arsenic	ug/L	<0.28	1.0	04/29/25 17:06	
Barium	ug/L	<0.70	2.3	04/29/25 17:06	
Beryllium	ug/L	<0.25	1.0	04/29/25 17:06	
Cadmium	ug/L	<0.15	1.0	04/29/25 17:06	
Chromium	ug/L	<1.0	3.4	04/29/25 17:06	
Cobalt	ug/L	<0.12	1.0	04/29/25 17:06	
Lead	ug/L	<0.24	1.0	04/29/25 17:06	
Lithium	ug/L	<0.22	1.0	04/29/25 17:06	
Molybdenum	ug/L	<0.44	1.5	04/29/25 17:06	
Selenium	ug/L	<0.32	1.1	04/29/25 17:06	
Thallium	ug/L	<0.14	1.0	04/29/25 17:06	

LABORATORY CONTROL SAMPLE: 2871568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	245	98	80-120	
Arsenic	ug/L	250	248	99	80-120	
Barium	ug/L	250	243	97	80-120	
Beryllium	ug/L	250	262	105	80-120	
Cadmium	ug/L	250	251	100	80-120	
Chromium	ug/L	250	252	101	80-120	
Cobalt	ug/L	250	244	98	80-120	
Lead	ug/L	250	246	98	80-120	
Lithium	ug/L	250	255	102	80-120	
Molybdenum	ug/L	250	247	99	80-120	
Selenium	ug/L	250	253	101	80-120	
Thallium	ug/L	250	243	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871569 2871570

Parameter	Units	40294085001		2871570		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Antimony	ug/L	0.21J	250	250	251	246	100	98	75-125	2	20	
Arsenic	ug/L	<0.28	250	250	255	251	102	101	75-125	1	20	
Barium	ug/L	25.5	250	250	274	269	99	98	75-125	2	20	
Beryllium	ug/L	<0.25	250	250	258	258	103	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Parameter	Units	2871569		2871570		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40294085001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Cadmium	ug/L	<0.15	250	250	256	249	102	100	75-125	3	20		
Chromium	ug/L	<1.0	250	250	249	246	100	98	75-125	1	20		
Cobalt	ug/L	<0.12	250	250	241	238	96	95	75-125	1	20		
Lead	ug/L	<0.24	250	250	252	248	101	99	75-125	1	20		
Lithium	ug/L	1.7	250	250	258	255	102	101	75-125	1	20		
Molybdenum	ug/L	12.2	250	250	266	263	102	100	75-125	1	20		
Selenium	ug/L	27.2	250	250	280	276	101	100	75-125	1	20		
Thallium	ug/L	0.16J	250	250	257	253	103	101	75-125	2	20		

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Sample: MW-301 **Lab ID: 40294114001** Collected: 04/22/25 12:15 Received: 04/23/25 10:30 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	0.114 ± 0.524 (1.00) C:NA T:93%	pCi/L	05/14/25 12:43	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.369 ± 0.417 (1.00) C:78% T:91%	pCi/L	05/14/25 14:28	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.483 ± 0.941 (2.00)	pCi/L	05/15/25 16:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Sample: MW-84A	Lab ID: 40294114002	Collected: 04/22/25 10:25	Received: 04/23/25 10:30	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	-0.210 ± 0.411 (1.00) C:NA T:95%	pCi/L	05/14/25 12:43	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.249 ± 0.361 (1.00) C:77% T:86%	pCi/L	05/14/25 14:28	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.249 ± 0.772 (2.00)	pCi/L	05/15/25 16:18	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

QC Batch: 742291

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: 40294114001, 40294114002

METHOD BLANK: 3612216

Matrix: Water

Associated Lab Samples: 40294114001, 40294114002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.294 ± 0.250 (0.310) C:NA T:94%	pCi/L	05/14/25 12:43	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

QC Batch: 742292

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: 40294114001, 40294114002

METHOD BLANK: 3612218

Matrix: Water

Associated Lab Samples: 40294114001, 40294114002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.200 ± 0.312 (0.778) C:79% T:86%	pCi/L	05/14/25 14:26	

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QUALIFIERS

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

DEFINITIONS

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25225067 COLUMBIA CCR BACKGRND

Pace Project No.: 40294114

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40294114001	MW-301	EPA 3010A	502899	EPA 6020B	502978
40294114002	MW-84A	EPA 3010A	502899	EPA 6020B	502978
40294114001	MW-301	EPA 7470	502929	EPA 7470	502995
40294114002	MW-84A	EPA 7470	502929	EPA 7470	502995
40294114001	MW-301	EPA 903.1	742291		
40294114002	MW-84A	EPA 903.1	742291		
40294114001	MW-301	EPA 904.0	742292		
40294114002	MW-84A	EPA 904.0	742292		
40294114001	MW-301	Total Radium Calculation	746009		
40294114002	MW-84A	Total Radium Calculation	746009		

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Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #: _____

WO#: **40294114**



40294114

Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR - 148 Type of Ice: Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0/20/30 Corr: 0.0/20/30

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/23/25 Initials: MCH
 Labeled By Initials: EL

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS
 Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Project #:

WO#: **40294084**



40294084

Tracking #: _____
 Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
 Custody Seal on Samples Present: yes no Seals intact: yes no
 Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR-148 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0/20/30 corr: 0.0/20/30

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/23/25 Initials: MCH
 Labeled By Initials: EL

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	8.	
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir
 Page 2 of 2



May 14, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25225067 COLUMBIA CCR MOD10-13
Pace Project No.: 40294398

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 30, 2025. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



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CERTIFICATIONS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

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SAMPLE SUMMARY

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40294398001	MW-317	Water	04/26/25 12:40	04/30/25 10:05
40294398002	MW-318	Water	04/26/25 13:40	04/30/25 10:05
40294398003	MW-319	Water	04/26/25 14:20	04/30/25 10:05
40294398004	MW-318 DUP	Water	04/26/25 13:45	04/30/25 10:05

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40294398001	MW-317	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294398002	MW-318	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	TXW	3
		EPA 310.2	MT	1
40294398003	MW-319	EPA 6020B	KXS	3
			SLV	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	AJS1	3
		EPA 310.2	MT	1
40294398004	MW-318 DUP	EPA 6020B	KXS	3
			AG1	7
		SM 2540C	LMB	1
		EPA 9040	HML	1
		EPA 300.0	AJS1	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Sample: MW-317 Lab ID: 40294398001 Collected: 04/26/25 12:40 Received: 04/30/25 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	29.1	ug/L	10.0	3.0	1	05/01/25 08:34	05/02/25 15:50	7440-42-8	
Calcium	57900	ug/L	254	76.2	1	05/01/25 08:34	05/02/25 15:50	7440-70-2	
Total Hardness by 2340B	268	mg/L	1.7	0.32	1	05/01/25 08:34	05/02/25 15:50		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.67	Std. Units			1		04/26/25 12:40		
Field Specific Conductance	516.4	umhos/cm			1		04/26/25 12:40		
Oxygen, Dissolved	2.80	mg/L			1		04/26/25 12:40	7782-44-7	
REDOX	-30.5	mV			1		04/26/25 12:40		
Turbidity	1.76	NTU			1		04/26/25 12:40		
Static Water Level	784.94	feet			1		04/26/25 12:40		
Temperature, Water (C)	11.1	deg C			1		04/26/25 12:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	288	mg/L	20.0	8.7	1		05/01/25 14:07		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		05/01/25 14:24		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	4.5	mg/L	2.0	0.59	1		05/04/25 15:53	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/04/25 15:53	16984-48-8	
Sulfate	5.2	mg/L	2.0	0.44	1		05/04/25 15:53	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	275	mg/L	25.0	7.4	1		05/02/25 13:59		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Sample: MW-318 **Lab ID: 40294398002** Collected: 04/26/25 13:40 Received: 04/30/25 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	18.3	ug/L	10.0	3.0	1	05/01/25 08:34	05/02/25 15:54	7440-42-8	
Calcium	99900	ug/L	254	76.2	1	05/01/25 08:34	05/02/25 15:54	7440-70-2	
Total Hardness by 2340B	453	mg/L	1.7	0.32	1	05/01/25 08:34	05/02/25 15:54		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.46	Std. Units			1		04/26/25 13:40		
Field Specific Conductance	863	umhos/cm			1		04/26/25 13:40		
Oxygen, Dissolved	6.65	mg/L			1		04/26/25 13:40	7782-44-7	
REDOX	66.9	mV			1		04/26/25 13:40		
Turbidity	4.26	NTU			1		04/26/25 13:40		
Static Water Level	785.06	feet			1		04/26/25 13:40		
Temperature, Water (C)	11.3	deg C			1		04/26/25 13:40		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	544	mg/L	20.0	8.7	1		05/01/25 14:08		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.1	Std. Units	0.10	0.010	1		05/01/25 14:25		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	23.7	mg/L	10.0	3.0	5		05/04/25 16:03	16887-00-6	
Fluoride	<0.48	mg/L	1.6	0.48	5		05/04/25 16:03	16984-48-8	D3
Sulfate	156	mg/L	10.0	2.2	5		05/04/25 16:03	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	310	mg/L	25.0	7.4	1		05/02/25 14:00		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Sample: MW-319 **Lab ID: 40294398003** Collected: 04/26/25 14:20 Received: 04/30/25 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	18.8	ug/L	10.0	3.0	1	05/01/25 08:34	05/02/25 15:59	7440-42-8	
Calcium	76000	ug/L	254	76.2	1	05/01/25 08:34	05/02/25 15:59	7440-70-2	
Total Hardness by 2340B	316	mg/L	1.7	0.32	1	05/01/25 08:34	05/02/25 15:59		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.56	Std. Units			1		04/26/25 14:20		
Field Specific Conductance	994	umhos/cm			1		04/26/25 14:20		
Oxygen, Dissolved	7.63	mg/L			1		04/26/25 14:20	7782-44-7	
REDOX	84.9	mV			1		04/26/25 14:20		
Turbidity	1.98	NTU			1		04/26/25 14:20		
Static Water Level	786.30	feet			1		04/26/25 14:20		
Temperature, Water (C)	11.3	deg C			1		04/26/25 14:20		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	700	mg/L	20.0	8.7	1		05/01/25 14:08		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.3	Std. Units	0.10	0.010	1		05/01/25 14:29		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	242	mg/L	10.0	3.0	5		05/05/25 20:47	16887-00-6	
Fluoride	<0.48	mg/L	1.6	0.48	5		05/05/25 20:47	16984-48-8	D3
Sulfate	31.6	mg/L	10.0	2.2	5		05/05/25 20:47	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	349	mg/L	25.0	7.4	1		05/02/25 14:01		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Sample: MW-318 DUP **Lab ID: 40294398004** Collected: 04/26/25 13:45 Received: 04/30/25 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	17.9	ug/L	10.0	3.0	1	05/01/25 08:34	05/02/25 16:03	7440-42-8	
Calcium	102000	ug/L	254	76.2	1	05/01/25 08:34	05/02/25 16:03	7440-70-2	
Total Hardness by 2340B	468	mg/L	1.7	0.32	1	05/01/25 08:34	05/02/25 16:03		
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.46	Std. Units			1		04/26/25 13:45		
Field Specific Conductance	863	umhos/cm			1		04/26/25 13:45		
Oxygen, Dissolved	7.46	mg/L			1		04/26/25 13:45	7782-44-7	
REDOX	66.9	mV			1		04/26/25 13:45		
Turbidity	4.26	NTU			1		04/26/25 13:45		
Static Water Level	785.06	feet			1		04/26/25 13:45		
Temperature, Water (C)	11.3	deg C			1		04/26/25 13:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	554	mg/L	20.0	8.7	1		05/01/25 14:09		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	8.2	Std. Units	0.10	0.010	1		05/01/25 14:35		H6
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	23.2	mg/L	2.0	0.59	1		05/12/25 10:54	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/12/25 10:54	16984-48-8	
Sulfate	149	mg/L	20.0	4.4	10		05/12/25 20:43	14808-79-8	
310.2 Alkalinity		Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay							
Alkalinity, Total as CaCO3	309	mg/L	25.0	7.4	1		05/02/25 14:02		

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch:	503371	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020B MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

METHOD BLANK: 2874357 Matrix: Water
 Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	05/02/25 14:29	
Calcium	ug/L	<76.2	254	05/02/25 14:29	
Total Hardness by 2340B	mg/L	<0.32	1.7	05/02/25 14:29	

LABORATORY CONTROL SAMPLE: 2874358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	222	89	80-120	
Calcium	ug/L	10000	9970	100	80-120	
Total Hardness by 2340B	mg/L		65.7			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874434 2874435

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40294315001 Result	Spike Conc.	Spike Conc.	Result						
Boron	ug/L	30.6	250	250	256	256	90	90	75-125	0	20
Calcium	ug/L	101000	10000	10000	111000	109000	101	81	75-125	2	20
Total Hardness by 2340B	mg/L	443000			512	497				3	20

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch:	503446	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

METHOD BLANK: 2874649 Matrix: Water

Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	05/01/25 14:07	

LABORATORY CONTROL SAMPLE: 2874650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	578	548	95	80-120	

SAMPLE DUPLICATE: 2874651

Parameter	Units	40294388001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	760	758	0	10	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch: 503445

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

SAMPLE DUPLICATE: 2874647

Parameter	Units	40294388001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.5	1	20	H6

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch:	503541	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398003

METHOD BLANK: 2875114 Matrix: Water

Associated Lab Samples: 40294398003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/03/25 10:54	
Fluoride	mg/L	<0.095	0.32	05/03/25 10:54	
Sulfate	mg/L	<0.44	2.0	05/03/25 10:54	

LABORATORY CONTROL SAMPLE: 2875115

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	104	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	21.1	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875116 2875117

Parameter	Units	40294083004		2875116		2875117		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	386	386	200	200	562	558	88	86	90-110	1	15	M0
Fluoride	mg/L	<0.95	<0.95	20	20	20.1	20.2	100	101	90-110	1	15	
Sulfate	mg/L	75.7	75.7	200	200	294	293	109	109	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875118 2875119

Parameter	Units	40294198001		2875118		2875119		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	101	101	200	200	307	308	103	104	90-110	0	15	
Fluoride	mg/L	<0.95	<0.95	20	20	21.0	21.2	105	106	90-110	1	15	
Sulfate	mg/L	104	104	200	200	323	323	109	110	90-110	0	15	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch:	503542	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398001, 40294398002

METHOD BLANK: 2875121 Matrix: Water

Associated Lab Samples: 40294398001, 40294398002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/04/25 08:36	
Fluoride	mg/L	<0.095	0.32	05/04/25 08:36	
Sulfate	mg/L	<0.44	2.0	05/04/25 08:36	

LABORATORY CONTROL SAMPLE: 2875122

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.2	101	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	20.7	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875123 2875124

Parameter	Units	40294105001		2875123		2875124		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	21.7	20	20	20	42.0	42.2	101	103	90-110	1	15	
Fluoride	mg/L	0.19J	2	2	2	2.4	2.4	109	109	90-110	1	15	
Sulfate	mg/L	185	100	100	100	280	280	95	94	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875125 2875126

Parameter	Units	40294106004		2875125		2875126		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	2.7	20	20	20	23.6	23.6	105	105	90-110	0	15	
Fluoride	mg/L	0.45	2	2	2	2.6	2.6	106	107	90-110	1	15	
Sulfate	mg/L	16.7	20	20	20	37.8	38.0	106	107	90-110	0	15	

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch: 504242	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398004

METHOD BLANK: 2878786 Matrix: Water

Associated Lab Samples: 40294398004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/12/25 09:24	
Fluoride	mg/L	<0.095	0.32	05/12/25 09:24	
Sulfate	mg/L	<0.44	2.0	05/12/25 09:24	

LABORATORY CONTROL SAMPLE: 2878787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.2	101	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2878788 2878789

Parameter	Units	40294271001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	105J	2000	2000	2040	2080	97	99	90-110	2	15			
Fluoride	mg/L	<9.5	200	200	197	200	98	100	90-110	1	15			
Sulfate	mg/L	3750	2000	2000	5680	5580	97	92	90-110	2	15			

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

QC Batch:	503500	Analysis Method:	EPA 310.2
QC Batch Method:	EPA 310.2	Analysis Description:	310.2 Alkalinity
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

METHOD BLANK: 2874919 Matrix: Water
 Associated Lab Samples: 40294398001, 40294398002, 40294398003, 40294398004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	05/02/25 13:48	

LABORATORY CONTROL SAMPLE: 2874920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	92.7	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874921 2874922

Parameter	Units	40294271001		2874921		2874922		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	449	200	200	641	649	96	100	90-110	1	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874923 2874924

Parameter	Units	40294442011		2874923		2874924		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Alkalinity, Total as CaCO3	mg/L	<7.4	100	100	105	103	103	100	90-110	2	20		

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QUALIFIERS

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25225067 COLUMBIA CCR MOD10-13

Pace Project No.: 40294398

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40294398001	MW-317	EPA 3010A	503371	EPA 6020B	503515
40294398002	MW-318	EPA 3010A	503371	EPA 6020B	503515
40294398003	MW-319	EPA 3010A	503371	EPA 6020B	503515
40294398004	MW-318 DUP	EPA 3010A	503371	EPA 6020B	503515
40294398001	MW-317				
40294398002	MW-318				
40294398003	MW-319				
40294398004	MW-318 DUP				
40294398001	MW-317	SM 2540C	503446		
40294398002	MW-318	SM 2540C	503446		
40294398003	MW-319	SM 2540C	503446		
40294398004	MW-318 DUP	SM 2540C	503446		
40294398001	MW-317	EPA 9040	503445		
40294398002	MW-318	EPA 9040	503445		
40294398003	MW-319	EPA 9040	503445		
40294398004	MW-318 DUP	EPA 9040	503445		
40294398001	MW-317	EPA 300.0	503542		
40294398002	MW-318	EPA 300.0	503542		
40294398003	MW-319	EPA 300.0	503541		
40294398004	MW-318 DUP	EPA 300.0	504242		
40294398001	MW-317	EPA 310.2	503500		
40294398002	MW-318	EPA 310.2	503500		
40294398003	MW-319	EPA 310.2	503500		
40294398004	MW-318 DUP	EPA 310.2	503500		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS
Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Project #:

WO# : 40294398

 40294398

Tracking #: _____
Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
Custody Seal on Samples Present: yes no Seals intact: yes no
Packing Material: Bubble Wrap Bubble Bags None Other _____
Thermometer Used SR - 142 **Type of Ice:** Wet Blue Dry None Meltwater Only
Cooler Temperature Uncorr: 0.0 / Corr: 0.5

Temp Blank Present: yes no **Biological Tissue is Frozen:** yes no

Person examining contents:
 Date: 4/30/25 / Initials: EC
 Labeled By Initials: MB

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir
 Page 2 of 2

C8 July 2025 Laboratory Reports



July 30, 2025

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25225067 COLUMBIA CCR LF MODS
Pace Project No.: 40298679

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on July 18, 2025. 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 - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-21-8

Virginia VELAP Certification ID: 11873

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-21-00008

Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 25225067 COLUMBIA CCR LF MODS
Pace Project No.: 40298679

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40298679001	MW-33AR	Water	07/16/25 10:10	07/18/25 10:30
40298679002	MW-309	Water	07/17/25 11:45	07/18/25 10:30
40298679003	MW-310	Water	07/16/25 11:20	07/18/25 10:30
40298679004	FIELD BLANK-LF MODULES	Water	07/16/25 11:25	07/18/25 10:30

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SAMPLE ANALYTE COUNT

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40298679001	MW-33AR		SLV	7
		EPA 300.0	AJS1	1
40298679002	MW-309	EPA 6020B	SIS	1
			SLV	7
40298679003	MW-310	EPA 6020B	SIS	1
			SLV	7
40298679004	FIELD BLANK-LF MODULES	EPA 6020B	KXS	1
		EPA 300.0	AJS1	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Sample: MW-33AR Lab ID: 40298679001 Collected: 07/16/25 10:10 Received: 07/18/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.45	Std. Units			1		07/16/25 10:10		
Field Specific Conductance	890	umhos/cm			1		07/16/25 10:10		
Oxygen, Dissolved	9.7	mg/L			1		07/16/25 10:10	7782-44-7	
REDOX	44.4	mV			1		07/16/25 10:10		
Turbidity	4.12	NTU			1		07/16/25 10:10		
Static Water Level	786.07	feet			1		07/16/25 10:10		
Temperature, Water (C)	13.6	deg C			1		07/16/25 10:10		
300.0 IC Anions		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Sulfate	231	mg/L	20.0	4.4	10		07/21/25 20:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Sample: MW-309 Lab ID: 40298679002 Collected: 07/17/25 11:45 Received: 07/18/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	93.6	ug/L	10.0	3.0	1	07/21/25 08:44	07/22/25 14:28	7440-42-8	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.75	Std. Units			1		07/17/25 11:45		
Field Specific Conductance	2708	umhos/cm			1		07/17/25 11:45		
Oxygen, Dissolved	8.85	mg/L			1		07/17/25 11:45	7782-44-7	
REDOX	74.9	mV			1		07/17/25 11:45		
Turbidity	3.33	NTU			1		07/17/25 11:45		
Static Water Level	785.46	feet			1		07/17/25 11:45		
Temperature, Water (C)	13.6	deg C			1		07/17/25 11:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Sample: MW-310 Lab ID: 40298679003 Collected: 07/16/25 11:20 Received: 07/18/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay							
Boron	97.9	ug/L	10.0	3.0	1	07/21/25 08:44	07/22/25 14:33	7440-42-8	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	7.71	Std. Units			1		07/16/25 11:20		
Field Specific Conductance	906	umhos/cm			1		07/16/25 11:20		
Oxygen, Dissolved	9.75	mg/L			1		07/16/25 11:20	7782-44-7	
REDOX	29.6	mV			1		07/16/25 11:20		
Turbidity	21.03	NTU			1		07/16/25 11:20		
Static Water Level	785.45	feet			1		07/16/25 11:20		
Temperature, Water (C)	14.2	deg C			1		07/16/25 11:20		

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ANALYTICAL RESULTS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Sample: FIELD BLANK-LF MODULES Lab ID: 40298679004 Collected: 07/16/25 11:25 Received: 07/18/25 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	<3.0	ug/L	10.0	3.0	1	07/21/25 08:44	07/23/25 11:56	7440-42-8	
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Sulfate	<0.44	mg/L	2.0	0.44	1		07/21/25 20:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

QC Batch: 510746	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40298679002, 40298679003, 40298679004

METHOD BLANK: 2916231 Matrix: Water
 Associated Lab Samples: 40298679002, 40298679003, 40298679004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	07/23/25 11:52	

LABORATORY CONTROL SAMPLE: 2916232

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	230	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2916233 2916234

Parameter	Units	2916233		2916234		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40298648001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	ug/L	20.0	250	250	257	256	95	94	75-125	0	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.

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QUALITY CONTROL DATA

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

QC Batch: 510822	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40298679001, 40298679004

METHOD BLANK: 2916412 Matrix: Water

Associated Lab Samples: 40298679001, 40298679004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<0.44	2.0	07/21/25 17:59	

LABORATORY CONTROL SAMPLE: 2916413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	19.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2916414 2916415

Parameter	Units	2916414		2916415		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40298677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Sulfate	mg/L	50.3	400	400	463	462	103	103	90-110	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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QUALIFIERS

Project: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

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 LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

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 - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

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

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: 25225067 COLUMBIA CCR LF MODS

Pace Project No.: 40298679

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40298679002	MW-309	EPA 3010A	510746	EPA 6020B	510866
40298679003	MW-310	EPA 3010A	510746	EPA 6020B	510866
40298679004	FIELD BLANK-LF MODULES	EPA 3010A	510746	EPA 6020B	510866
40298679001	MW-33AR				
40298679002	MW-309				
40298679003	MW-310				
40298679001	MW-33AR	EPA 300.0	510822		
40298679004	FIELD BLANK-LF MODULES	EPA 300.0	510822		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: 40298679



40298679

Courier: CS Logistics Fed Ex Speedee UPS Purple Mountain
 Client Pace Other: _____

Tracking #: _____

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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used SR-142 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0.0 / Corr: 0.5

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:

Date: 7/18/25 / Initials: EL

Labeled By Initials: AK

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>(Pace Green Bay)</u> Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2



Appendix D

Historical Monitoring Results

Single Location

Name: WPL -
Columbia

Location ID: MW-33AR
Number of Sampling Dates: 30

Parameter Name	Units	12/21/2015	4/5/2016	7/7/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/7/2017	10/24/2017	4/24/2018	9/21/2018	10/22/2018	4/2/2019	10/8/2019	5/28/2020
Boron	ug/L	954	813	794	827	812	763	760	692	697	678	601	683	682	568	548	566
Calcium	ug/L	50000	48900	50500	79000	63100	57500	66800	80700	84800	98200	99800	--	66900	131000	121000	58400
Chloride	mg/L	10.6	12.5	12.5	52.5	39.6	41.4	47.1	68.1	105	119	188	32.6	14.4	229	153	15.9
Fluoride	mg/L	<0.2	<0.2	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.095
Field pH	Std. Units	7.87	8.08	7.68	8.23	7.63	8.62	8.19	7.78	7.47	7.81	7.74	8.16	7.69	7.72	7.74	7.59
Sulfate	mg/L	96.2	91.5	99.2	124	132	133	139	151	164	175	163	124	112	201	182	104
Total Dissolved Solids	mg/L	356	354	364	456	440	426	446	492	598	606	692	466	388	784	634	376
Antimony	ug/L	0.14	0.11	0.18	0.79	0.11	0.12	<0.073	<0.15	0.35	--	--	--	--	--	--	--
Arsenic	ug/L	0.46	0.38	0.52	1.2	0.32	0.45	0.31	0.36	0.59	--	--	--	--	--	--	--
Barium	ug/L	25.8	24.8	26.8	47.7	37.8	33.8	35.1	37.7	42.4	--	--	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	0.28	<0.13	<0.13	<0.13	<0.18	0.19	--	--	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	0.11	0.66	<0.089	<0.089	<0.089	<0.081	0.22	--	--	--	--	--	--	--
Chromium	ug/L	2.3	2.1	1.9	2.2	1.9	2	2.4	1.5	1.7	--	--	--	--	--	--	--
Cobalt	ug/L	<0.036	<0.036	0.13	0.68	0.039	0.065	<0.036	<0.085	0.23	--	--	--	--	--	--	--
Lead	ug/L	<0.04	<0.04	0.14	0.73	<0.04	0.046	<0.04	<0.2	0.35	--	--	--	--	--	--	--
Lithium	ug/L	1.3	1.3	1.1	2.8	1.4	1.3	1.2	1.4	1.4	--	--	--	--	--	--	--
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--
Molybdenum	ug/L	4.7	4.1	4.4	2.4	3.8	3.6	3	1.3	2.1	--	--	--	--	--	--	--
Selenium	ug/L	2.2	2	2.1	2.9	2	2.3	2.3	1.9	2.4	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	0.17	0.76	<0.14	<0.14	<0.14	<0.14	0.31	--	--	--	--	--	--	--
Total Radium	pCi/L	0.76	0.852	1.79	1.01	1.53	0.556	0.313	0.829	1.12	--	--	--	--	--	--	--
Radium-226	pCi/L	0.202	0.709	0.835	-0.209	0.834	0.314	0.166	0.3	0.426	--	--	--	--	--	--	--
Radium-228	pCi/L	0.558	0.143	0.951	1.01	0.698	0.242	0.147	0.529	0.698	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	607	417.6	583.4	1255	702	797	1165	689	823	804	1079	632	618.4	1312	1102	633.4
Oxygen, Dissolved	mg/L	10.6	9.67	3.82	9.98	9.41	6.46	9.98	10.7	8.1	9.5	3	10.33	9.88	10.22	12.19	10.35
Field Oxidation Potential	mV	269	176	39.9	67.7	73.5	193.9	833	101.5	152.1	191	33.8	2.9	136.9	129	165.1	199.4
Groundwater Elevation	feet	783.77	763.29	785.19	787.36	785.66	785.88	786.39	787.27	786.11	784.13	783.09	787.9	788.77	786.63	788.26	786.01
Temperature	deg C	11.6	10.1	11.9	13.2	12.2	11.3	10.3	10.9	12.3	12.5	10.9	13.8	13.6	10.3	12.8	10.7
Turbidity	NTU	--	1.37	0.57	0.45	0.44	0.23	0.45	0.68	0.32	3.24	0.61	3.79	4.69	2.71	2.13	0
pH at 25 Degrees C	Std. Units	7.8	7.8	7.7	7.6	7.6	7.6	8	7.8	7.4	7.7	7.7	7.8	7.8	7.6	7.6	7.6

Single Location

Name: WPL -
Columbia

Location ID: MW-33AR
Number of Sampling Dates: 30

Parameter Name	Units	10/8/2020	4/13/2021	6/11/2021	10/12/2021	4/12/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024	10/2/2024	11/5/2024	1/10/2025	4/21/2025	7/16/2025
Boron	ug/L	569	473	--	564	558	586	532	485	531	477	--	--	468	--
Calcium	ug/L	57100	51600	--	53700	80000	77000	55300	59400	64200	96400	--	--	85300	--
Chloride	mg/L	27.3	26.9	--	22.6	59	40.5	19	24.2	22.8	52.7	--	--	47.7	--
Fluoride	mg/L	<0.095	<0.095	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--	<0.48	--
Field pH	Std. Units	7.7	8.78	7.71	7.59	7.6	7.54	7.61	7.88	7.58	7.52	7.76	7.51	7.81	7.45
Sulfate	mg/L	97.4	94.3	--	96.4	155	153	104	139	165	224	--	250	236	231
Total Dissolved Solids	mg/L	270	362	--	374	506	440	394	448	452	620	558	--	542	--
Antimony	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	623.5	622	609	623.2	847	737	609.3	691	706	900	770	858	856	890
Oxygen, Dissolved	mg/L	9.31	10.11	11.42	--	9.62	8.91	11.71	9.11	9.5	7.77	8.46	8.78	86.6	9.7
Field Oxidation Potential	mV	160.4	125.3	85.3	90	198.2	101.2	176.7	131.2	40.4	158.3	45.1	-0.7	49.6	44.4
Groundwater Elevation	feet	785.91	784.27	784.19	783.73	783.27	781.94	785.79	782.57	783.02	787.33	785.98	785.35	783.71	786.07
Temperature	deg C	13.8	9.8	12.7	13.5	10.6	12.7	10.2	13.3	11	14.4	13.9	11.7	10.2	13.6
Turbidity	NTU	0	0.63	0	0	0	0	0.2	0.93	1.47	0	0.41	0	3.74	4.12
pH at 25 Degrees C	Std. Units	7.8	7.8	--	8	7.7	7.9	7.8	7.7	8.6	8.4	--	--	8.2	--

Single Location

Name: WPL -
Columbia

Location ID: MW-34A
Number of Sampling Dates: 30

Parameter Name	Units	12/21/2015	4/5/2016	7/7/2016	7/28/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/7/2017	10/24/2017	4/24/2018	9/21/2018	10/22/2018	4/2/2019
Boron	ug/L	230/205	220	216	--	212	224	214	214	201	205	208	209	241	233	204
Calcium	ug/L	65300/65200	63500	60000	--	55600	62800	58900	66300	66900	67300	69600	69600	--	70100	67500
Chloride	mg/L	4.9/4.8	5.1	5.6	--	6.8	7.1	7.2	6.2	7.8	7.4	7.6	8.2	17.1	19.9	18.7
Fluoride	mg/L	<0.2/<0.2	<0.2	<0.2	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1
Field pH	Std. Units	7.91	7.92	7.52	7.4	8.19	7.43	7.71	8.03	7.57	7.39	7.67	7.8	8.12	7.64	7.73
Sulfate	mg/L	69.9/71.3	71.6	63.4	--	54.8	63.9	71.2	87.6	106	105	98	144	141	123	70.4
Total Dissolved Solids	mg/L	300/324	298	304	--	288	242	310	330	366	358	340	412	460	392	310
Antimony	ug/L	<0.073/<0.073	<0.073	<0.073	--	0.59	<0.073	<0.073	<0.073	<0.15	<0.15	--	--	--	--	--
Arsenic	ug/L	0.2/0.2	0.35	0.26	--	0.87	0.23	0.36	0.29	<0.28	0.36	--	--	--	--	--
Barium	ug/L	15.8/11.1	9.1	9.4	--	9.9	9.5	8.9	11.6	9.9	10.2	--	--	--	--	--
Beryllium	ug/L	<0.13/<0.13	<0.13	<0.13	--	0.28	<0.13	<0.13	<0.13	<0.18	<0.18	--	--	--	--	--
Cadmium	ug/L	<0.089/<0.089	<0.089	<0.089	--	0.51	<0.089	<0.089	<0.089	<0.081	0.089	--	--	--	--	--
Chromium	ug/L	2.5/2.2	2	2.2	--	2.2	1.8	1.8	2.4	1.7	1.5	--	--	--	--	--
Cobalt	ug/L	0.29/0.13	0.048	0.16	--	0.53	<0.036	<0.036	0.18	<0.085	0.13	--	--	--	--	--
Lead	ug/L	0.38/0.18	0.046	0.18	--	0.61	0.049	<0.04	0.18	<0.2	<0.2	--	--	--	--	--
Lithium	ug/L	0.7/0.64	0.4	0.56	--	0.8	0.51	0.46	0.57	0.45	0.62	--	--	--	--	--
Mercury	ug/L	<0.1/<0.1	<0.1	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--
Molybdenum	ug/L	1.1/1.1	1.1	1.1	--	1.7	1.1	1	1.1	0.93	1.1	--	--	--	--	--
Selenium	ug/L	0.77/1	0.78	0.71	--	1.2	0.45	0.82	1.2	0.77	1.2	--	--	--	--	--
Thallium	ug/L	<0.14/<0.14	<0.14	<0.14	--	0.68	<0.14	<0.14	<0.14	<0.14	0.24	--	--	--	--	--
Total Radium	pCi/L	0.689 /0.696	0.869	--	0.788	0.602	0.509	0.477	0.215	0.373	0.348	--	--	--	--	--
Radium-226	pCi/L	0.585 /0.198	0.869	--	-0.132	0.256	-0.235	0.477	0	-0.29	0.0539	--	--	--	--	--
Radium-228	pCi/L	0.104 /0.498	-0.021	--	0.788	0.346	0.509	-0.459	0.215	0.373	0.294	--	--	--	--	--
Field Specific Conductance	umhos/cm	517	386.9	494.3	503.6	819	490	470.9	843	499.1	510.6	454	581.4	578	607.7	531.7
Oxygen, Dissolved	mg/L	10	9.38	3.96	5.11	10.33	9.9	9.83	9.96	10.27	8.02	9.9	2.45	10.54	10.62	10.22
Field Oxidation Potential	mV	255	163.5	28.8	130.8	77.5	72.9	17.9	82.5	109.3	144.8	207	38.3	-2.6	118.8	104.4
Groundwater Elevation	feet	783.5	795.16	785.05	784.86	786.45	785.72	785.98	786.3	786.66	785.81	784.5	781.77	787.01	787.88	786.82
Temperature	deg C	11.7	10.9	10.8	10.9	12.2	12.3	12.3	11	11	11.5	11.7	11	12.45	12.7	10.6
Turbidity	NTU	--	4.08	6.3	4.96	2.27	0.95	2.09	15.96	3.7	2.68	14.34	2.72	24.9	9.32	64.77
pH at 25 Degrees C	Std. Units	7.7/7.7	7.7	7.4	--	7.6	7.4	7.3	7.9	7.7	7.8	7.7	7.7	7.7	7.8	7.7

Single Location

Name: WPL -
Columbia

Location ID: MW-34A
Number of Sampling Dates: 30

Parameter Name	Units	10/8/2019	5/28/2020	10/8/2020	2/25/2021	4/13/2021	6/11/2021	10/12/2021	4/12/2022	10/27/2022	4/26/2023	10/11/2023	4/17/2024	7/29/2024	10/2/2024	4/21/2025
Boron	ug/L	207	210	213	--	203	--	212	237	264	220	237	265	214	219	224
Calcium	ug/L	78800	58700	61300	--	61600	--	58100	77000	87300	49600	59000	58500	--	57900	59400
Chloride	mg/L	57.9	3.9	2.1	--	2.3	--	1.9	2.2	2.2	2	2.7	2.2	--	5.4	8.7
Fluoride	mg/L	<0.1	<0.095	<0.095	--	<0.095	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	<0.095	<0.095
Field pH	Std. Units	7.79	7.4	7.81	7.57	7.93	7.61	7.68	8.34	7.53	7.53	7.78	7.4	7.69	7.64	7.8
Sulfate	mg/L	39.8	44.4	58.7	--	59.3	--	56.1	146	169	48.4	43.6	51.5	--	57.5	78.7
Total Dissolved Solids	mg/L	314	284	306	--	290	--	278	402	436	302	302	278	--	278	300
Antimony	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	572.9	459	464.2	--	472.6	472.7	478.1	577	648	465.8	457.3	472.6	470.6	476.2	522.5
Oxygen, Dissolved	mg/L	11.71	10.12	9.88	--	10.47	11.77	10.1	7.82	8.46	9.87	8.32	8.57	9.69	9.1	94.2
Field Oxidation Potential	mV	150.9	198.5	143.2	--	118.8	73.4	72.6	112.6	38.8	124.4	122.4	44.4	96.7	156.1	50.3
Groundwater Elevation	feet	787.92	785.98	785.7	--	784.77	784.66	784.42	784.3	783.61	786.22	783.55	784.14	787.29	786.79	783.15
Temperature	deg C	13.4	11.1	12.9	--	10.3	12.2	13	11.4	12.6	10.9	13	11.3	11.7	12.9	11.3
Turbidity	NTU	52.88	84.51	55	--	36.34	9.72	21.13	4.39	1.76	2.11	1.05	3.65	2.44	0.86	1.09
pH at 25 Degrees C	Std. Units	7.7	7.6	7.7	--	7.8	--	7.8	7.8	7.7	7.8	7.7	8.6	--	8.4	8.2

Single Location

Name: WPL -
Columbia

Location ID: MW-84A
Number of Sampling Dates: 28

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	7/28/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/24/2017	4/25/2018	8/8/2018	10/24/2018	4/3/2019
Boron	ug/L	11.9	14	14.7	--	11.1	14.7	16.1	12.9	14.8	22.9	13.8	25	12.8	10.1	13.6
Calcium	ug/L	74000	72200	67600	--	74000	76000	70800	73200	76100	74900	77500	76600	76000	74000	80100
Chloride	mg/L	4.9	4.7	5.1	--	4.3	4.7	4.6	4.9	5.5	5.5	5.1	4.8	4.9	4.2	3.6
Fluoride	mg/L	<0.2	<0.2	<0.2	--	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Field pH	Std. Units	7.6	7.61	7.45	7.34	7.91	7.25	6.99	7.8	7.28	7.23	7.68	7.45	7.38	7.24	7.03
Sulfate	mg/L	4.9	4.3	3.7	--	2.6	2.7	3	2.8	2.7	2	2.2	2.8	1.9	1.6	1.4
Total Dissolved Solids	mg/L	316	322	316	--	324	316	328	342	344	342	314	328	372	330	318
Antimony	ug/L	<0.073	0.084	0.1	--	<0.073	<0.073	<0.073	<0.073	<0.15	<0.15	--	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.15	0.29	0.14	--	0.35	0.19	0.35	<0.099	<0.28	0.28	--	<0.28	<0.28	0.33	<0.28
Barium	ug/L	15.3	12.7	12.2	--	14.2	18.4	13.8	14.1	13.4	14	--	14.6	13.7	14.5	14.7
Beryllium	ug/L	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18
Cadmium	ug/L	<0.089	<0.089	<0.089	--	<0.089	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	<0.15
Chromium	ug/L	2.5	1.9	1.8	--	2	2	1.9	2.4	2	1.6	--	2.4	1.5	1.6	1.8
Cobalt	ug/L	0.095	<0.036	0.053	--	<0.036	<0.036	<0.036	<0.036	<0.085	<0.085	--	<0.085	<0.085	<0.12	<0.12
Lead	ug/L	0.16	<0.04	0.39	--	0.049	0.11	<0.04	0.041	<0.2	<0.2	--	<0.2	--	<0.24	<0.24
Lithium	ug/L	0.72	0.44	0.5	--	0.56	0.56	0.56	0.55	0.46	0.58	--	0.5	0.4	0.49	0.56
Mercury	ug/L	<0.1	<0.1	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084
Molybdenum	ug/L	<0.07	<0.07	0.073	--	0.12	<0.07	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.21	<0.21	<0.21	--	<0.21	<0.21	<0.21	<0.21	<0.32	<0.32	--	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.593	0.0809	--	1.37	0.825	0.404	1.39	0.0929	0.676	0.509	--	0.526	0.529	0.62	0.681
Radium-226	pCi/L	0.156	-0.088	--	-0.058	0.132	0.168	0.624	0.0768	0.27	0.242	--	0.155	-0.203	0.313	0.199
Radium-228	pCi/L	0.437	0.0809	--	1.37	0.693	0.236	0.766	0.0161	0.406	0.267	--	0.371	0.529	0.307	0.482
Field Specific Conductance	umhos/cm	599	427	574.8	579.3	1002	578.2	489	948	535.3	557.2	491	581.7	617.1	609	637.2
Oxygen, Dissolved	mg/L	9.7	9.37	3.78	5.11	9.61	8.94	6.48	9.28	9.46	7.5	9.3	3.94	8.84	10.01	9.49
Field Oxidation Potential	mV	154	165.1	139.9	138.3	82.7	87	192.9	102	123.6	204.7	210	53.3	142.7	71.5	103.4
Groundwater Elevation	feet	785.31	786.3	785.89	785.61	787.22	786.63	786.7	787.16	787.63	786.68	785.32	785.88	786.55	788.32	787.35
Temperature	deg C	10.4	10.2	11.3	11	11.5	10.8	10.9	10.6	11.3	11.2	11.1	10.2	12	11.6	10.2
Turbidity	NTU	--	0.86	2.75	0.17	0.3	0.25	0.33	0.04	0.56	0.08	2.93	0.81	0.71	3.79	1.9
pH at 25 Degrees C	Std. Units	7.5	7.4	7.4	--	7.3	7.4	7.3	7.7	7.6	7.4	7.6	7.6	7.4	7.5	7.4

Single Location

Name: WPL -
Columbia

Location ID: MW-84A
Number of Sampling Dates: 28

Parameter Name	Units	10/9/2019	2/3/2020	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024	10/2/2024	4/22/2025
Boron	ug/L	12	15.7	10	9.7	14.3	11.1	10.5	12.2	10.3	14	11.9	10.3	10
Calcium	ug/L	73500	72700	77600	69200	69100	75300	75100	78400	68600	65100	73700	73300	70000
Chloride	mg/L	3.9	3.7	3.7	4.3	4.4	3.5	5.2	3.4	3	3.1	3.2	3.3	3
Fluoride	mg/L	<0.1	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	0.12	<0.095	<0.095
Field pH	Std. Units	7.23	7.51	7.34	7.49	7.34	7.42	7.34	7.31	7.01	7.51	7.68	7.36	7.07
Sulfate	mg/L	1.3	<2.2	1.5	1.3	1.4	1.3	1.4	1.1	1.3	1.4	1.4	1.8	1.7
Total Dissolved Solids	mg/L	310	316	340	320	328	326	334	302	326	324	322	318	324
Antimony	ug/L	<0.15	--	<0.15	<0.15	0.55	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.46	0.38	0.34	0.49	0.91	0.41	0.31	0.72	<0.28	<0.28	0.29	<0.28	<0.28
Barium	ug/L	13.2	14	13.9	12.6	13.4	12.9	13.5	13.7	12.6	12.7	14.4	13.6	13.5
Beryllium	ug/L	<0.25	--	<0.25	<0.25	0.47	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	--	<0.15	<0.15	0.53	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	1.6	1.6	1.7	1.6	2.6	1.9	2.2	2.2	1.7	1.6	2.1	1.7	1.9
Cobalt	ug/L	<0.12	<0.12	<0.12	<0.12	0.52	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Lead	ug/L	<0.24	--	<0.24	<0.24	0.55	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.52	0.58	0.4	0.39	1	0.28	0.36	0.41	0.71	0.54	0.67	0.57	0.41
Mercury	ug/L	<0.084	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	<0.44	0.62	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	0.48	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.66	0.19	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.247	0.1	0.395	0.39	0.285	0.243	0.611	0.673	0.326	0.844	--	0.668	0.249
Radium-226	pCi/L	0.247	0.1	0.368	0	-0.289	0	0.254	0.267	0	0.292	--	0	-0.21
Radium-228	pCi/L	-0.024	-0.153	0.0273	0.39	0.285	0.243	0.357	0.406	0.326	0.552	--	0.668	0.249
Field Specific Conductance	umhos/cm	614.1	618.4	613.7	610.1	610.9	598.9	600.2	585.2	556.6	599.9	588.1	502.7	587.6
Oxygen, Dissolved	mg/L	11.36	8.43	9.81	9.39	9.8	9.25	9.33	8.31	9.37	8.44	7.82	8.73	7.42
Field Oxidation Potential	mV	181.7	121.5	135	153.2	95.6	89.7	200.6	39.9	103.4	91.2	0	65.1	93.8
Groundwater Elevation	feet	787.79	786.5	787.02	786.1	785.84	784.96	785.02	784.57	786.97	784.39	784.9	787.14	786.33
Temperature	deg C	11.8	10.3	10.6	11.9	10.2	12.5	9.9	11.7	10.7	12.3	11	12.4	10.8
Turbidity	NTU	2.41	1.23	2.15	0	2.45	3.41	0	0	0.72	0.03	0	2.55	0
pH at 25 Degrees C	Std. Units	7.5	7.4	7.6	7.6	7.6	7.8	7.6	7.4	7.6	7.6	8.2	8.4	8

Single Location

Name: WPL -
Columbia

Location ID: MW-301
Number of Sampling Dates: 27

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/23/2017	4/25/2018	8/8/2018	10/24/2018	4/2/2019	10/9/2019
Boron	ug/L	26.5	25.2	23.6	30.6	32.8	32.6	28.8	21.3	30.6	34.3	24.3	22.8	27.8	26.9	35.9
Calcium	ug/L	126000	115000	108000	118000	129000	124000	120000	111000	108000	87200	112000	105000	101000	126000	114000
Chloride	mg/L	3.7	4	3.5	2.2	2	1.5	2	3.5	5.5	4	2.3	5.2	3.2	0.79	1.7
Fluoride	mg/L	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Field pH	Std. Units	6.85	7.01	6.87	7.28	6.63	7.1	7.11	6.7	6.75	7.37	6.76	6.91	6.79	6.62	6.67
Sulfate	mg/L	9.3	15.3	15	13.9	12.3	6.5	10.3	17.1	31.6	27.5	8.6	21.6	19.2	4.4	8.4
Total Dissolved Solids	mg/L	478	486	464	490	444	514	502	458	462	362	464	502	424	462	418
Antimony	ug/L	0.15	0.094	0.13	<0.073	0.4	<0.073	<0.073	<0.15	<0.15	--	<0.15	0.36	<0.15	0.32	<0.15
Arsenic	ug/L	0.26	0.26	0.19	0.24	0.4	0.13	0.18	<0.28	<0.28	--	<0.28	0.45	<0.28	0.4	0.42
Barium	ug/L	20.2	11.1	11.6	15.6	15	13.5	13.2	11.3	11.8	--	9.3	10.2	11.5	11.8	10
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	0.19	<0.13	<0.13	<0.18	<0.18	--	<0.18	0.37	<0.18	0.28	<0.25
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	0.32	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	0.21	<0.15
Chromium	ug/L	2.1	0.58	0.59	<0.39	0.7	0.53	0.7	2.3	<1	--	<1	<1	<1	<1	<1
Cobalt	ug/L	1.4	0.25	0.22	0.041	0.38	0.071	0.064	0.13	0.12	--	<0.085	0.28	<0.12	0.35	<0.12
Lead	ug/L	0.9	0.077	0.48	<0.04	0.34	<0.04	<0.04	<0.2	<0.2	--	<0.2	--	<0.24	0.3	<0.24
Lithium	ug/L	1.3	0.58	0.69	0.6	0.87	0.67	0.68	0.62	0.6	--	0.55	0.85	0.52	0.9	0.61
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	<0.084
Molybdenum	ug/L	0.35	0.15	0.14	0.12	0.38	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	0.3	0.21	0.39	<0.21	0.26	<0.21	<0.21	<0.32	<0.32	--	<0.32	0.71	<0.32	0.49	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.48	<0.14	<0.14	<0.14	<0.14	--	<0.14	0.3	<0.14	0.48	<0.14
Total Radium	pCi/L	1.31	1.11	0.89	0.631	1.01	2.42	1.35	1.3	1.74	--	0.882	0.0351	0.652	0.552	0.701
Radium-226	pCi/L	0.655	0.294	0.404	-0.067	0.108	1.46	0.513	0.287	1.09	--	0.122	-0.06	0.247	0	0.252
Radium-228	pCi/L	0.651	0.82	0.486	0.631	0.905	0.964	0.833	1.01	0.647	--	0.76	0.0351	0.405	0.552	0.449
Field Specific Conductance	umhos/cm	897	573	796	1464	859	1018	1354	698.4	691.7	561	774	799	767	883	801
Oxygen, Dissolved	mg/L	1.7	2.71	1.47	1.99	1.34	1.24	1.44	1.81	1.43	1.1	2.35	2.14	2.49	2.2	1.67
Field Oxidation Potential	mV	135	123.7	133.9	100.8	95.8	226.1	100.9	115.1	187.4	204	74.3	126.5	77.9	152.1	173
Groundwater Elevation	feet	785.56	768.12	786.31	787.64	787.37	787.27	787.89	788.25	787.34	785.89	785.29	787.06	788.98	787.04	788.47
Temperature	deg C	9.7	7.7	10	11.2	10.1	8.8	7.7	8.9	10.2	11.1	7.4	10.6	11.1	7.5	11.3
Turbidity	NTU	--	1.52	3.89	0.59	0.74	0.42	0.1	0.22	0.18	1.52	1.12	0.46	3.3	2.02	2.12
pH at 25 Degrees C	Std. Units	7	7	6.8	6.8	6.9	6.9	7.1	7	7	7.3	7	7	7.1	6.8	7

Single Location

Name: WPL -
Columbia

Location ID: MW-301
Number of Sampling Dates: 27

Parameter Name	Units	2/3/2020	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024	10/2/2024	4/22/2025
Boron	ug/L	27.9	21.3	28.8	22.2	31.4	28.7	37.5	20.1	36.2	24.9	22.1	25.5
Calcium	ug/L	113000	112000	93000	117000	67800	97300	62800	120000	52300	102000	97000	108000
Chloride	mg/L	1.3	2	3.4	1.5	2.7	1.9	2.3	1.5	2.1	1.6	1.5	1.4
Fluoride	mg/L	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	0.13	<0.095
Field pH	Std. Units	6.89	6.73	6.95	6.66	7.01	6.6	6.8	6.65	7.06	7.06	6.85	6.59
Sulfate	mg/L	7.2	11.5	25.1	8.5	17.4	12.7	11.6	12.3	11.8	11.5	10.4	8.2
Total Dissolved Solids	mg/L	462	452	412	472	334	422	282	526	300	458	410	468
Antimony	ug/L	--	<0.15	0.33	<0.15	<0.15	0.31	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	<0.28	0.33	0.62	<0.28	0.35	0.47	0.3	<0.28	<0.28	<0.28	<0.28	<0.28
Barium	ug/L	10.9	9.8	9.4	8.9	7.7	7.8	7.5	9.8	7.3	8.1	10.6	10.2
Beryllium	ug/L	--	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	--	<0.15	0.19	<0.15	<0.15	0.3	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	0.17	<0.12	0.29	<0.12	0.34	0.32	0.52	<0.12	0.13	<0.12	<0.12	<0.12
Lead	ug/L	--	<0.24	0.25	<0.24	<0.24	3.1	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.67	0.47	0.46	0.58	0.46	0.56	0.37	0.62	0.43	0.63	0.8	0.57
Mercury	ug/L	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.39	<0.32
Thallium	ug/L	<0.14	<0.14	0.3	<0.14	0.17	0.32	<0.14	<0.14	<0.14	<0.14	0.15	<0.14
Total Radium	pCi/L	0.502	0.193	0.38	1.16	0.172	0.179	0.00292	0.417	0.611	1.04	0.833	0.483
Radium-226	pCi/L	0.136	0	0.0511	0.418	0.172	0	-0.169	0	-0.0576	0.252	0.102	0.114
Radium-228	pCi/L	0.366	0.193	0.329	0.739	-0.0327	0.179	0.00292	0.417	0.611	0.787	0.731	0.369
Field Specific Conductance	umhos/cm	868	797	760	857	597.2	747	507.5	857	536	781	602.4	827
Oxygen, Dissolved	mg/L	1.07	2	1.22	3.9	0.25	2.47	0.1	6.5	0.16	2.53	2.77	3.11
Field Oxidation Potential	mV	132.3	118.7	183.9	102.9	57.8	207.5	80.9	95.3	23.8	17.9	68.1	106.7
Groundwater Elevation	feet	787.24	787.77	786.53	786.5	785.28	785.44	784.91	787.57	784.67	785.27	787.92	787.41
Temperature	deg C	8.5	8.1	11	7.4	11.1	7.1	10.8	8	10.7	8.6	11.7	8
Turbidity	NTU	1.41	0	0	2.41	3.21	0	0	0	0.34	0	1.84	8.64
pH at 25 Degrees C	Std. Units	6.8	7	7.2	6.9	7.3	7	7.1	6.9	7.2	7.9	8.2	7.7

Single Location

Name: WPL -
Columbia

Location ID: MW-302
Number of Sampling Dates: 27

Parameter Name	Units	12/22/2015	4/5/2016	7/7/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/24/2017	4/24/2018	9/21/2018	10/22/2018	4/2/2019	10/9/2019	5/29/2020
Boron	ug/L	80	78.8	134	132	106	149	322	671	833	691	1950	203	296	254	246	611
Calcium	ug/L	68800	65900	66900	71700	76100	75400	79600	88900	87100	94400	110000	--	56900	62400	61400	90500
Chloride	mg/L	4.2	4.1	3.1	1.1	1.2	1.6	1.6	3.5	4.5	6.9	15	1.7	1.8	1.5	1.1	1.2
Fluoride	mg/L	<0.2	<0.2	<0.2	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.095
Field pH	Std. Units	7.63	7.7	7.29	7.72	7.12	8.21	7.63	7.16	7.04	8.23	7.21	7.74	7.22	7.32	7.08	7.2
Sulfate	mg/L	37.4	55.6	35.4	64.7	56.4	61.6	81.3	84.6	79	78.4	109	30	26.9	25.2	16.7	34.6
Total Dissolved Solids	mg/L	312	312	344	360	330	384	436	466	470	446	598	280	288	290	274	404
Antimony	ug/L	0.17	0.092	0.2	0.14	0.14	0.17	<0.073	<0.15	<0.15	--	--	--	--	--	--	--
Arsenic	ug/L	<0.099	0.17	0.23	0.2	<0.099	0.24	<0.099	<0.28	<0.28	--	--	--	--	--	--	--
Barium	ug/L	14.3	9.7	14.6	16.4	16.9	17.8	20.3	22	22.2	--	--	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	--	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	0.14	<0.089	<0.089	<0.089	<0.089	<0.081	<0.081	--	--	--	--	--	--	--
Chromium	ug/L	2.3	3.3	2.7	1.7	2.4	2.6	2.7	2.3	2	--	--	--	--	--	--	--
Cobalt	ug/L	0.11	0.11	0.2	<0.036	0.079	0.083	0.08	<0.085	<0.085	--	--	--	--	--	--	--
Lead	ug/L	0.1	0.084	0.24	<0.04	0.073	0.075	0.047	<0.2	<0.2	--	--	--	--	--	--	--
Lithium	ug/L	17.1	13.7	4.5	3	3.3	3.2	2.7	2.2	2.4	--	--	--	--	--	--	--
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	--	--	--	--	--
Molybdenum	ug/L	8.9	8	2.4	1.6	1.6	1.6	1.5	1.3	1.6	--	--	--	--	--	--	--
Selenium	ug/L	2.8	2.7	1.8	1.2	2	1.6	2.5	2	2.4	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	0.24	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	--	--	--	--	--	--
Total Radium	pCi/L	0.184	0.505	1.21	0.4	0.252	2.6	0.555	1.45	0.731	--	--	--	--	--	--	--
Radium-226	pCi/L	0.184	0.1	-0.358	0.208	-0.103	1.37	0.077	0.649	0.193	--	--	--	--	--	--	--
Radium-228	pCi/L	-0.028	0.405	1.21	0.192	0.252	1.23	0.478	0.802	0.538	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	566	383.6	578	1006	588.9	726	1114	641.8	679	596	894	461	507.6	538.6	515.4	694.7
Oxygen, Dissolved	mg/L	6.8	9.7	3.7	9.37	8.5	6.22	9.53	9.91	7.4	8.7	2.8	9.82	9.34	9.65	11.38	10
Field Oxidation Potential	mV	132	198.6	80	96.3	88.9	223.4	107.4	130.4	191.1	220	49.1	56	135.1	126.7	134.5	169.2
Groundwater Elevation	feet	784.78	778.91	786.28	787.76	787.05	786.89	787.55	788.37	787.55	785.94	784.37	788.37	789.16	787.56	788.31	787.29
Temperature	deg C	10.6	9.8	11.2	12.2	11.1	10.4	9.5	10.1	11.4	11.4	10.7	12.45	13.1	9.8	12.6	9.8
Turbidity	NTU	--	9.69	2.08	0.81	1.78	1.26	1.68	1.9	0.83	2.61	3.42	5.26	5.23	9.72	2.01	2.88
pH at 25 Degrees C	Std. Units	7.5	7.6	7.3	7.2	7.1	7.8	7.6	7.5	7.4	7.2	7.4	7.4	7.3	7.4	7.4	7.4

Single Location

Name: WPL -
Columbia

Location ID: MW-302
Number of Sampling Dates: 27

Parameter Name	Units	10/8/2020	4/13/2021	10/14/2021	4/12/2022	10/27/2022	4/27/2023	8/31/2023	10/11/2023	4/17/2024	10/2/2024	4/22/2025
Boron	ug/L	648	521	495	389	374	541	--	309	442	290	379
Calcium	ug/L	80600	82400	84100	91600	91200	66500	--	70800	77800	63600	66700
Chloride	mg/L	1.1	1.4	1.3	0.79	2.1	1.3	--	1.6	1.1	1.9	0.83
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	0.1	0.12	<0.095	<0.095
Field pH	Std. Units	7.21	7.51	7.07	7.21	7.25	7.36	7.33	7.4	7.67	7.32	7.18
Sulfate	mg/L	36.5	36.9	37.8	22.1	30.3	36.6	--	19.9	26.8	57.9	30
Total Dissolved Solids	mg/L	378	370	394	398	348	352	--	354	344	262	338
Antimony	ug/L	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--	3.3	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	643.1	661.3	663.7	677.1	616.1	605.2	566.8	559.4	606.6	422.7	554.8
Oxygen, Dissolved	mg/L	9.21	9.92	8.07	8.74	8.6	10.91	11.98	9.93	8.58	7.91	7.35
Field Oxidation Potential	mV	152.7	127	149.1	197.1	38.2	144.7	259	152.5	29.6	53	103.6
Groundwater Elevation	feet	786.74	785.77	785.09	784.42	784.62	786.87	785.3	784.65	784.49	788.35	787.05
Temperature	deg C	11.8	9.6	11.5	9.5	11.6	9.7	11.9	11.8	10.2	13.3	10.6
Turbidity	NTU	0	2.6	2.54	3.92	0	1.82	3.87	0.15	4.17	3.81	17.15
pH at 25 Degrees C	Std. Units	7.6	7.4	7.7	7.4	7.4	7.7	--	7.4	8.5	8.3	8.1

Single Location

Name: WPL -
Columbia

Location ID: MW-309
Number of Sampling Dates: 33

Parameter Name	Units	2/21/2018	3/23/2018	4/23/2018	5/24/2018	6/23/2018	7/23/2018	8/22/2018	9/21/2018	10/22/2018	4/2/2019	10/8/2019	5/29/2020	6/30/2020	8/6/2020	10/8/2020	12/11/2020
Boron	ug/L	31.4	31	30.4	28	26.6	35.5	40.5	30	--	37.4	33.4	54.6	50.7	55.3	57.7	65.9
Calcium	ug/L	42700	41800	39600	52700	67600	63800	93600	55200	--	45300	46900	51600	--	--	65300	--
Chloride	mg/L	147	157	157	141	203	557	811	329	--	145	43.2	350	--	--	575	--
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	--	<0.1	<0.1	<0.095	--	--	<0.095	--
Field pH	Std. Units	7.84	8.08	7.71	7.59	7.5	7.55	7.53	7.83	7.56	7.49	7.75	7.35	7.33	7.72	7.33	7.42
Sulfate	mg/L	12.2	12.2	12	17.5	24.1	33.1	43.3	35.9	--	35.2	21.9	28.6	--	--	21.8	--
Total Dissolved Solids	mg/L	576	552	562	478	548	1210	1570	830	--	548	370	960	--	--	1160	--
Antimony	ug/L	0.28	<0.15	0.36	0.24	0.76	0.31	0.57	<0.15	--	--	--	--	--	--	--	--
Arsenic	ug/L	<0.28	0.35	0.77	<0.28	0.56	0.55	0.46	<0.28	--	--	--	--	--	--	--	--
Barium	ug/L	24.1	22.2	21.3	15.3	18.3	31.2	46.2	22.2	--	--	--	--	--	--	--	--
Beryllium	ug/L	0.21	<0.18	0.2	<0.18	0.38	<0.18	<0.18	<0.18	--	--	--	--	--	--	--	--
Cadmium	ug/L	0.11	<0.081	0.27	<0.081	0.58	0.23	0.3	<0.15	--	--	--	--	--	--	--	--
Chromium	ug/L	2.3	1.9	2.3	1.9	2.2	<1	2.6	1.3	--	--	--	--	--	--	--	--
Cobalt	ug/L	0.5	0.18	0.39	0.11	0.54	0.29	0.35	<0.12	--	--	--	--	--	--	--	--
Lead	ug/L	0.66	<0.2	0.39	<0.2	0.76	0.34	0.39	<0.24	--	--	--	--	--	--	--	--
Lithium	ug/L	1.4	0.88	1.1	0.77	1.1	0.88	1.1	0.76	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.084	<0.084	--	--	--	--	--	--	--
Molybdenum	ug/L	2.1	2.6	2	<0.44	0.7	0.47	<0.44	<0.44	--	--	--	--	--	--	--	--
Selenium	ug/L	0.39	0.37	0.6	0.41	1.1	0.51	0.39	0.33	--	--	--	--	--	--	--	--
Thallium	ug/L	0.16	<0.14	0.83	<0.14	0.57	0.42	0.38	<0.14	--	--	--	--	--	--	--	--
Total Radium	pCi/L	0.516	1.25	1.13	0.895	0.673	1.74	0.754	0.569	--	--	--	--	--	--	--	--
Radium-226	pCi/L	0.486	0.815	0.539	0.0638	-0.208	0.334	0.232	0.569	--	--	--	--	--	--	--	--
Radium-228	pCi/L	0.03	0.431	0.595	0.831	0.673	1.41	0.522	-0.304	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	983	1094	985	921	1057	2290	2948	1423	1424	1041	687	1785	1726	1656	2222	2227
Oxygen, Dissolved	mg/L	11.4	6.74	5.43	8.76	9.93	9.27	7.26	10.75	10.23	9.79	11.52	9.83	9.71	9.05	9.4	8.08
Field Oxidation Potential	mV	45.4	123	94.2	54.5	89.9	163.8	106.4	65.5	157.1	120.1	125.2	230.6	65.7	224.2	147.7	112.2
Groundwater Elevation	feet	783.2	783.11	783.07	785.45	786.03	786.27	785.54	787.08	787.99	786.3	787.26	785.98	786.18	785.93	785.47	785.26
Temperature	deg C	10.3	10.6	11	12.1	12	13.3	13.4	12.72	13.3	10.1	13	11	13.3	12.9	12.9	11.8
Turbidity	NTU	4.84	28.88	4.76	3.35	1.94	2.73	2.09	3.18	2.81	1.25	4.89	1.74	3.74	3.56	0	0
pH at 25 Degrees C	Std. Units	7.8	8	7.9	7.6	7.6	7.7	7.8	7.7	--	7.7	7.7	8	--	--	7.7	--

Single Location

Name: WPL -
Columbia

Location ID: MW-309
Number of Sampling Dates: 33

Parameter Name	Units	4/13/2021	6/11/2021	10/14/2021	12/21/2021	4/12/2022	10/26/2022	11/30/2022	4/26/2023	6/29/2023	10/9/2023	11/9/2023	4/15/2024	6/4/2024	10/1/2024	11/5/2024	4/21/2025
Boron	ug/L	48	49.9	42.9	36.4	32.5	46.6	49.3	50.8	59.4	41.5	--	38.7	--	72.1	72.3	102
Calcium	ug/L	62300	--	83100	--	80200	162000	153000	35500	--	66800	--	82600	--	105000	--	35900
Chloride	mg/L	390	--	519	--	319	796	--	372	--	259	--	391	--	971	743	386
Fluoride	mg/L	<0.095	--	<0.095	--	<0.095	<0.095	--	<0.095	--	<0.095	--	<0.095	--	<4.8	--	<0.95
Field pH	Std. Units	7.68	7.71	7.64	7.45	7.64	7.23	7.3	7.61	7.72	7.43	7.25	7.27	7.55	7.64	7.77	7.55
Sulfate	mg/L	30.3	--	27.7	--	17.9	28.9	--	143	147	80.6	89	75.1	68.8	142	131	75.7
Total Dissolved Solids	mg/L	916	--	1110	--	764	1670	--	1250	--	858	--	948	--	2180	1630	1160
Antimony	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	1804	3072	2079	1382	1420	2591	2746	2073	3282	1553	1330	1620	2328	3454	2634	2021
Oxygen, Dissolved	mg/L	10.14	11.21	9.27	9.33	7.66	8.49	8.97	10.96	9.22	9.9	7.45	8.91	9.2	7.84	8.02	10.07
Field Oxidation Potential	mV	124.1	67.2	85.8	142.9	111.7	41	155.5	107	217.1	87.2	169	46.1	121.6	131.6	-138.7	105.7
Groundwater Elevation	feet	784.29	784.2	783.65	782.93	783.14	781.5	781.62	785.05	784.12	782.58	782.76	782.79	784.27	786.46	785.66	785.17
Temperature	deg C	10.7	13.3	13.2	11.17	11.5	12.9	7.7	10.8	13.9	12.5	13.5	12.5	14.3	13.5	13.9	10.2
Turbidity	NTU	2.8	0.1	9.06	2.67	7.83	1.81	0.31	1.9	0	9.11	1.6	4.93	0.99	2.24	2.55	0.01
pH at 25 Degrees C	Std. Units	7.7	--	7.8	--	7.6	7.5	--	7.9	--	7.7	--	8.4	--	8.3	--	8.3

Single Location

Name: WPL -
Columbia

Location ID: MW-309
Number of Sampling Dates: 33

Parameter Name	Units	7/17/2025
Boron	ug/L	93.6
Calcium	ug/L	--
Chloride	mg/L	--
Fluoride	mg/L	--
Field pH	Std. Units	7.75
Sulfate	mg/L	50.3
Total Dissolved Solids	mg/L	--
Antimony	ug/L	--
Arsenic	ug/L	--
Barium	ug/L	--
Beryllium	ug/L	--
Cadmium	ug/L	--
Chromium	ug/L	--
Cobalt	ug/L	--
Lead	ug/L	--
Lithium	ug/L	--
Mercury	ug/L	--
Molybdenum	ug/L	--
Selenium	ug/L	--
Thallium	ug/L	--
Total Radium	pCi/L	--
Radium-226	pCi/L	--
Radium-228	pCi/L	--
Field Specific Conductance	umhos/cm	2708
Oxygen, Dissolved	mg/L	8.85
Field Oxidation Potential	mV	74.9
Groundwater Elevation	feet	785.46
Temperature	deg C	13.6
Turbidity	NTU	3.33
pH at 25 Degrees C	Std. Units	--

Single Location

Name: WPL -
Columbia

Location ID: MW-310
Number of Sampling Dates: 31

Parameter Name	Units	2/21/2018	3/23/2018	4/23/2018	5/24/2018	6/23/2018	7/23/2018	8/22/2018	9/21/2018	10/22/2018	4/2/2019	6/12/2019	10/8/2019	12/23/2019	5/29/2020	10/8/2020	12/11/2020
Boron	ug/L	67.1	62.1	60.7	59.2	61.4	69.5	64.2	80.3	--	73	--	81.8	--	74.4	77.6	--
Calcium	ug/L	32400	33400	32100	32100	34300	39700	38800	54100	--	38800	--	57600	55400	41100	62000	56800
Chloride	mg/L	19.8	21.7	22.1	68.6	59.8	118	139	152	--	76	--	190	--	128	310	227
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	--	<0.095	<0.095	--
Field pH	Std. Units	7.85	8.06	7.75	7.74	7.82	7.81	7.77	7.98	7.7	9.79	7.82	7.82	7.7	7.54	7.52	7.62
Sulfate	mg/L	31.6	33.1	32	28	30.4	60.2	32.8	118	--	58.4	--	85.9	--	68.2	60	--
Total Dissolved Solids	mg/L	406	398	396	436	438	532	526	736	--	470	--	650	--	582	846	700
Antimony	ug/L	0.15	<0.15	0.3	0.21	0.97	0.42	0.17	0.49	--	--	--	--	--	--	--	--
Arsenic	ug/L	<0.28	0.42	0.82	0.45	1.2	0.66	0.43	0.76	--	--	--	--	--	--	--	--
Barium	ug/L	19.8	19.5	19	20.7	20.3	21.2	21	26.1	--	--	--	--	--	--	--	--
Beryllium	ug/L	<0.18	<0.18	0.72	<0.18	0.59	0.29	<0.18	<0.18	--	--	--	--	--	--	--	--
Cadmium	ug/L	<0.081	<0.081	0.14	0.11	0.78	0.31	<0.15	0.17	--	--	--	--	--	--	--	--
Chromium	ug/L	1.1	1.2	1.4	1.4	2.4	<1	1.3	<1	--	--	--	--	--	--	--	--
Cobalt	ug/L	0.18	0.13	0.26	0.15	0.75	0.32	0.13	0.24	--	--	--	--	--	--	--	--
Lead	ug/L	<0.2	<0.2	0.21	<0.2	0.77	0.45	<0.24	0.25	--	--	--	--	--	--	--	--
Lithium	ug/L	1	0.85	1.4	0.81	1.2	1.2	0.92	1.1	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.084	<0.084	--	--	--	--	--	--	--
Molybdenum	ug/L	2.3	3.6	2.8	1.9	1.9	1.7	1.2	4.8	--	--	--	--	--	--	--	--
Selenium	ug/L	<0.32	<0.32	0.55	<0.32	0.96	0.75	<0.32	1.4	--	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	0.73	<0.14	0.9	0.44	<0.14	0.27	--	--	--	--	--	--	--	--
Total Radium	pCi/L	0.114	0.709	0.969	0.346	0.12	0.257	0.308	0.475	--	--	--	--	--	--	--	--
Radium-226	pCi/L	-0.053	0.423	-0.261	-0.115	0.12	0.0705	0.247	0.285	--	--	--	--	--	--	--	--
Radium-228	pCi/L	0.114	0.286	0.969	0.346	-0.00299	0.186	0.0614	0.19	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	684	765	688	840	791	998	1016	1114	1182	924	--	1226	1416	1035	1481	1212
Oxygen, Dissolved	mg/L	11.02	5.83	2.87	8.85	10.09	8.32	3.43	10.49	10.27	7.86	--	11.57	9.65	10.07	9.63	8.3
Field Oxidation Potential	mV	25	64.2	68.2	63.5	74.5	165.7	137	51.5	145	119	--	139.4	40	207.8	150.4	111.5
Groundwater Elevation	feet	783.05	783.1	782.97	785.97	786.64	786.35	785.4	787.24	788.18	786.38	--	787.94	775.22	785.81	785.56	785.26
Temperature	deg C	11.04	11.2	11.2	11.7	12	13.2	13.4	13.52	13.6	10.5	--	13.4	12.4	11.5	13.2	12.5
Turbidity	NTU	0.94	1.7	1.35	0.04	1.12	0.41	0.32	3.99	5.53	1.13	--	2.66	2.06	1.96	0	0
pH at 25 Degrees C	Std. Units	7.8	7.8	7.9	7.8	7.8	7.8	7.9	7.6	--	7.8	--	7.8	--	8	7.8	--

Single Location

Name: WPL -
Columbia

Location ID: MW-310
Number of Sampling Dates: 31

Parameter Name	Units	4/13/2021	6/11/2021	10/14/2021	4/12/2022	10/26/2022	11/30/2022	4/26/2023	8/31/2023	10/9/2023	4/15/2024	10/1/2024	11/5/2024	4/21/2025	7/16/2025	7/30/2025
Boron	ug/L	69.6	--	72	72	71.3	--	57.5	--	65.6	65.2	93.1	78.4	86.4	97.9	--
Calcium	ug/L	49300	--	38900	31900	68900	55500	36800	--	37500	44600	108000	99700	45900	--	--
Chloride	mg/L	227	220	84.6	35.2	323	215	128	--	71.3	175	420	435	110	--	--
Fluoride	mg/L	<0.095	--	<0.095	<0.095	<0.095	--	<0.095	--	<0.095	<0.095	<0.095	--	<0.48	--	--
Field pH	Std. Units	7.73	7.73	7.7	7.74	7.61	7.67	7.27	7.75	7.7	7.63	7.65	7.7	7.69	7.71	7.84
Sulfate	mg/L	43.3	--	54.3	39.8	32.8	--	102	--	90.7	98.9	179	194	170	--	67.4
Total Dissolved Solids	mg/L	654	--	498	416	750	--	654	--	554	686	1210	1190	692	--	--
Antimony	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	1194	1192	884	711	1	1200	1040	1064	949	1170	1927	1797	1097	906	953
Oxygen, Dissolved	mg/L	9.93	11.21	9.29	10.03	8.66	9.46	11.38	11.24	10.05	8.83	8.56	8.78	11.46	9.75	--
Field Oxidation Potential	mV	106	55.6	85.2	200.5	31.3	146.5	112.6	184.6	106.6	50.8	90.5	-122.4	92.1	29.6	--
Groundwater Elevation	feet	784.24	784.05	783.48	783.19	780.96	781.14	785.18	782.47	782.32	782.68	786.35	785.45	785.09	785.45	784.97
Temperature	deg C	10.8	12.8	13.4	10.6	13	10.8	10.8	13.4	13.1	12.2	14	13.9	10.6	14.2	13.7
Turbidity	NTU	0.57	0.67	3.16	1.17	1.58	0.51	2.25	0	2.32	0	2.49	1.4	0	21.03	--
pH at 25 Degrees C	Std. Units	7.8	--	8	7.9	7.7	--	7.8	--	7.9	8.5	8.4	--	8.3	--	--

Single Location

Name: WPL -
Columbia

Location ID: MW-311
Number of Sampling Dates: 22

Parameter Name	Units	2/21/2018	3/23/2018	4/23/2018	5/24/2018	6/23/2018	7/23/2018	8/22/2018	9/21/2018	10/22/2018	4/2/2019	10/8/2019	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/12/2022
Boron	ug/L	43.7	42.7	40.1	31.7	33.6	30.1	32.4	27.5	--	35.7	33.5	25.7	26.2	33.6	31.7	32.7
Calcium	ug/L	58000	61000	56600	62500	70700	76800	65700	75400	--	65600	63900	62200	73400	59000	61000	61800
Chloride	mg/L	2.9	2.7	2.6	3.5	3	2	2	3.9	--	1.9	1.5	1.5	1.4	1.3	1.3	1
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.095	<0.095	<0.095	<0.095	<0.095
Field pH	Std. Units	7.72	7.93	7.62	7.54	7.65	7.59	7.6	7.95	7.5	7.51	7.69	7.37	7.66	7.46	7.45	8
Sulfate	mg/L	7.1	7.2	7.9	36.9	72.3	84.7	53.6	92.4	--	23.1	21.2	39.1	72.1	15.6	14.2	8.9
Total Dissolved Solids	mg/L	260	274	262	304	352	372	332	424	--	276	272	326	380	270	276	278
Antimony	ug/L	0.15	<0.15	<0.15	<0.15	0.18	<0.15	0.43	<0.15	--	--	--	--	--	--	--	--
Arsenic	ug/L	<0.28	0.56	0.42	0.32	0.31	0.46	0.56	0.56	--	--	--	--	--	--	--	--
Barium	ug/L	13.3	12.3	12.4	10.7	15.4	16.3	14.2	18.2	--	--	--	--	--	--	--	--
Beryllium	ug/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	0.19	<0.18	--	--	--	--	--	--	--	--
Cadmium	ug/L	<0.081	<0.081	<0.081	<0.081	<0.081	<0.081	0.29	<0.15	--	--	--	--	--	--	--	--
Chromium	ug/L	2.1	2.2	2.2	2.2	2.3	1.3	2.3	1.5	--	--	--	--	--	--	--	--
Cobalt	ug/L	0.24	0.11	<0.085	0.11	0.11	0.12	0.35	<0.12	--	--	--	--	--	--	--	--
Lead	ug/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.24	--	--	--	--	--	--	--	--
Lithium	ug/L	0.75	0.62	0.58	0.52	0.72	0.67	0.83	0.82	--	--	--	--	--	--	--	--
Mercury	ug/L	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.084	<0.084	--	--	--	--	--	--	--
Molybdenum	ug/L	2.1	1.9	2.1	0.55	0.93	0.56	0.74	2.5	--	--	--	--	--	--	--	--
Selenium	ug/L	0.83	0.78	0.6	0.9	0.86	0.62	0.93	1.2	--	--	--	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.3	<0.14	--	--	--	--	--	--	--	--
Total Radium	pCi/L	0.608	1.14	0.898	0.162	0.0331	0.338	0.0614	0.773	--	--	--	--	--	--	--	--
Radium-226	pCi/L	0.205	0.569	0.502	0	-0.058	0.338	0.0614	0.424	--	--	--	--	--	--	--	--
Radium-228	pCi/L	0.403	0.571	0.396	0.162	0.0331	-0.0845	-0.253	0.349	--	--	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	455	508.1	459.1	539	596	606.8	573.2	600	699	337.8	495.6	547.2	606.1	500.2	493.5	482
Oxygen, Dissolved	mg/L	11.74	4.77	0.87	8.91	9.75	7.91	1.97	10.31	9.96	9.77	11.68	10.64	9.38	10.23	9.42	7.74
Field Oxidation Potential	mV	31	74	65.3	70.1	82.6	157	150.3	42.4	146	116.3	144.3	176.3	137.1	110.4	90.7	110.2
Groundwater Elevation	feet	783.02	783	781.83	786.11	786.47	786.55	785.46	787.66	788.64	786.38	787.64	785.85	785.83	784.15	783.48	783.04
Temperature	deg C	10.3	10.5	10.5	11	11	12.1	12.6	13.07	13.4	9.7	12.9	10.5	12.7	9.5	12.8	11.1
Turbidity	NTU	2.56	9.12	2.58	0.59	0.58	1.13	0.65	10.3	3.73	2.91	8.56	4.7	0.7	3.49	4.26	2.5
pH at 25 Degrees C	Std. Units	7.7	7.9	7.7	7.6	7.7	7.6	7.7	7.6	--	7.6	7.6	7.7	7.7	7.7	7.9	7.7

Single Location

Name: WPL -
Columbia

Location ID: MW-311
Number of Sampling Dates: 22

Parameter Name	Units	10/27/2022	4/26/2023	10/9/2023	4/15/2024	10/1/2024	4/21/2025
Boron	ug/L	34.2	23	31	30.9	34	24.8
Calcium	ug/L	66300	52800	60900	59900	64800	51300
Chloride	mg/L	1.2	2.1	2	2.3	2.6	2.1
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	0.1	<0.095
Field pH	Std. Units	7.5	7.48	7.46	7.4	7.71	7.54
Sulfate	mg/L	15.5	22.2	10.8	10.1	11.2	10.5
Total Dissolved Solids	mg/L	268	292	270	276	262	254
Antimony	ug/L	--	--	--	--	--	--
Arsenic	ug/L	--	--	--	--	--	--
Barium	ug/L	--	--	--	--	--	--
Beryllium	ug/L	--	--	--	--	--	--
Cadmium	ug/L	--	--	--	--	--	--
Chromium	ug/L	--	--	--	--	--	--
Cobalt	ug/L	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--
Lithium	ug/L	--	--	--	--	--	--
Mercury	ug/L	--	--	--	--	--	--
Molybdenum	ug/L	--	--	--	--	--	--
Selenium	ug/L	--	--	--	--	--	--
Thallium	ug/L	--	--	--	--	--	--
Total Radium	pCi/L	--	--	--	--	--	--
Radium-226	pCi/L	--	--	--	--	--	--
Radium-228	pCi/L	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	487	484.7	493.4	460.8	442.9	453.4
Oxygen, Dissolved	mg/L	8.92	10.58	10.48	9.42	8.78	10.06
Field Oxidation Potential	mV	34.5	118.4	-101.8	51.5	61	115.5
Groundwater Elevation	feet	781.23	785.69	782.22	782.64	786.4	785.23
Temperature	deg C	11.9	9.8	12.3	11.3	13.7	9.4
Turbidity	NTU	0	0.39	0.31	0	2.81	0
pH at 25 Degrees C	Std. Units	7.6	7.7	7.7	8.4	8.5	8.3

Single Location

Name: WPL -
Columbia

Location ID: MW-317
Number of Sampling Dates: 10

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024	10/1/2024	10/31/2024	12/9/2024	1/10/2025	2/25/2025	3/27/2025	4/26/2025
Boron	ug/L	33.8	41.7	49.3	75.6	39.4	37.9	31	30	30.6	29.1
Calcium	ug/L	43800	44300	44600	46400	48100	50900	50500	54200	53700	57900
Chloride	mg/L	5.1	7	6.1	3.2	4.6	3.6	2.7	3.1	3	4.5
Fluoride	mg/L	0.28	0.31	0.28	0.17	0.22	0.15	<0.095	<0.095	0.12	<0.095
Field pH	Std. Units	7.6	7.88	7.44	7.84	7.56	7.62	7.33	7.83	7.77	7.67
Sulfate	mg/L	26.4	23.5	13.5	5.2	5	3.7	3.8	3.8	5.4	5.2
Total Dissolved Solids	mg/L	318	328	334	248	272	280	128	248	240	288
Antimony	ug/L	0.17	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--
Arsenic	ug/L	1.4	1.5	1.3	1.3	1.1	1.1	0.87	0.8	0.77	--
Barium	ug/L	51.6	55.2	54.5	51.6	54.5	52.1	48	45.5	50.2	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--
Chromium	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	--
Cobalt	ug/L	0.24	0.19	0.13	0.2	<0.12	<0.12	0.12	0.13	0.16	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--
Lithium	ug/L	6.6	5.3	4.5	5	3.2	4.3	4.3	3.6	2.8	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--
Molybdenum	ug/L	43.8	50.7	52.4	24.6	37.5	23.9	15.3	13.6	18	--
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	--
Thallium	ug/L	<0.14	0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.2	--
Total Radium	pCi/L	0.564	0.273	0.45	0.634	1.97	0.777	0.436	1.14	1.93	--
Radium-226	pCi/L	0.263	-0.053	0	-0.115	1.03	0	-0.362	-0.204	1.17	--
Radium-228	pCi/L	0.301	0.273	0.45	0.634	0.941	0.777	0.436	1.14	1.01	--
Field Specific Conductance	umhos/cm	484.1	540	546	422.8	470.9	440.7	425.6	417.9	458.8	516.4
Oxygen, Dissolved	mg/L	0.28	0.63	0.13	2.26	0.13	1.19	2.73	3.65	2.07	2.8
Field Oxidation Potential	mV	-119.4	-143	-130.2	-103.8	-93.2	-87.4	-13.1	-63.8	-74.7	-30.5
Groundwater Elevation	feet	785.87	787.95	787.28	786.41	785.73	785.5	785.22	784.36	784.26	784.94
Temperature	deg C	11.8	12.5	12.7	11.4	12.3	10.9	10.5	11.1	11.3	11.1
Turbidity	NTU	4.31	9.97	3.37	2.31	1.8	0	0	0	3.94	1.76
pH at 25 Degrees C	Std. Units	8.2	8.6	8.3	8.5	8.7	8.4	8.4	8.5	8.5	8.3

Single Location

Name: WPL -
Columbia

Location ID: MW-318

Number of Sampling Dates: 11

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024	10/1/2024	10/31/2024	12/9/2024	1/17/2025	2/25/2025	3/27/2025	4/26/2025	7/16/2025
Boron	ug/L	17.2	14.5	23.5	37.6	12.9	16.7	18.2	18.6	15.9	18.3	--
Calcium	ug/L	122000	110000	101000	103000	105000	106000	102000	119000	113000	99900	--
Chloride	mg/L	44.9	19.7	31.8	65.5	74.3	65.9	39.4	37	39.3	23.7	--
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.95	<0.95	<0.95	<0.95	<0.48	<0.48	--
Field pH	Std. Units	7.34	7.57	7.22	7.45	7.29	7.27	7.45	7.47	7.37	7.46	7.38
Sulfate	mg/L	276	290	272	231	203	215	187	186	207	156	122
Total Dissolved Solids	mg/L	804	712	694	674	676	666	628	692	666	544	--
Antimony	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Arsenic	ug/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	0.31	0.34	<0.28	--	--
Barium	ug/L	52.1	12.5	11.8	22.6	30.9	27.4	29	35.7	35.2	--	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Chromium	ug/L	<1	1.1	2	1.8	1.3	1.4	2.1	2.1	1.8	--	--
Cobalt	ug/L	0.44	<0.12	0.31	0.18	0.15	0.17	0.34	0.26	0.2	--	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.29	0.28	0.24	--	--
Lithium	ug/L	1.8	0.92	0.95	1.1	1	0.93	1.3	1.4	1.5	--	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--	--
Molybdenum	ug/L	3.2	<0.44	0.45	0.52	0.58	0.48	0.68	0.71	0.57	--	--
Selenium	ug/L	1.2	1.3	1.1	0.8	0.76	0.9	0.76	0.99	1	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.17	<0.14	<0.14	0.18	<0.14	--	--
Total Radium	pCi/L	1.8	0.552	0.727	0.397	2.18	1.1	0.9	1.85	1.83	--	--
Radium-226	pCi/L	1.7	0.409	0.285	-0.0661	1.24	-0.71	0.183	-0.507	1.01	--	--
Radium-228	pCi/L	0.0973	0.143	0.442	0.397	0.935	1.1	0.717	1.85	1.24	--	--
Field Specific Conductance	umhos/cm	1115	984	969	942	924	919	829	897	955	863	733
Oxygen, Dissolved	mg/L	5.76	8.4	8.05	6.84	7.62	8.38	6.66	6.69	7.33	6.65	--
Field Oxidation Potential	mV	97.1	98.4	95.3	59.8	36	32.9	105.1	80.7	173.5	66.9	--
Groundwater Elevation	feet	785.97	788.83	787.78	786.71	785.92	785.64	785.35	784.53	784.44	785.06	785.45
Temperature	deg C	11.7	13	13.4	11.6	12.3	11.3	11.2	11.4	11.6	11.3	11.9
Turbidity	NTU	4.89	1.97	4.08	7.62	1.07	4.33	20.7	22.79	5.54	4.26	--
pH at 25 Degrees C	Std. Units	7.8	8.4	8.1	8.3	8.5	8.3	8.2	8.4	8.2	8.1	--

Single Location

Name: WPL -
Columbia

Location ID: MW-319

Number of Sampling Dates: 11

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024	10/1/2024	10/31/2024	12/9/2024	1/10/2025	2/25/2025	3/27/2025	4/26/2025	7/17/2025
Boron	ug/L	20.4	22.5	42.2	30.8	18.3	21.7	21.2	19.9	16.4	18.8	--
Calcium	ug/L	125000	126000	131000	106000	48600	83300	101000	91700	64600	76000	--
Chloride	mg/L	486	712	802	649	237	455	409	355	173	242	141
Fluoride	mg/L	<0.48	<0.48	<0.095	<1.9	<0.95	<1.9	<0.95	<1.9	<0.95	<0.48	--
Field pH	Std. Units	7.32	7.15	7.43	7.61	7.7	7.53	7.38	7.6	7.61	7.56	7.49
Sulfate	mg/L	26.1	43.6	70.9	62.9	38.5	50.3	51.2	44.4	33.1	31.6	--
Total Dissolved Solids	mg/L	1140	1530	1700	1450	753	1050	647	986	623	700	--
Antimony	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Arsenic	ug/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	--	--
Barium	ug/L	68.6	63.9	51.4	41.2	19.2	30	33.5	27.3	17.1	--	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Chromium	ug/L	1.4	1.2	1.7	1.8	1.1	1.1	1.4	1.2	1.2	--	--
Cobalt	ug/L	0.44	0.45	0.37	0.42	0.2	0.2	0.28	0.22	0.16	--	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--	--
Lithium	ug/L	1.4	1.3	1.5	0.98	0.58	0.58	0.84	0.68	0.79	--	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--	--
Molybdenum	ug/L	1.1	0.86	1.6	0.62	0.84	0.6	0.56	0.86	1.1	--	--
Selenium	ug/L	1.4	1.5	1.4	1.4	1	1.1	1.4	1	0.78	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.28	<0.14	<0.14	--	--
Total Radium	pCi/L	0.827	0.904	1.3	1.71	1.21	0.837	1.02	1.82	2.08	--	--
Radium-226	pCi/L	0.333	0.156	-0.345	0.432	0.438	-0.562	-0.682	0.07	1.34	--	--
Radium-228	pCi/L	0.494	0.748	1.3	1.28	0.896	0.837	1.02	1.75	0.741	--	--
Field Specific Conductance	umhos/cm	1869	2725	2948	2344	1088	1108	1732	1560	1054	994	1011
Oxygen, Dissolved	mg/L	6.89	5.78	7.67	7.52	8.16	9.41	8.23	8.87	9.16	7.63	--
Field Oxidation Potential	mV	146.5	85.9	107.4	78	52.3	58.8	15.4	40.8	169.7	84.9	--
Groundwater Elevation	feet	787.2	789.56	789.17	788.22	787.88	787.41	787.12	786.59	786.25	786.3	787.04
Temperature	deg C	12.5	12.8	12.3	11.4	13.1	11.3	10.4	11.2	11.2	11.3	14.6
Turbidity	NTU	4.2	2.58	4.39	7.4	2.74	0	0	0	0	1.98	--
pH at 25 Degrees C	Std. Units	8	8.4	8.2	8.3	8.8	8.3	8.4	8.4	8.5	8.3	--



Appendix E

Statistical Evaluation of Groundwater Monitoring Results

August 15, 2025
File No. 25225067.00

TECHNICAL MEMORANDUM

SUBJECT: Statistical Evaluation of Groundwater Monitoring Results
Columbia Dry Ash Disposal Facility

PREPARED BY: Ryan Matzuk

CHECKED BY: Sherren Clark

This memorandum and the attachments provide new upper prediction limit (UPL) calculations for the groundwater monitoring system at the Columbia (COL) Dry Ash Disposal Facility (ADF) coal combustion residual (CCR) unit. As part of the evaluation of the April 2025 monitoring results and as a follow-up to the network recertification finalized on January 31, 2025, new intrawell UPLs were calculated to include data from the compliance wells collected through March 2025. This memo addresses new intrawell UPLs for Appendix III parameters.

STATISTICAL METHOD

Groundwater monitoring data for the COL ADF was evaluated in accordance with 40 CFR 257.93(f)(3), using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the UPL.

The statistical analysis is performed using commercially available software (*Sanitas for Groundwater*® or similar) in general accordance with the U.S. Environmental Protection Agency's (U.S. EPA's) *Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* dated March 2009 (Unified Guidance) (U.S. EPA, 2009) and generally accepted procedures. For the prediction interval evaluation, intrawell testing was selected based on the considerations outlined in Chapter 6 of the Unified Guidance. The statistical program used to calculate the intrawell prediction interval evaluation is Sanitas™ (v.10.0.27).

Prior to the January 2025 network recertification, the COL ADF landfill modules were monitored as three separate CCR units: Modules 1-3, Modules 4-6, and Modules 10-13. Data analysis approaches varied between units, with each unit using either interwell, intrawell, or a combination of interwell and intrawell approaches. Following the recertification, a unified approach was more appropriate. An intrawell approach was selected because background appears to vary spatially. Statistically significant increases (SSIs) that were previously identified relative to the interwell UPLs have been attributed to sources other than the CCR units as documented in Alternative Source Demonstrations, and the site remains in detection monitoring. The intrawell approach is more consistent with the State CCR program established by the Wisconsin Department of Natural Resources (DNR), which compares monitoring results to well-specific Preventative Action Limits (PALs) and the Alternative Concentration Limits (ACLs) approved by the DNR.



Under the intrawell approach, detection monitoring results are compared to UPLs calculated based on monitoring results from the individual compliance wells. Compliance wells for the ADF include MW-33AR, MW-34A, MW-302, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319. Because the evaluation is intrawell, the background well data from monitoring wells MW-84A and MW-301 is not used in the statistical evaluation but is available for use in data interpretation and comparison as needed. The background wells are shared with other CCR units at COL.

TIME SERIES PLOTS

Time series plots were prepared for the required detection monitoring parameters to show the concentration variations over time, and are included in **Attachment A**. The time series plots include the nine compliance wells and two background wells.

OUTLIER ANALYSIS

For the intrawell evaluation, an outlier analysis was performed for the background monitoring results at each of the nine compliance wells. A statistical outlier is a value that is extremely different from the other values in the data set. The Sanitas outlier tests identify data points that do not appear to fit the distribution of the rest of the data set and determine if they differ significantly from the rest of the data. The outlier analysis performed in Sanitas includes the following steps:

- 1) Run normality test (Shapiro Wilk):
 - a) If not normal, transform to natural log and test for lognormal distribution.
- 2) If normally or lognormally distributed, run U.S. EPA's 1989 Outlier Test to identify suspected outliers:
 - a) If number of background samples is less than or equal to 25, run Dixon's test for suspected outliers.
 - b) If number of background samples is more than 25, run Rosner's test for suspected outliers.
- 3) If not normally distributed, run Tukey's test for outliers.
- 4) Review data flagged as possible outliers to evaluate whether they should be removed from the background data set. Also review time series plots for possible outliers that were not picked up in the statistical evaluation (e.g., outlier test may not identify outliers when two values are similar to each other, but very different from all other data).

The Sanitas output for the outlier analysis is provided in **Attachment B**.

Results identified as statistical outliers are checked for possible lab instrument failure, field collection problems, or data entry errors. However, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error can be identified, the outlier should not be removed.

For the 2025 statistical calculations, the following values were identified as potential outliers and handled as described:

- **Boron (MW-302):** One high result from the April 2018 sampling event was not flagged by Sanitas as a statistical outlier, but the result was manually removed from the dataset. The value was anomalously high and was also removed from the state CCR dataset for the ACL analysis.
- **Boron (MW-319):** One high result from the August 2024 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential background variation.
- **Calcium (MW-310):** One high result from the November 2024 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential background variation. Similar concentrations of calcium have been observed in results from adjacent well MW-309.
- **Chloride (MW-302):** One high result from the April 2018 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential background variation based on chloride levels at other nearby monitoring wells.
- **Field pH (MW-310):** One high result from the April 2019 sampling event was flagged by Sanitas as a statistical outlier. The result (9.79 Standard Units) was significantly higher than other results in for this parameter at this well. This high result is likely a result of a field transcription error. Field recordings may have been switched for dissolved oxygen and field pH. The dissolved oxygen value for this sampling event was transcribed as 7.86 mg/L, which is more consistent with historical field pH values than dissolved oxygen values for this well. Although the data swap cannot be confirmed, the field pH value was removed from the dataset for this statistical analysis.
- **Field pH (MW-33AR):** One high result from the January 2017 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential background variation.
- **Fluoride (MW-309):** One result from the October 2024 event was not flagged by Sanitas as a statistical outlier, but the result was manually removed from the dataset. The result was non-detect but the sample was highly diluted due to the presence of non-target analytes, resulting in an elevated detection limit. All fluoride results for this well were non-detects.
- **Total Dissolved Solids (MW-310):** One high result from the November 2024 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential natural variation.

- **Total Dissolved Solids (MW-317):** One low result from the January 2025 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the low result and the result was within the range of potential natural variation.
- **Total Dissolved Solids (MW-318):** One high result from the June 2024 sampling event was flagged by Sanitas as a statistical outlier. The result was kept in the dataset because there was no known explanation for the high result and the result was within the range of potential natural variation.

INTRAWELL PREDICTION LIMITS

Intrawell UPLs were calculated using background data from the compliance wells for each monitored constituent, with outliers handled as noted above. The prediction limit analysis performed in Sanitas includes the following steps:

- 1) If more than 50 percent of results are non-detect, apply a non-parametric UPL. For small background sample sizes, the non-parametric UPL is the highest background value. For a parameter with 100 percent non-detects in the background values, the Double Quantitation rule applies, which says that a statistically significant increase (SSI) occurs when two results exceeding the quantification limit are reported for a compliance well.
- 2) If 50 percent or fewer of the results are non-detect, run normality test (Shapiro Wilk/Francia) to assess whether the data fit a normal distribution or can be transformed to fit a normal distribution (e.g., lognormal).
- 3) If normal or transformed normal, calculate parametric UPL.
- 4) If not normal or transformed normal, calculate non-parametric UPL.

Consistent with the Unified Guidance, parametric prediction limits were calculated based on a 1-of-2 retesting protocol and a target 10 percent annual site-wide false positive rate. Sanitas establishes the per-test significance level based on user inputs of the number of events per year, number of constituents being evaluated, and number of compliance wells. For the April 2025 event, the following values were used:

Parameter	Value	Comments
Evaluations per year	2	April and October events
Constituents analyzed	7	Total of seven constituents analyzed for detection monitoring.
Compliance wells	9	MW-33AR, MW-34A, MW-302, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319

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August 15, 2025

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Non-parametric prediction limits are also based on a 1-of-2 retesting protocol. The non-parametric limit is the highest value in the background dataset. For the current background sample size, the highest value provides a false positive rate for the non-parametric tests that is higher than target per-test rate established to meet the overall target site-wide false positive rate (SWFPR) of 10 percent.

For results with 100 percent non-detects in the background data, evaluation under the Double Quantitation Rule means that an SSI has not occurred for a compliance well unless two sample results from the well exceed the laboratory's reporting limit or quantification limit. For evaluation of parameters with less than 100 percent non-detects in the background sampling, the non-detects were replaced with a value of one-half the detection limit. For all parameters, only results at or above the laboratory's reporting limit or quantitation limit are compared to the UPL for SSI determination.

Intrawell prediction limit analysis results are included in **Attachment C**.

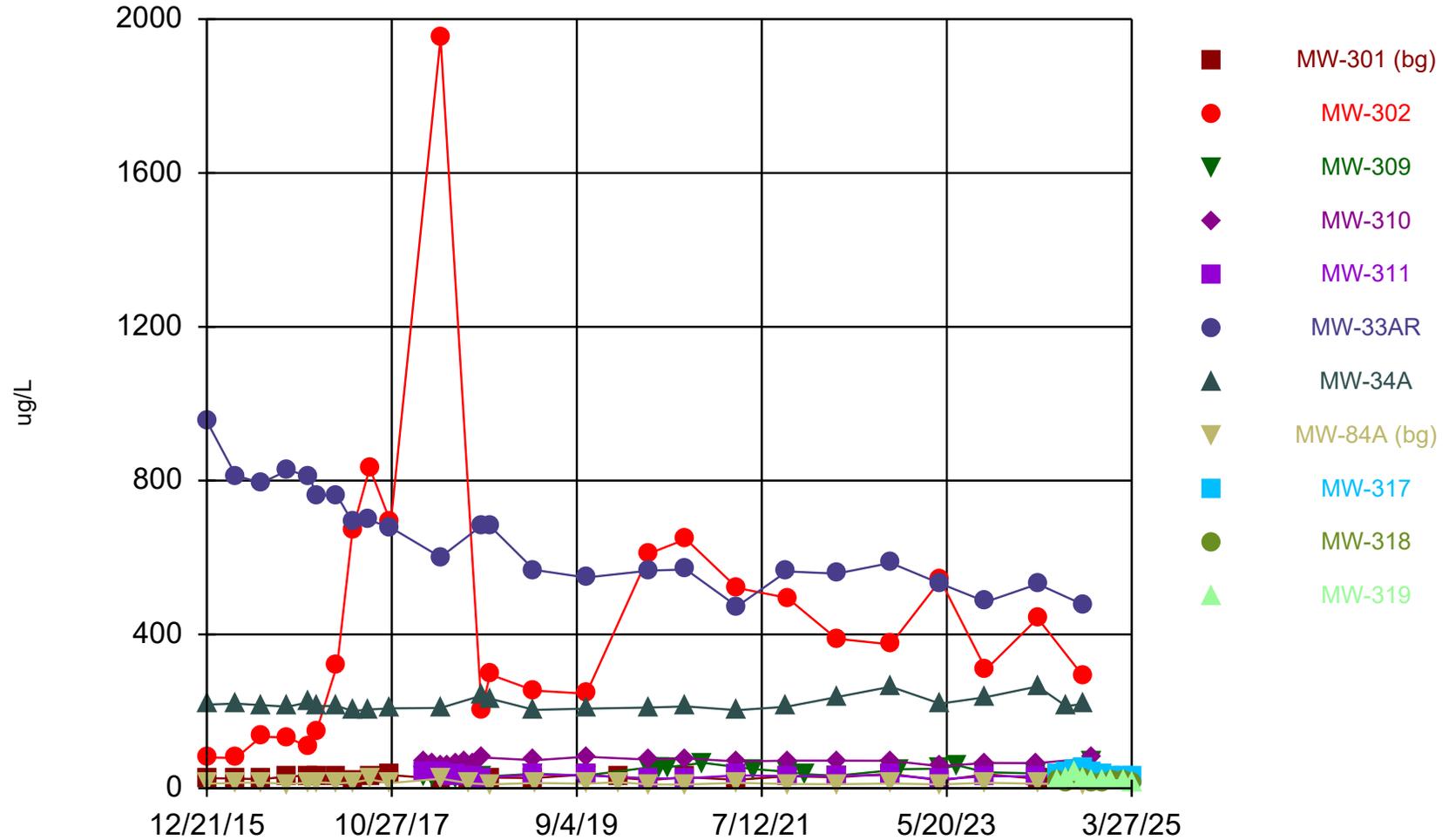
Encl. Attachments A through C

RM/AJR/SCC

I:\25225067.00\Data and Calculations\Sanitas\COL ADF CCR Stats Memo - 2025\250815_COL ADF_Stats Memo_Intrawell_Draft.docx

Attachment A
Time Series Plots

Time Series



Constituent: Boron Analysis Run 5/27/2025 11:00 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						954	217.5 (D)		
12/22/2015	26.5	80						11.9	
4/5/2016	25.2	78.8				813	220	14	
7/7/2016		134				794	216		
7/8/2016	23.6							14.7	
10/13/2016	30.6	132				827	212	11.1	
12/29/2016	32.8	106				812	224	14.7	
1/25/2017	32.6	149				763	214	16.1	
4/11/2017	28.8	322				760	214	12.9	
6/6/2017	21.3	671				692	201	14.8	
8/7/2017						697	205		
8/8/2017	30.6	833						22.9	
10/23/2017	34.3								
10/24/2017		691				678	208	13.8	
2/21/2018			31.4	67.1	43.7				
3/23/2018			31	62.1	42.7				
4/23/2018			30.4	60.7	40.1				
4/24/2018		1950				601	209		
4/25/2018	24.3							25	
5/24/2018			28	59.2	31.7				
6/23/2018			26.6	61.4	33.6				
7/23/2018			35.5	69.5	30.1				
8/8/2018	22.8							12.8	
8/22/2018			40.5	64.2	32.4				
9/21/2018		203	30	80.3	27.5	683	241		
10/22/2018		296				682	233		
10/24/2018	27.8							10.1 (J)	
4/2/2019	26.9	254	37.4	73	35.7	568	204		
4/3/2019								13.6	
10/8/2019			33.4	81.8	33.5	548	207		
10/9/2019	35.9	246						12	
2/3/2020	27.9							15.7	
5/28/2020						566	210		
5/29/2020	21.3	611	54.6	74.4	25.7			10	
6/30/2020			50.7						
8/6/2020			55.3						
10/8/2020	28.8	648		77.6	26.2	569	213	9.7 (J)	
12/11/2020			65.9 (R)						
4/13/2021		521		69.6		473	203		
4/14/2021	22.2				33.6			14.3	
6/11/2021			49.9 (R)						
10/12/2021						564	212		
10/14/2021	31.4	495	42.9	72	31.7			11.1	
12/21/2021			36.4						
4/12/2022		389	32.5	72	32.7	558	237		
4/13/2022	28.7							10.5	
10/26/2022			46.6	71.3					
10/27/2022	37.5	374			34.2	586	264	12.2	
11/30/2022			49.3						
4/26/2023			50.8	57.5	23		220		
4/27/2023	20.1	541				532		10.3	
6/29/2023			59.4						

Time Series

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
10/9/2023			41.5	65.6	31				
10/11/2023	36.2	309				485	237	14	
4/15/2024			38.7	65.2	30.9				
4/17/2024	24.9	442				531	265	11.9	
6/27/2024									33.8
7/29/2024							214		
7/31/2024									41.7
8/30/2024									49.3
10/1/2024					34				53.85 (D)
10/2/2024	22.1	290				477	219	10.3	
10/31/2024									39.4
11/5/2024			72.3 (R)	78.4 (R)					
12/9/2024									37.9
1/10/2025									31
1/17/2025									
2/25/2025									30
3/27/2025									30.6

Time Series

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318

MW-319

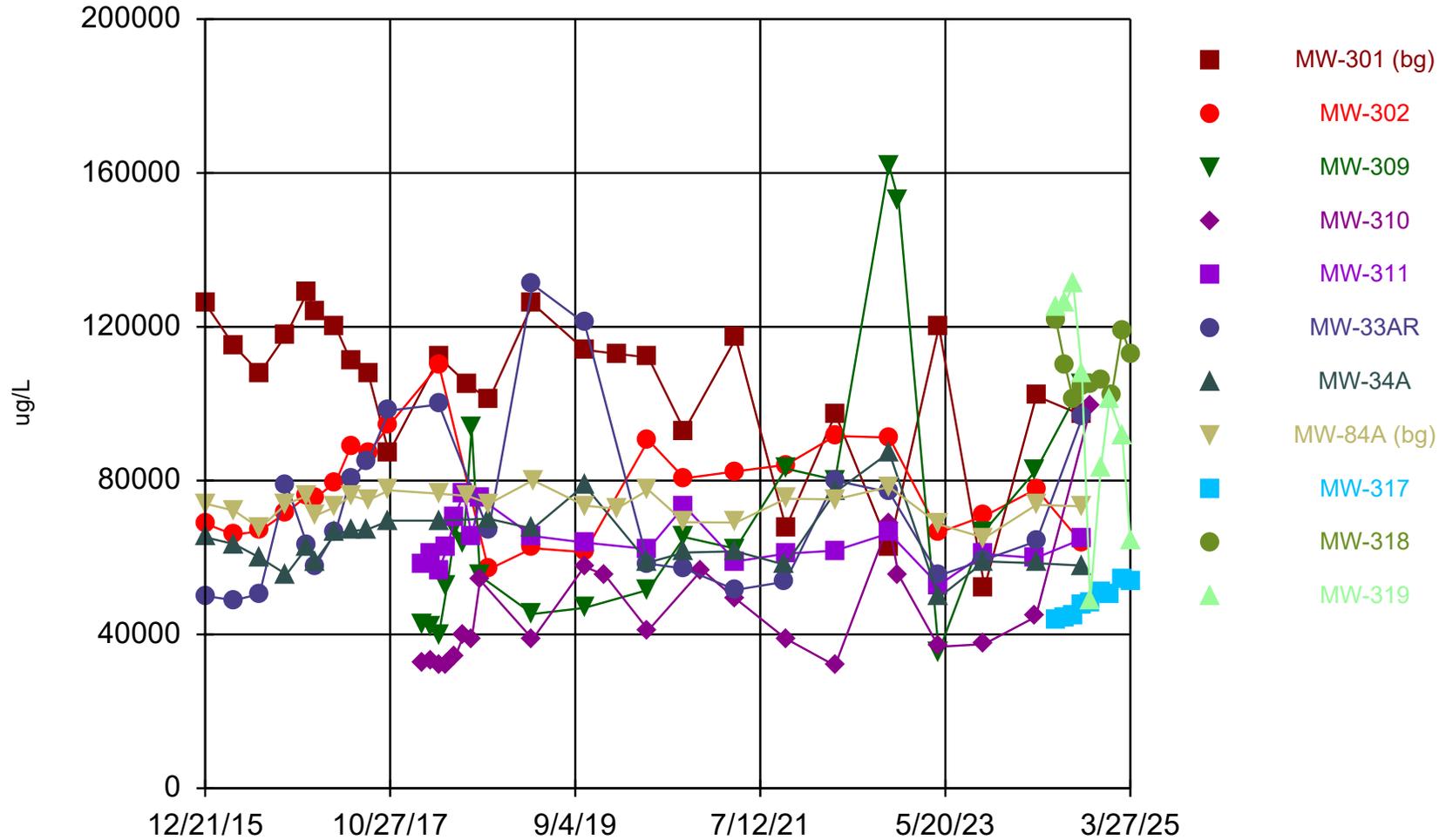
12/21/2015
12/22/2015
4/5/2016
7/7/2016
7/8/2016
10/13/2016
12/29/2016
1/25/2017
4/11/2017
6/6/2017
8/7/2017
8/8/2017
10/23/2017
10/24/2017
2/21/2018
3/23/2018
4/23/2018
4/24/2018
4/25/2018
5/24/2018
6/23/2018
7/23/2018
8/8/2018
8/22/2018
9/21/2018
10/22/2018
10/24/2018
4/2/2019
4/3/2019
10/8/2019
10/9/2019
2/3/2020
5/28/2020
5/29/2020
6/30/2020
8/6/2020
10/8/2020
12/11/2020
4/13/2021
4/14/2021
6/11/2021
10/12/2021
10/14/2021
12/21/2021
4/12/2022
4/13/2022
10/26/2022
10/27/2022
11/30/2022
4/26/2023
4/27/2023
6/29/2023

Time Series

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
10/9/2023		
10/11/2023		
4/15/2024		
4/17/2024		
6/27/2024	17.2	20.4
7/29/2024		
7/31/2024	14.5	22.5
8/30/2024	23.5	42.2
10/1/2024	25.6 (D)	27.25 (D)
10/2/2024		
10/31/2024	12.9	18.3
11/5/2024		
12/9/2024	16.7	21.7
1/10/2025		21.2
1/17/2025	18.2	
2/25/2025	18.6	19.9
3/27/2025	15.9	16.4

Time Series



Constituent: Calcium Analysis Run 5/27/2025 11:00 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						50000	65250 (D)		
12/22/2015	126000	68800						74000	
4/5/2016	115000	65900				48900	63500	72200	
7/7/2016		66900				50500	60000		
7/8/2016	108000							67600	
10/13/2016	118000	71700				79000	55600	74000	
12/29/2016	129000	76100				63100	62800	76000	
1/25/2017	124000	75400				57500	58900	70800	
4/11/2017	120000	79600				66800	66300	73200	
6/6/2017	111000	88900				80700	66900	76100	
8/7/2017						84800	67300		
8/8/2017	108000	87100						74900	
10/23/2017	87200								
10/24/2017		94400				98200	69600	77500	
2/21/2018			42700	32400	58000				
3/23/2018			41800	33400	61000				
4/23/2018			39600	32100	56600				
4/24/2018		110000				99800	69600		
4/25/2018	112000							76600	
5/24/2018			52700	32100	62500				
6/23/2018			67600	34300	70700				
7/23/2018			63800	39700	76800				
8/8/2018	105000							76000	
8/22/2018			93600	38800	65700				
9/21/2018			55200	54100	75400				
10/22/2018		56900				66900	70100		
10/24/2018	101000							74000	
4/2/2019	126000	62400	45300	38800	65600	131000	67500		
4/3/2019								80100	
10/8/2019			46900	57600	63900	121000	78800		
10/9/2019	114000	61400						73500	
12/23/2019				55400					
2/3/2020	113000							72700	
5/28/2020						58400	58700		
5/29/2020	112000	90500	51600	41100	62200			77600	
10/8/2020	93000	80600	65300		73400	57100	61300	69200	
12/11/2020				56800 (R)					
4/13/2021		82400	62300	49300		51600	61600		
4/14/2021	117000				59000			69100	
10/12/2021						53700	58100		
10/14/2021	67800	84100	83100	38900	61000			75300	
4/12/2022		91600	80200	31900	61800	80000	77000		
4/13/2022	97300							75100	
10/26/2022			162000	68900					
10/27/2022	62800	91200			66300	77000	87300	78400	
11/30/2022			153000	55500					
4/26/2023			35500	36800	52800		49600		
4/27/2023	120000	66500				55300		68600	
10/9/2023			66800	37500	60900				
10/11/2023	52300	70800				59400	59000	65100	
4/15/2024			82600	44600	59900				
4/17/2024	102000	77800				64200	58500	73700	

Time Series

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
6/27/2024									43800
7/31/2024									44300
8/30/2024									44600
10/1/2024			105000		64800				47550 (D)
10/2/2024	97000	63600				96400	57900	73300	
10/31/2024									48100
11/5/2024				99700 (R)					
12/9/2024									50900
1/10/2025									50500
1/17/2025									
2/25/2025									54200
3/27/2025									53700

Time Series

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318 MW-319

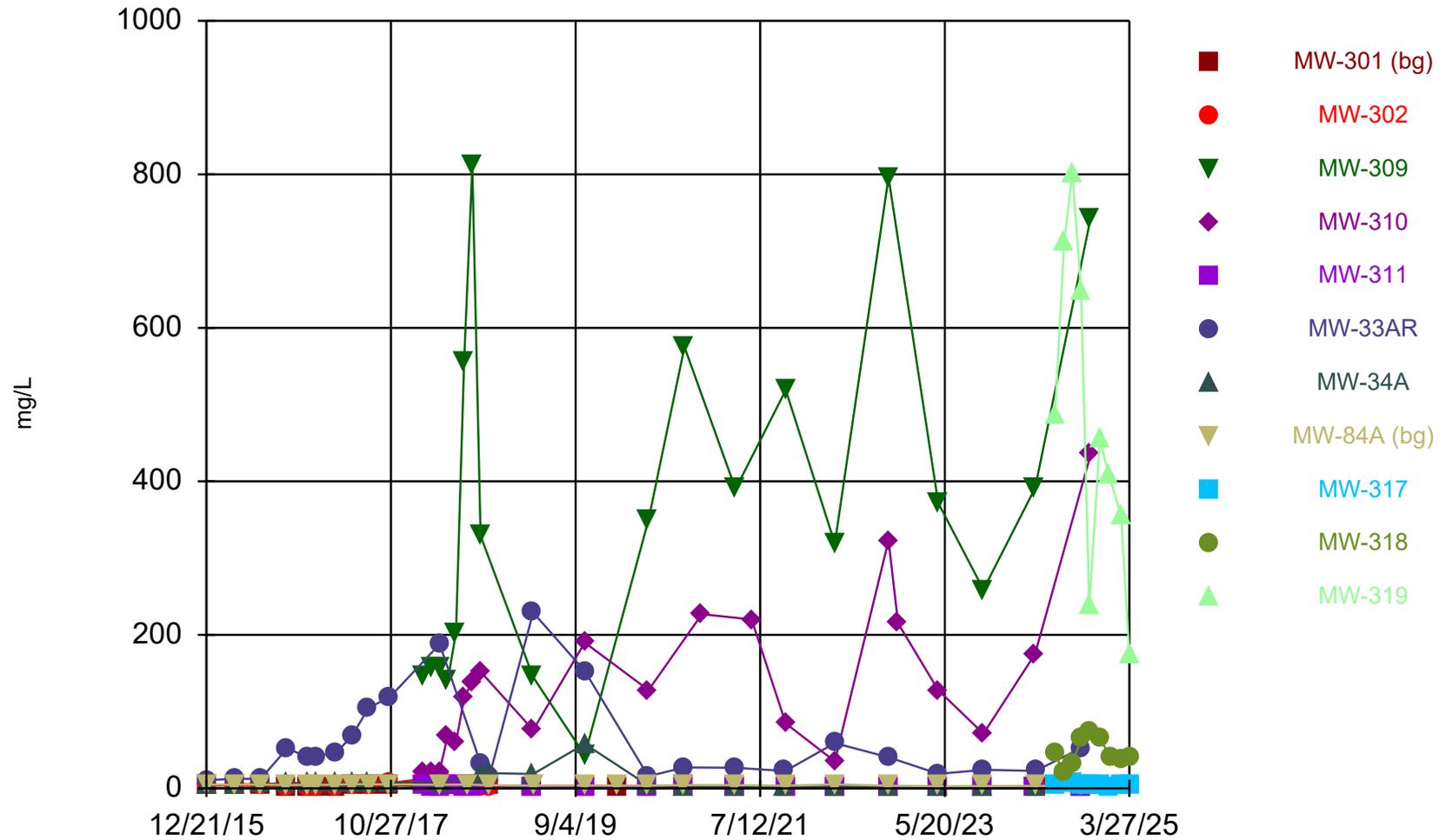
12/21/2015
12/22/2015
4/5/2016
7/7/2016
7/8/2016
10/13/2016
12/29/2016
1/25/2017
4/11/2017
6/6/2017
8/7/2017
8/8/2017
10/23/2017
10/24/2017
2/21/2018
3/23/2018
4/23/2018
4/24/2018
4/25/2018
5/24/2018
6/23/2018
7/23/2018
8/8/2018
8/22/2018
9/21/2018
10/22/2018
10/24/2018
4/2/2019
4/3/2019
10/8/2019
10/9/2019
12/23/2019
2/3/2020
5/28/2020
5/29/2020
10/8/2020
12/11/2020
4/13/2021
4/14/2021
10/12/2021
10/14/2021
4/12/2022
4/13/2022
10/26/2022
10/27/2022
11/30/2022
4/26/2023
4/27/2023
10/9/2023
10/11/2023
4/15/2024
4/17/2024

Time Series

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
6/27/2024	122000	125000
7/31/2024	110000	126000
8/30/2024	101000	131000
10/1/2024	104500 (D)	108000 (D)
10/2/2024		
10/31/2024	105000	48600
11/5/2024		
12/9/2024	106000	83300
1/10/2025		101000
1/17/2025	102000	
2/25/2025	119000	91700
3/27/2025	113000	64600

Time Series



Constituent: Chloride Analysis Run 5/27/2025 11:01 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						10.6	4.85 (D)		
12/22/2015	3.7 (J)	4.2						4.9	
4/5/2016	4	4.1				12.5	5.1	4.7	
7/7/2016		3.1 (J)				12.5	5.6		
7/8/2016	3.5 (J)							5.1	
10/13/2016	2.2	1.1 (J)				52.5	6.8	4.3	
12/29/2016	2 (J)	1.2 (J)				39.6	7.1	4.7	
1/25/2017	1.5 (J)	1.6 (J)				41.4	7.2	4.6	
4/11/2017	2	1.6 (J)				47.1	6.2	4.9	
6/6/2017	3.5	3.5				68.1	7.8	5.5	
8/7/2017						105	7.4		
8/8/2017	5.5	4.5						5.5	
10/23/2017	4								
10/24/2017		6.9				119	7.6	5.1	
2/21/2018			147	19.8	2.9				
3/23/2018			157	21.7	2.7				
4/23/2018			157	22.1	2.6				
4/24/2018		15				188	8.2		
4/25/2018	2.3							4.8	
5/24/2018			141	68.6	3.5				
6/23/2018			203	59.8	3				
7/23/2018			557	118	2 (J)				
8/8/2018	5.2							4.9	
8/22/2018			811	139	2 (J)				
9/21/2018		1.7 (J)	329	152	3.9	32.6	17.1		
10/22/2018		1.8 (J)				14.4	19.9		
10/24/2018	3.2							4.2	
4/2/2019	0.79 (J)	1.5 (J)	145	76	1.9 (J)	229	18.7		
4/3/2019								3.6	
10/8/2019			43.2	190	1.5 (J)	153	57.9		
10/9/2019	1.7 (J)	1.1 (J)						3.9	
2/3/2020	1.3 (J)							3.7	
5/28/2020						15.9	3.9		
5/29/2020	2 (J)	1.2 (J)	350	128	1.5 (J)			3.7	
10/8/2020	3.4	1.1 (J)	575		1.4 (J)	27.3	2.1	4.3	
12/11/2020				227 (R)					
4/13/2021		1.4 (J)	390			26.9	2.3		
4/14/2021	1.5 (J)				1.3 (J)			4.4	
6/11/2021				220 (R)					
10/12/2021						22.6	1.9 (J)		
10/14/2021	2.7	1.3 (J)	519	84.6	1.3 (J)			3.5	
4/12/2022		0.79 (J)	319	35.2	1 (J)	59	2.2		
4/13/2022	1.9 (J)							5.2	
10/26/2022			796	323					
10/27/2022	2.3	2.1			1.2 (J)	40.5	2.2	3.4	
11/30/2022				215					
4/26/2023			372	128	2.1		2		
4/27/2023	1.5 (J)	1.3 (J)				19		3	
10/9/2023			259	71.3	2 (J)				
10/11/2023	2.1	1.6 (J)				24.2	2.7	3.1	
4/15/2024			391	175	2.3				
4/17/2024	1.6 (J)	1.1 (J)				22.8	2.2	3.2	

Time Series

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
6/27/2024									5.1
7/31/2024									7
8/30/2024									6.1
10/1/2024					2.6				3.2 (D)
10/2/2024	1.5 (J)	1.9 (J)				52.7	5.4	3.3	
10/31/2024									4.6
11/5/2024			743 (R)	435 (R)					
12/9/2024									3.6
1/10/2025									2.7
1/17/2025									
2/25/2025									3.1
3/27/2025									3

Time Series

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318

MW-319

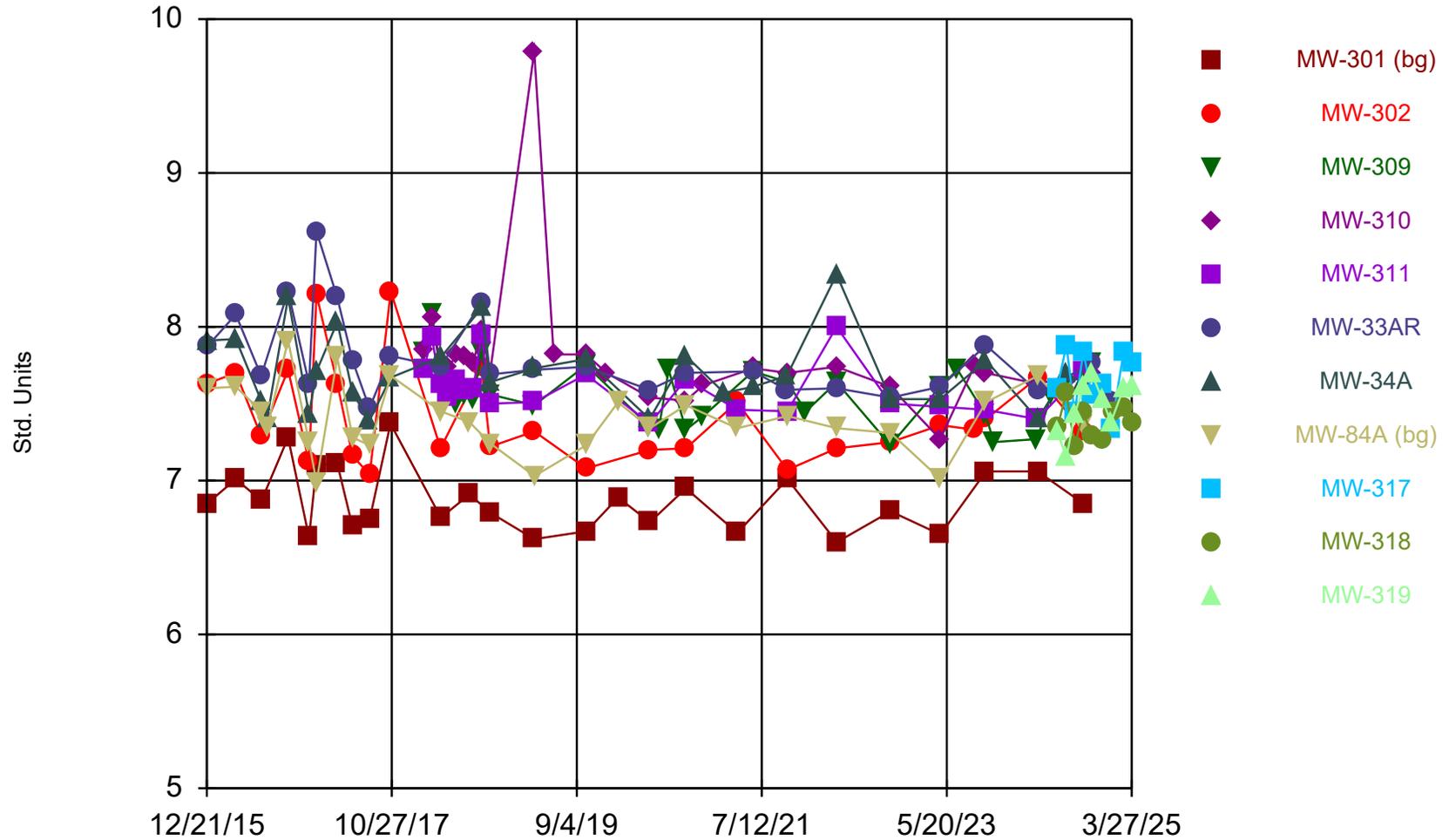
12/21/2015
12/22/2015
4/5/2016
7/7/2016
7/8/2016
10/13/2016
12/29/2016
1/25/2017
4/11/2017
6/6/2017
8/7/2017
8/8/2017
10/23/2017
10/24/2017
2/21/2018
3/23/2018
4/23/2018
4/24/2018
4/25/2018
5/24/2018
6/23/2018
7/23/2018
8/8/2018
8/22/2018
9/21/2018
10/22/2018
10/24/2018
4/2/2019
4/3/2019
10/8/2019
10/9/2019
2/3/2020
5/28/2020
5/29/2020
10/8/2020
12/11/2020
4/13/2021
4/14/2021
6/11/2021
10/12/2021
10/14/2021
4/12/2022
4/13/2022
10/26/2022
10/27/2022
11/30/2022
4/26/2023
4/27/2023
10/9/2023
10/11/2023
4/15/2024
4/17/2024

Time Series

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
6/27/2024	44.9	486
7/31/2024	19.7	712
8/30/2024	31.8	802
10/1/2024	64.6 (D)	648 (D)
10/2/2024		
10/31/2024	74.3	237
11/5/2024		
12/9/2024	65.9	455
1/10/2025		409
1/17/2025	39.4	
2/25/2025	37	355
3/27/2025	39.3	173

Time Series



Constituent: Field pH Analysis Run 5/27/2025 11:01 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:06 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						7.87	7.91		
12/22/2015	6.85	7.63						7.6	
4/5/2016	7.01	7.7				8.08	7.92	7.61	
7/7/2016		7.29				7.68	7.52		
7/8/2016	6.87							7.45	
7/28/2016							7.4	7.34	
10/13/2016	7.28	7.72				8.23	8.19	7.91	
12/29/2016	6.63	7.12				7.63	7.43	7.25	
1/25/2017	7.1	8.21				8.62	7.71	6.99	
4/11/2017	7.11	7.63				8.19	8.03	7.8	
6/6/2017	6.7	7.16				7.78	7.57	7.28	
8/7/2017						7.47	7.39		
8/8/2017	6.75	7.04						7.23	
10/23/2017	7.37								
10/24/2017		8.23				7.81	7.67	7.68	
2/21/2018			7.84	7.85	7.72				
3/23/2018			8.08	8.06	7.93				
4/23/2018			7.71	7.75	7.62				
4/24/2018		7.21				7.74	7.8		
4/25/2018	6.76							7.45	
5/24/2018			7.59	7.74	7.54				
6/23/2018			7.5	7.82	7.65				
7/23/2018			7.55	7.81	7.59				
8/8/2018	6.91							7.38	
8/22/2018			7.53	7.77	7.6				
9/21/2018		7.74	7.83	7.98	7.95	8.16	8.12		
10/22/2018		7.22	7.56	7.7	7.5	7.69	7.64		
10/24/2018	6.79							7.24	
4/2/2019	6.62	7.32	7.49	9.79 (X)	7.51	7.72	7.73		
4/3/2019								7.03	
6/12/2019				7.82					
10/8/2019			7.75	7.82	7.69	7.74	7.79		
10/9/2019	6.67	7.08						7.23	
12/23/2019				7.7					
2/3/2020	6.89							7.51	
5/28/2020						7.59	7.4		
5/29/2020	6.73	7.2	7.35	7.54	7.37			7.34	
6/30/2020			7.33						
8/6/2020			7.72						
10/8/2020	6.95	7.21	7.33	7.52	7.66	7.7	7.81	7.49	
12/11/2020			7.42	7.62					
2/25/2021							7.57		
4/13/2021		7.51							
4/14/2021	6.66				7.46			7.34	
6/11/2021			7.71 (R)	7.73 (R)		7.71 (R)	7.61 (R)		
10/12/2021						7.59	7.68		
10/14/2021	7.01	7.07	7.64	7.7	7.45			7.42	
12/21/2021			7.45						
4/12/2022		7.21	7.64	7.74	8	7.6	8.34		
4/13/2022	6.6							7.34	
10/26/2022			7.23	7.61					
10/27/2022	6.8	7.25			7.5	7.54	7.53	7.31	

Time Series

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:06 AM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
4/26/2023			7.61	7.27	7.48		7.53		
4/27/2023	6.65	7.36				7.61		7.01	
6/29/2023			7.72						
8/31/2023		7.33		7.75					
10/9/2023			7.43	7.7	7.46				
10/11/2023	7.06	7.4				7.88	7.78	7.51	
11/9/2023			7.25						
4/15/2024			7.27	7.63	7.4				
4/17/2024	7.06	7.67				7.58	7.4	7.68	
6/4/2024			7.55						
6/27/2024									7.6
7/29/2024							7.69		
7/31/2024									7.88
8/30/2024									7.44
10/1/2024					7.71				7.84 (D)
10/2/2024	6.85	7.32					7.64	7.36	
10/31/2024									7.56
11/5/2024			7.77 (R)	7.7 (R)		7.76 (R)			
12/9/2024									7.62
1/10/2025						7.51			7.33
1/17/2025									
2/25/2025									7.83
3/27/2025									7.77

Time Series

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318 MW-319

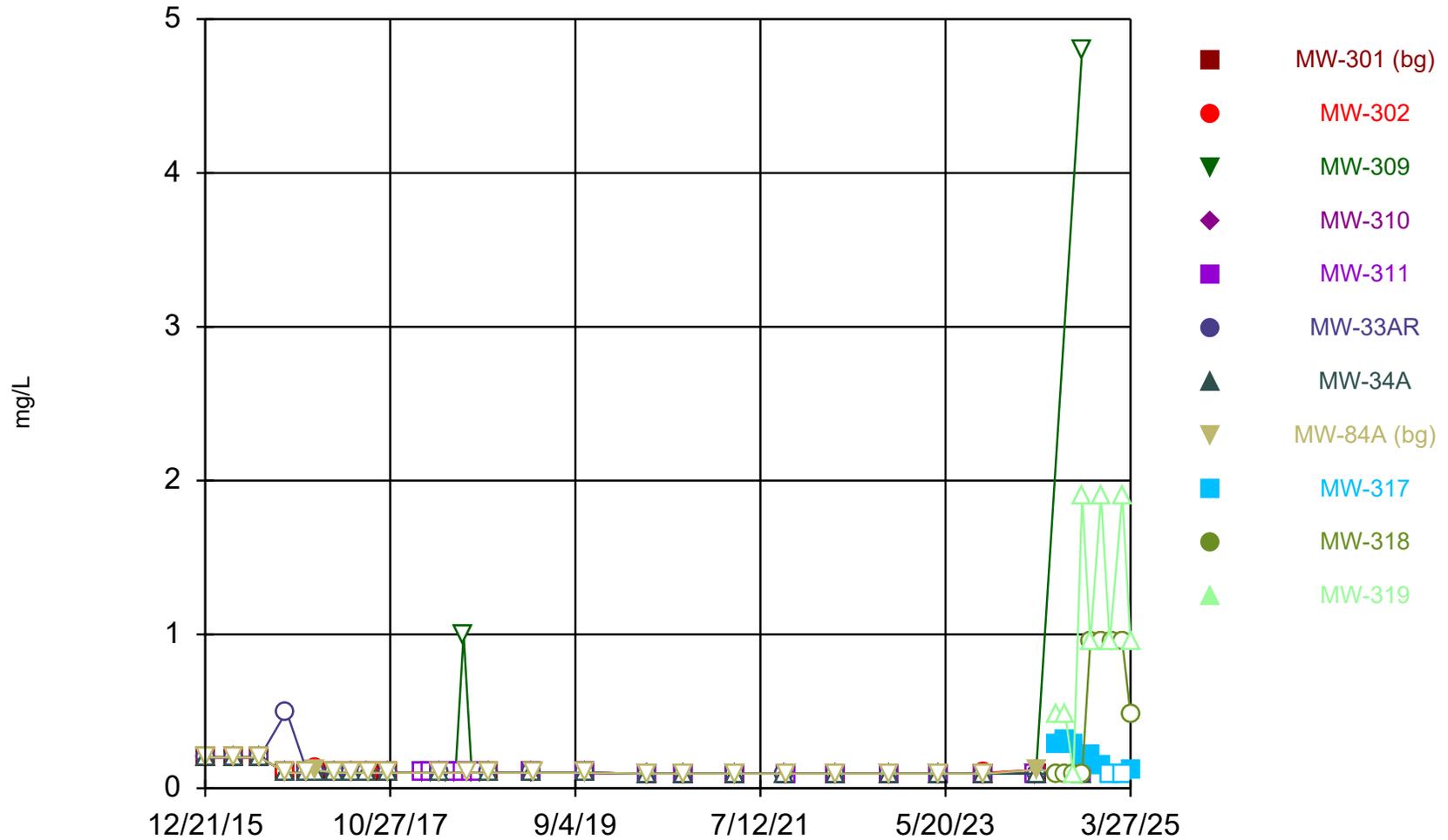
12/21/2015
12/22/2015
4/5/2016
7/7/2016
7/8/2016
7/28/2016
10/13/2016
12/29/2016
1/25/2017
4/11/2017
6/6/2017
8/7/2017
8/8/2017
10/23/2017
10/24/2017
2/21/2018
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9/21/2018
10/22/2018
10/24/2018
4/2/2019
4/3/2019
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10/8/2019
10/9/2019
12/23/2019
2/3/2020
5/28/2020
5/29/2020
6/30/2020
8/6/2020
10/8/2020
12/11/2020
2/25/2021
4/13/2021
4/14/2021
6/11/2021
10/12/2021
10/14/2021
12/21/2021
4/12/2022
4/13/2022
10/26/2022
10/27/2022

Time Series

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
4/26/2023		
4/27/2023		
6/29/2023		
8/31/2023		
10/9/2023		
10/11/2023		
11/9/2023		
4/15/2024		
4/17/2024		
6/4/2024		
6/27/2024	7.34	7.32
7/29/2024		
7/31/2024	7.57	7.15
8/30/2024	7.22	7.43
10/1/2024	7.45 (D)	7.61 (D)
10/2/2024		
10/31/2024	7.29	7.7
11/5/2024		
12/9/2024	7.27	7.53
1/10/2025		7.38
1/17/2025	7.45	
2/25/2025	7.47	7.6
3/27/2025	7.37	7.61

Time Series



Constituent: Fluoride Analysis Run 5/27/2025 11:01 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						<0.2 (U)	<0.2 (UD)		
12/22/2015	<0.2 (U)	<0.2 (U)						<0.2 (U)	
4/5/2016	<0.2 (U)	<0.2 (U)				<0.2 (U)	<0.2 (U)	<0.2 (U)	
7/7/2016		<0.2 (U)				<0.2 (U)	<0.2 (U)		
7/8/2016	<0.2 (U)							<0.2 (U)	
10/13/2016	<0.1 (U)	<0.1 (U)				<0.5 (U)	<0.1 (U)	<0.1 (U)	
12/29/2016	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
1/25/2017	<0.1 (U)	0.13 (J)				<0.1 (U)	<0.1 (U)	0.12 (J)	
4/11/2017	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
6/6/2017	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
8/7/2017						<0.1 (U)	<0.1 (U)		
8/8/2017	<0.1 (U)	<0.1 (U)						<0.1 (U)	
10/23/2017	<0.1 (U)								
10/24/2017		<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
2/21/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
3/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
4/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
4/24/2018		<0.1 (U)				<0.1 (U)	<0.1 (U)		
4/25/2018	<0.1 (U)							<0.1 (U)	
5/24/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
6/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
7/23/2018			<1 (U)	<0.1 (U)	<0.1 (U)				
8/8/2018	<0.1 (U)							<0.1 (U)	
8/22/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
9/21/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
10/22/2018		<0.1 (U)				<0.1 (U)	<0.1 (U)		
10/24/2018	<0.1 (U)							<0.1 (U)	
4/2/2019	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)		
4/3/2019								<0.1 (U)	
10/8/2019			<0.1 (U)						
10/9/2019	<0.1 (U)	<0.1 (U)						<0.1 (U)	
5/28/2020						<0.095 (U)	<0.095 (U)		
5/29/2020	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)			<0.095 (U)	
10/8/2020	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/13/2021		<0.095 (U)	<0.095 (U)	<0.095 (U)		<0.095 (U)	<0.095 (U)		
4/14/2021	<0.095 (U)				<0.095 (U)			<0.095 (U)	
10/12/2021						<0.095 (U)	<0.095 (U)		
10/14/2021	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)			<0.095 (U)	
4/12/2022		<0.095 (U)							
4/13/2022	<0.095 (U)							<0.095 (U)	
10/26/2022			<0.095 (U)	<0.095 (U)					
10/27/2022	<0.095 (U)	<0.095 (U)			<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/26/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)		<0.095 (U)		
4/27/2023	<0.095 (U)	<0.095 (U)				<0.095 (U)		<0.095 (U)	
10/9/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)				
10/11/2023	<0.095 (U)	0.1 (J)				<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/15/2024			<0.095 (U)	<0.095	<0.095				
4/17/2024	<0.095	0.12 (J)				<0.095	<0.095	0.12 (J)	
6/27/2024									0.28 (J)
7/31/2024									0.31 (J)
8/30/2024									0.28 (J)
10/1/2024			<4.8 (U)	<0.095	0.1 (J)				0.17 (JD)

Time Series

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
10/2/2024	0.13 (J)	<0.095				<0.095	<0.095	<0.095	
10/31/2024									0.22 (J)
12/9/2024									0.15 (J)
1/10/2025									<0.095
1/17/2025									
2/25/2025									<0.095
3/27/2025									0.12 (J)

Time Series

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

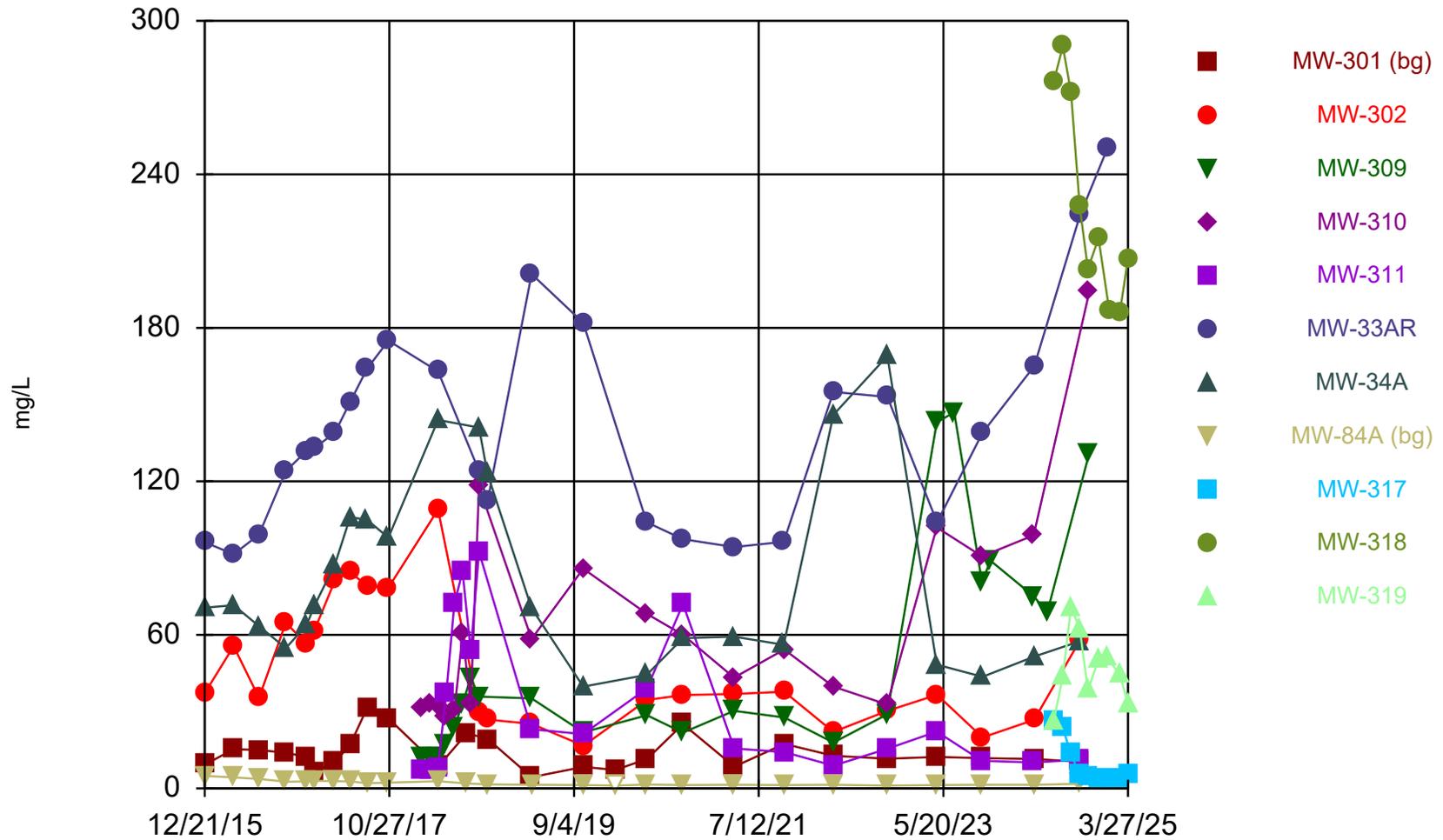
	MW-318	MW-319
12/21/2015		
12/22/2015		
4/5/2016		
7/7/2016		
7/8/2016		
10/13/2016		
12/29/2016		
1/25/2017		
4/11/2017		
6/6/2017		
8/7/2017		
8/8/2017		
10/23/2017		
10/24/2017		
2/21/2018		
3/23/2018		
4/23/2018		
4/24/2018		
4/25/2018		
5/24/2018		
6/23/2018		
7/23/2018		
8/8/2018		
8/22/2018		
9/21/2018		
10/22/2018		
10/24/2018		
4/2/2019		
4/3/2019		
10/8/2019		
10/9/2019		
5/28/2020		
5/29/2020		
10/8/2020		
4/13/2021		
4/14/2021		
10/12/2021		
10/14/2021		
4/12/2022		
4/13/2022		
10/26/2022		
10/27/2022		
4/26/2023		
4/27/2023		
10/9/2023		
10/11/2023		
4/15/2024		
4/17/2024		
6/27/2024	<0.095	<0.48
7/31/2024	<0.095	<0.48
8/30/2024	<0.095	<0.095
10/1/2024	<0.095 (D)	<1.9 (D)

Time Series

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:06 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
10/2/2024		
10/31/2024	<0.95	<0.95
12/9/2024	<0.95	<1.9
1/10/2025		<0.95
1/17/2025	<0.95	
2/25/2025	<0.95	<1.9
3/27/2025	<0.48 (U)	<0.95 (U)

Time Series



Constituent: Sulfate Analysis Run 5/27/2025 11:02 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						96.2	70.6 (D)		
12/22/2015	9.3	37.4						4.9	
4/5/2016	15.3	55.6				91.5	71.6	4.3	
7/7/2016		35.4				99.2	63.4		
7/8/2016	15							3.7 (J)	
10/13/2016	13.9	64.7				124	54.8	2.6 (J)	
12/29/2016	12.3 (J)	56.4				132	63.9	2.7 (J)	
1/25/2017	6.5	61.6				133	71.2	3	
4/11/2017	10.3	81.3				139	87.6	2.8 (J)	
6/6/2017	17.1	84.6				151	106	2.7 (J)	
8/7/2017						164	105		
8/8/2017	31.6	79						2 (J)	
10/23/2017	27.5								
10/24/2017		78.4				175	98	2.2 (J)	
2/21/2018			12.2	31.6	7.1				
3/23/2018			12.2	33.1	7.2				
4/23/2018			12	32	7.9				
4/24/2018		109				163	144		
4/25/2018	8.6							2.8 (J)	
5/24/2018			17.5	28	36.9				
6/23/2018			24.1	30.4	72.3				
7/23/2018			33.1	60.2	84.7				
8/8/2018	21.6							1.9 (J)	
8/22/2018			43.3	32.8	53.6				
9/21/2018		30	35.9	118	92.4	124	141		
10/22/2018		26.9				112	123		
10/24/2018	19.2							1.6 (J)	
4/2/2019	4.4	25.2	35.2	58.4	23.1	201	70.4		
4/3/2019								1.4 (J)	
10/8/2019			21.9	85.9	21.2	182	39.8		
10/9/2019	8.4	16.7						1.3 (J)	
2/3/2020	7.2							<2.2 (U)	
5/28/2020						104	44.4		
5/29/2020	11.5	34.6	28.6	68.2	39.1			1.5 (J)	
10/8/2020	25.1	36.5	21.8	60	72.1	97.4	58.7	1.3 (J)	
4/13/2021		36.9	30.3	43.3		94.3	59.3		
4/14/2021	8.5				15.6			1.4 (J)	
10/12/2021						96.4	56.1		
10/14/2021	17.4	37.8	27.7	54.3	14.2			1.3 (J)	
4/12/2022		22.1	17.9	39.8	8.9	155	146		
4/13/2022	12.7							1.4 (J)	
10/26/2022			28.9	32.8					
10/27/2022	11.6	30.3			15.5	153	169	1.1 (J)	
4/26/2023			143 (X)	102	22.2		48.4		
4/27/2023	12.3	36.6				104		1.3 (J)	
6/29/2023			147 (X)						
10/9/2023			80.6	90.7	10.8				
10/11/2023	11.8	19.9				139	43.6	1.4 (J)	
11/9/2023			89						
4/15/2024			75.1	98.9	10.1				
4/17/2024	11.5	26.8				165	51.5	1.4 (J)	
6/4/2024			68.8						

Time Series

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
6/27/2024									26.4
7/31/2024									23.5
8/30/2024									13.5
10/1/2024					11.2				5.2 (D)
10/2/2024	10.4	57.9				224	57.5	1.8 (J)	
10/31/2024									5
11/5/2024			131 (R)	194 (R)					
12/9/2024									3.7
1/10/2025						250			3.8
1/17/2025									
2/25/2025									3.8
3/27/2025									5.4

Time Series

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318

MW-319

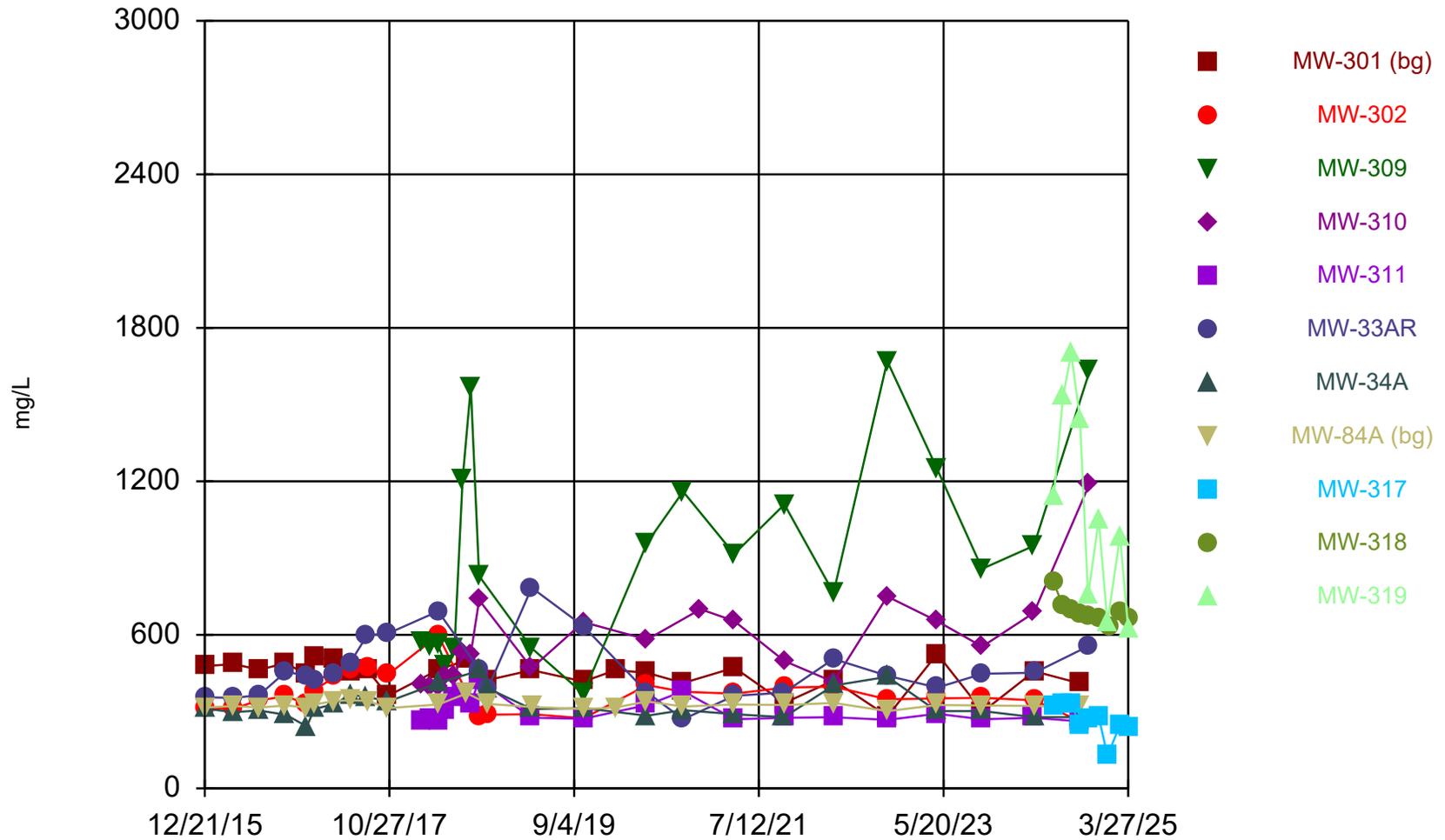
12/21/2015
12/22/2015
4/5/2016
7/7/2016
7/8/2016
10/13/2016
12/29/2016
1/25/2017
4/11/2017
6/6/2017
8/7/2017
8/8/2017
10/23/2017
10/24/2017
2/21/2018
3/23/2018
4/23/2018
4/24/2018
4/25/2018
5/24/2018
6/23/2018
7/23/2018
8/8/2018
8/22/2018
9/21/2018
10/22/2018
10/24/2018
4/2/2019
4/3/2019
10/8/2019
10/9/2019
2/3/2020
5/28/2020
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4/13/2021
4/14/2021
10/12/2021
10/14/2021
4/12/2022
4/13/2022
10/26/2022
10/27/2022
4/26/2023
4/27/2023
6/29/2023
10/9/2023
10/11/2023
11/9/2023
4/15/2024
4/17/2024
6/4/2024

Time Series

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
6/27/2024	276	26.1
7/31/2024	290	43.6
8/30/2024	272	70.9 (J)
10/1/2024	227.5 (D)	62.45 (D)
10/2/2024		
10/31/2024	203	38.5
11/5/2024		
12/9/2024	215	50.3
1/10/2025		51.2
1/17/2025	187	
2/25/2025	186	44.4
3/27/2025	207	33.1

Time Series



Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:02 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
12/21/2015						356	312 (D)		
12/22/2015	478	312						316	
4/5/2016	486	312				354	298	322	
7/7/2016		344				364	304		
7/8/2016	464							316	
10/13/2016	490	360				456	288	324	
12/29/2016	444	330				440	242	316	
1/25/2017	514	384				426	310	328	
4/11/2017	502	436				446	330	342	
6/6/2017	458	466				492	366	344	
8/7/2017						598	358		
8/8/2017	462	470						342	
10/23/2017	362								
10/24/2017		446				606	340	314	
2/21/2018			576	406	260				
3/23/2018			552	398	274				
4/23/2018			562	396	262				
4/24/2018		598				692	412		
4/25/2018	464							328	
5/24/2018			478	436	304				
6/23/2018			548	438	352				
7/23/2018			1210	532	372				
8/8/2018	502							372	
8/22/2018			1570	526	332				
9/21/2018		280	830	736	424	466	460		
10/22/2018		288				388	392		
10/24/2018	424							330	
4/2/2019	462	290	548	470	276	784	310		
4/3/2019								318	
10/8/2019			370	650	272	634	314		
10/9/2019	418	274						310	
2/3/2020	462							316	
5/28/2020						376	284		
5/29/2020	452	404	960	582	326			340	
10/8/2020	412	378	1160		380	270	306	320	
12/11/2020				700 (R)					
4/13/2021		370	916	654		362	290		
4/14/2021	472				270			328	
10/12/2021						374	278		
10/14/2021	334	394	1110	498	276			326	
4/12/2022		398	764	416	278	506	402		
4/13/2022	422							334	
10/26/2022			1670	750					
10/27/2022	282	348			268	440	436	302	
4/26/2023			1250	654	292		302		
4/27/2023	526	352				394		326	
10/9/2023			858	554	270				
10/11/2023	300	354				448	302	324	
4/15/2024			948	686	276				
4/17/2024	458	344				452	278	322	
6/27/2024									318
7/31/2024									328

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-317
8/30/2024									334
10/1/2024					262				245 (D)
10/2/2024	410	262					278	318	
10/31/2024									272
11/5/2024			1630 (R)	1190 (R)		558 (R)			
12/9/2024									280
1/10/2025									128
1/17/2025									
2/25/2025									248
3/27/2025									240

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
12/21/2015		
12/22/2015		
4/5/2016		
7/7/2016		
7/8/2016		
10/13/2016		
12/29/2016		
1/25/2017		
4/11/2017		
6/6/2017		
8/7/2017		
8/8/2017		
10/23/2017		
10/24/2017		
2/21/2018		
3/23/2018		
4/23/2018		
4/24/2018		
4/25/2018		
5/24/2018		
6/23/2018		
7/23/2018		
8/8/2018		
8/22/2018		
9/21/2018		
10/22/2018		
10/24/2018		
4/2/2019		
4/3/2019		
10/8/2019		
10/9/2019		
2/3/2020		
5/28/2020		
5/29/2020		
10/8/2020		
12/11/2020		
4/13/2021		
4/14/2021		
10/12/2021		
10/14/2021		
4/12/2022		
4/13/2022		
10/26/2022		
10/27/2022		
4/26/2023		
4/27/2023		
10/9/2023		
10/11/2023		
4/15/2024		
4/17/2024		
6/27/2024	804	1140
7/31/2024	712	1530

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:07 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318	MW-319
8/30/2024	694	1700
10/1/2024	679 (D)	1445 (D)
10/2/2024		
10/31/2024	676	753
11/5/2024		
12/9/2024	666	1050
1/10/2025		647
1/17/2025	628	
2/25/2025	692	986
3/27/2025	666	623

Attachment B
Outlier Analysis

Outlier Analysis

Columbia Energy Center Client: SCS Engineers Data: Columbia Printed 5/27/2025, 11:42 AM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Boron (ug/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	25	430.6	381.6	ln(x)	ShapiroWilk
Boron (ug/L)	MW-309	No	n/a	n/a	EPA 1989	0.05	25	42.84	12.28	normal	ShapiroWilk
Boron (ug/L)	MW-310	No	n/a	n/a	EPA 1989	0.05	20	69.15	7.173	normal	ShapiroWilk
Boron (ug/L)	MW-311	No	n/a	n/a	EPA 1989	0.05	20	32.7	5.223	normal	ShapiroWilk
Boron (ug/L)	MW-33AR	No	n/a	n/a	EPA 1989	0.05	25	648.5	128.9	normal	ShapiroWilk
Boron (ug/L)	MW-34A	No	n/a	n/a	NP (nrm)	NaN	26	220	16.9	unknown	ShapiroWilk
Boron (ug/L)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	38.62	8.489	normal	ShapiroWilk
Boron (ug/L)	MW-318	No	n/a	n/a	EPA 1989	0.05	9	18.12	4.082	normal	ShapiroWilk
Boron (ug/L)	MW-319	Yes	42.2	8/30/2024	Dixon's	0.05	9	23.32	7.689	normal	ShapiroWilk
Calcium (ug/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	24	77692	12910	normal	ShapiroWilk
Calcium (ug/L)	MW-309	No	n/a	n/a	EPA 1989	0.05	21	71267	34152	ln(x)	ShapiroWilk
Calcium (ug/L)	MW-310	Yes	99700	11/5/2024	Dixon's	0.05	22	45895	15971	normal	ShapiroWilk
Calcium (ug/L)	MW-311	No	n/a	n/a	EPA 1989	0.05	20	63915	6216	normal	ShapiroWilk
Calcium (ug/L)	MW-33AR	No	n/a	n/a	EPA 1989	0.05	24	72971	22622	ln(x)	ShapiroWilk
Calcium (ug/L)	MW-34A	No	n/a	n/a	EPA 1989	0.05	24	64631	8209	normal	ShapiroWilk
Calcium (ug/L)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	48628	3955	normal	ShapiroWilk
Calcium (ug/L)	MW-318	No	n/a	n/a	EPA 1989	0.05	9	109167	7450	normal	ShapiroWilk
Calcium (ug/L)	MW-319	No	n/a	n/a	EPA 1989	0.05	9	97689	28552	normal	ShapiroWilk
Chloride (mg/L)	MW-302	Yes	15	4/24/2018	Dixon's	0.05	25	2.668	2.951	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-309	No	n/a	n/a	Dixon's	0.05	20	370.2	230.6	normal	ShapiroWilk
Chloride (mg/L)	MW-310	No	n/a	n/a	EPA 1989	0.05	21	138.5	105.2	normal	ShapiroWilk
Chloride (mg/L)	MW-311	No	n/a	n/a	EPA 1989	0.05	20	2.135	0.7982	normal	ShapiroWilk
Chloride (mg/L)	MW-33AR	No	n/a	n/a	EPA 1989	0.05	25	57.45	57.76	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-34A	No	n/a	n/a	Dixon's	0.05	25	8.574	11.45	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	4.267	1.526	normal	ShapiroWilk
Chloride (mg/L)	MW-318	No	n/a	n/a	EPA 1989	0.05	9	46.32	18.05	normal	ShapiroWilk
Chloride (mg/L)	MW-319	No	n/a	n/a	EPA 1989	0.05	9	475.2	212.2	normal	ShapiroWilk
Field pH (Std. Units)	MW-302	No	n/a	n/a	NP (nrm)	NaN	26	7.417	0.3193	unknown	ShapiroWilk
Field pH (Std. Units)	MW-309	No	n/a	n/a	EPA 1989	0.05	28	7.566	0.2028	normal	ShapiroWilk
Field pH (Std. Units)	MW-310	Yes	9.79	4/2/2019	Dixon's	0.05	25	7.805	0.4404	normal	ShapiroWilk
Field pH (Std. Units)	MW-311	No	n/a	n/a	EPA 1989	0.05	21	7.609	0.1777	normal	ShapiroWilk
Field pH (Std. Units)	MW-33AR	Yes	8.62	1/25/2017	Rosner's	0.01	26	7.788	0.2674	ln(x)	ShapiroWilk
Field pH (Std. Units)	MW-34A	No	n/a	n/a	EPA 1989	0.05	28	7.707	0.2467	normal	ShapiroWilk
Field pH (Std. Units)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	7.652	0.1916	normal	ShapiroWilk
Field pH (Std. Units)	MW-318	No	n/a	n/a	EPA 1989	0.05	9	7.381	0.1126	normal	ShapiroWilk
Field pH (Std. Units)	MW-319	No	n/a	n/a	EPA 1989	0.05	9	7.481	0.1754	normal	ShapiroWilk
Fluoride (mg/L)	MW-302	n/a	n/a	n/a	NP (nrm)	NaN	24	0.1129	0.03458	unknown	ShapiroWilk
Fluoride (mg/L)	MW-309	n/a	n/a	n/a	NP (nrm)	NaN	20	0.3778	1.06	unknown	ShapiroWilk
Fluoride (mg/L)	MW-310	n/a	n/a	n/a	NP (nrm)	NaN	20	0.0975	0.002565	unknown	ShapiroWilk
Fluoride (mg/L)	MW-311	n/a	n/a	n/a	NP (nrm)	NaN	20	0.09775	0.002552	unknown	ShapiroWilk
Fluoride (mg/L)	MW-33AR	n/a	n/a	n/a	NP (nrm)	NaN	24	0.1271	0.08664	unknown	ShapiroWilk
Fluoride (mg/L)	MW-34A	n/a	n/a	n/a	NP (nrm)	NaN	24	0.1104	0.03467	unknown	ShapiroWilk
Fluoride (mg/L)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	0.1911	0.08399	normal	ShapiroWilk
Fluoride (mg/L)	MW-318	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5178	0.4277	unknown	ShapiroWilk
Fluoride (mg/L)	MW-319	No	n/a	n/a	Dixon's	0.05	9	1.067	0.6853	normal	ShapiroWilk
Sulfate (mg/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	25	47.26	24.29	normal	ShapiroWilk
Sulfate (mg/L)	MW-309	No	n/a	n/a	EPA 1989	0.05	23	49.44	42.23	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-310	No	n/a	n/a	EPA 1989	0.05	20	64.72	41.2	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-311	No	n/a	n/a	EPA 1989	0.05	20	31.31	28.14	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-33AR	No	n/a	n/a	EPA 1989	0.05	26	141.1	41.87	normal	ShapiroWilk

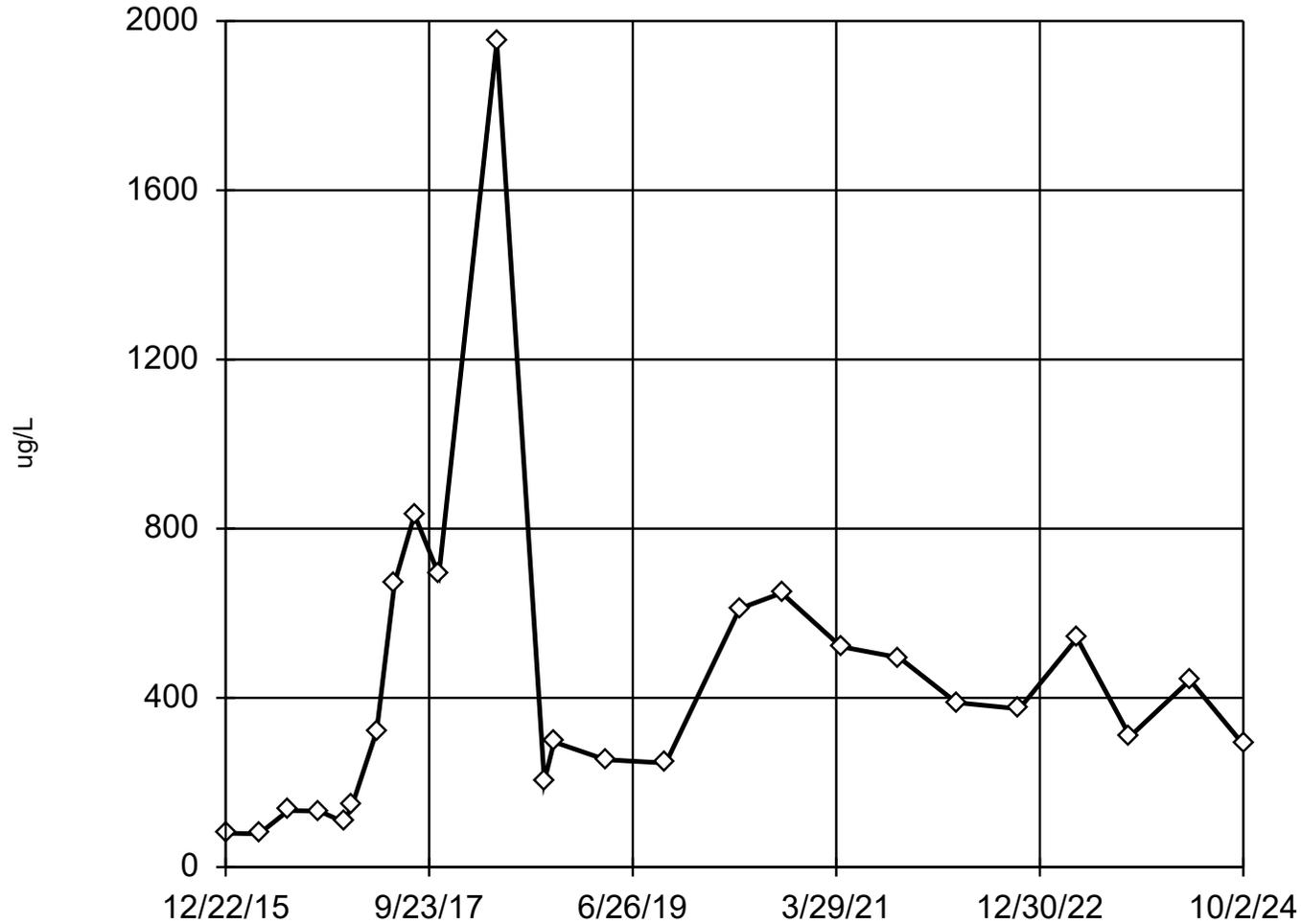
Outlier Analysis

Columbia Energy Center Client: SCS Engineers Data: Columbia Printed 5/27/2025, 11:42 AM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
Sulfate (mg/L)	MW-34A	No	n/a	n/a	EPA 1989	0.05	25	81.79	37.09	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-317	No	n/a	n/a	EPA 1989	0.05	9	10.03	9.008	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-318	No	n/a	n/a	EPA 1989	0.05	9	229.3	39.92	normal	ShapiroWilk
Sulfate (mg/L)	MW-319	No	n/a	n/a	EPA 1989	0.05	9	46.73	13.96	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-302	No	n/a	n/a	EPA 1989	0.05	25	367.8	75.53	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-309	No	n/a	n/a	EPA 1989	0.05	20	925.5	395.4	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-310	Yes	1190	11/5/2024	Dixon`s	0.05	20	583.6	185.9	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-311	No	n/a	n/a	NP (nm)	NaN	20	301.3	47.24	unknown	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-33AR	No	n/a	n/a	EPA 1989	0.05	25	467.3	119.8	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-34A	No	n/a	n/a	EPA 1989	0.05	25	327.7	54.96	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-317	Yes	128	1/10/2025	Dixon`s	0.05	9	265.9	63.14	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-318	Yes	804	6/27/2024	Dixon`s	0.05	9	690.8	48.49	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-319	No	n/a	n/a	EPA 1989	0.05	9	1097	392.8	normal	ShapiroWilk

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 430.6, std. dev. 381.6, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9713
Critical = 0.888 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Boron Analysis Run 5/27/2025 11:17 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

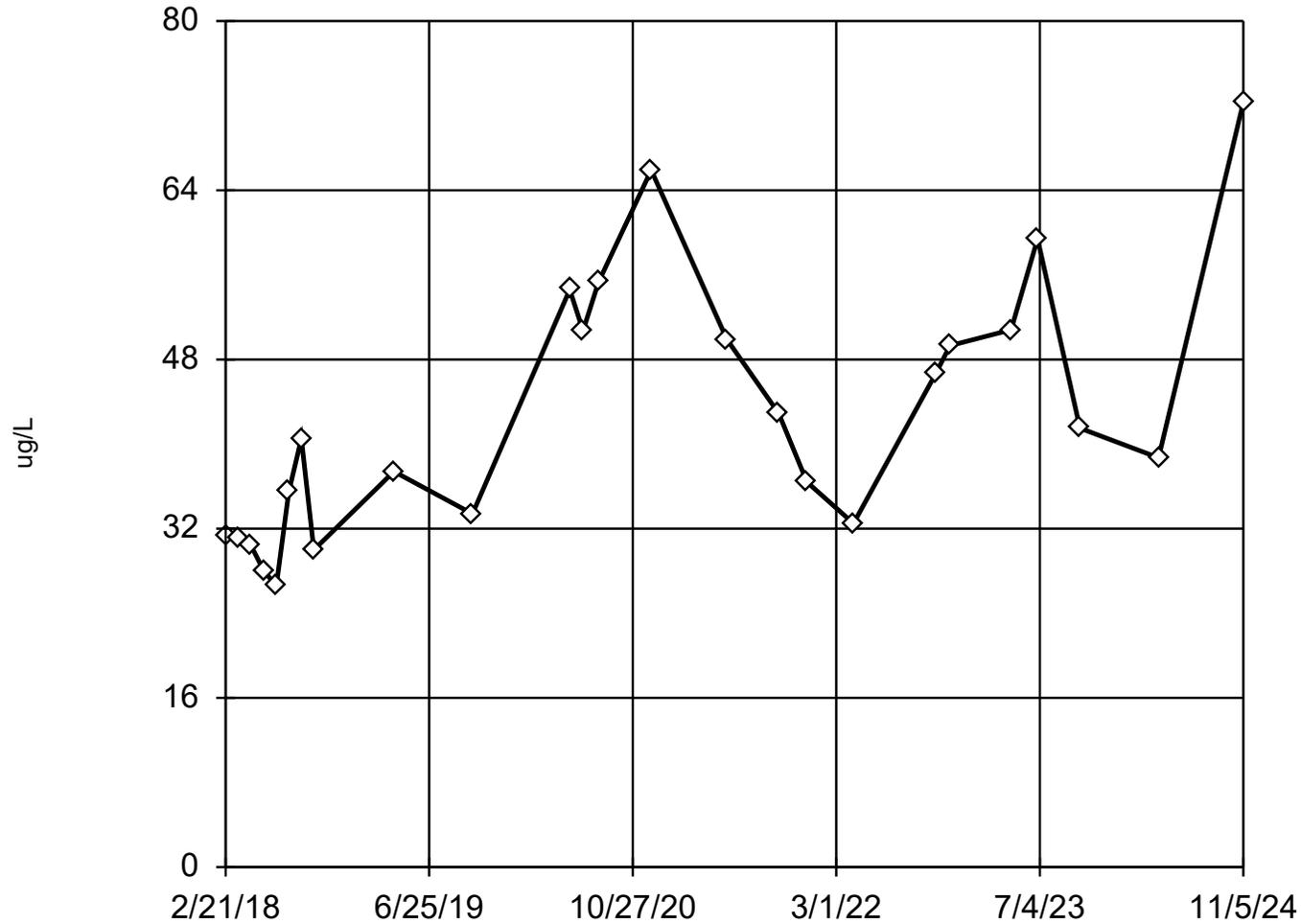
Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	80
4/5/2016	78.8
7/7/2016	134
10/13/2016	132
12/29/2016	106
1/25/2017	149
4/11/2017	322
6/6/2017	671
8/8/2017	833
10/24/2017	691
4/24/2018	1950
9/21/2018	203
10/22/2018	296
4/2/2019	254
10/9/2019	246
5/29/2020	611
10/8/2020	648
4/13/2021	521
10/14/2021	495
4/12/2022	389
10/27/2022	374
4/27/2023	541
10/11/2023	309
4/17/2024	442
10/2/2024	290

EPA Screening (suspected outliers for Dixon's Test)

MW-309



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 42.84, std. dev. 12.28, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9353
Critical = 0.888
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:18 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

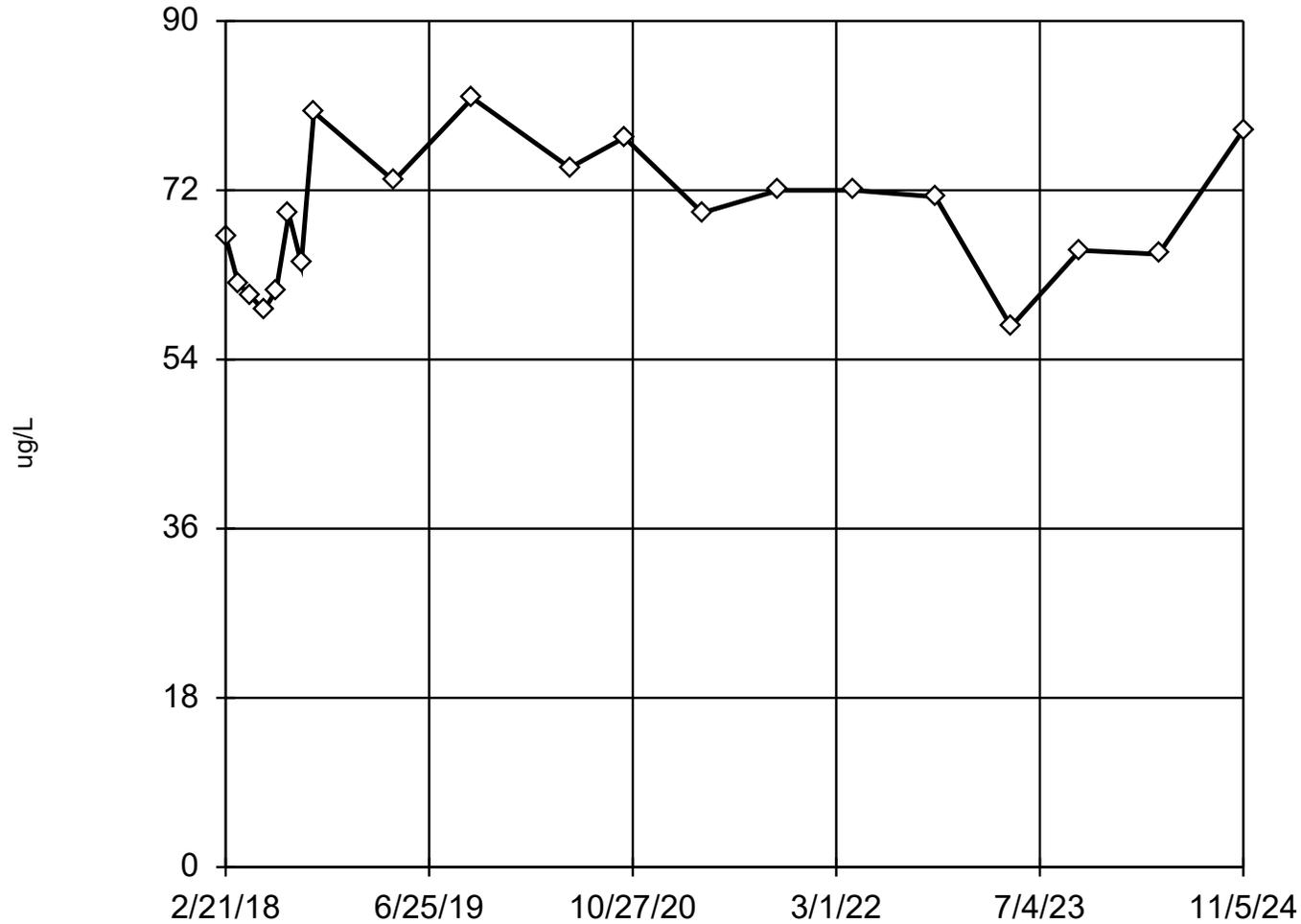
Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	31.4
3/23/2018	31
4/23/2018	30.4
5/24/2018	28
6/23/2018	26.6
7/23/2018	35.5
8/22/2018	40.5
9/21/2018	30
4/2/2019	37.4
10/8/2019	33.4
5/29/2020	54.6
6/30/2020	50.7
8/6/2020	55.3
12/11/2020	65.9 (R)
6/11/2021	49.9 (R)
10/14/2021	42.9
12/21/2021	36.4
4/12/2022	32.5
10/26/2022	46.6
11/30/2022	49.3
4/26/2023	50.8
6/29/2023	59.4
10/9/2023	41.5
4/15/2024	38.7
11/5/2024	72.3 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-310



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 69.15, std. dev. 7.173, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9682
Critical = 0.868
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:18 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

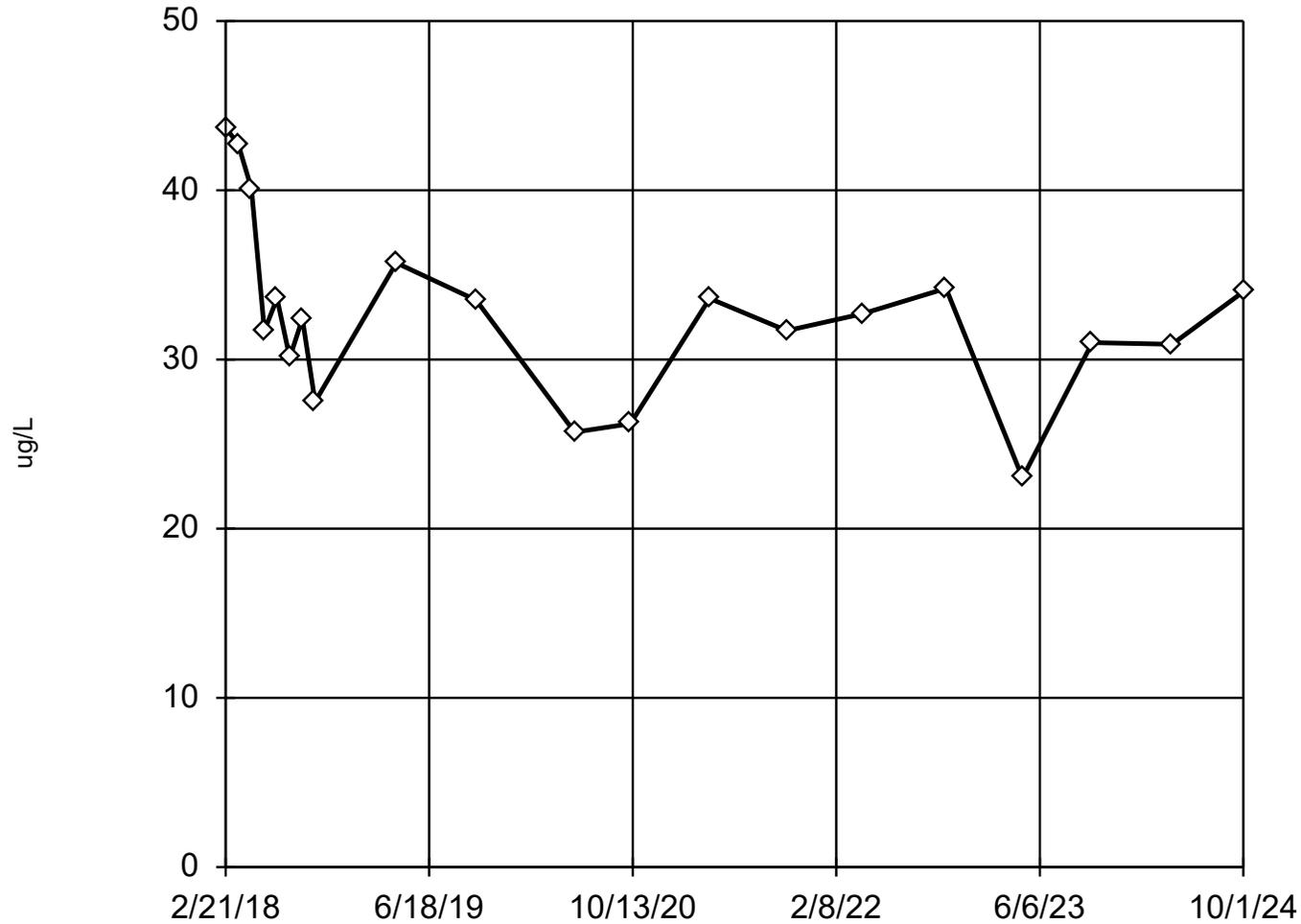
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	67.1
3/23/2018	62.1
4/23/2018	60.7
5/24/2018	59.2
6/23/2018	61.4
7/23/2018	69.5
8/22/2018	64.2
9/21/2018	80.3
4/2/2019	73
10/8/2019	81.8
5/29/2020	74.4
10/8/2020	77.6
4/13/2021	69.6
10/14/2021	72
4/12/2022	72
10/26/2022	71.3
4/26/2023	57.5
10/9/2023	65.6
4/15/2024	65.2
11/5/2024	78.4 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-311



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 32.7, std. dev. 5.223, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9437
Critical = 0.868
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:18 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	43.7
3/23/2018	42.7
4/23/2018	40.1
5/24/2018	31.7
6/23/2018	33.6
7/23/2018	30.1
8/22/2018	32.4
9/21/2018	27.5
4/2/2019	35.7
10/8/2019	33.5
5/29/2020	25.7
10/8/2020	26.2
4/14/2021	33.6
10/14/2021	31.7
4/12/2022	32.7
10/27/2022	34.2
4/26/2023	23
10/9/2023	31
4/15/2024	30.9
10/1/2024	34

EPA Screening (suspected outliers for Dixon's Test)

MW-33AR



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 648.5, std. dev. 128.9, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9324
Critical = 0.888
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF

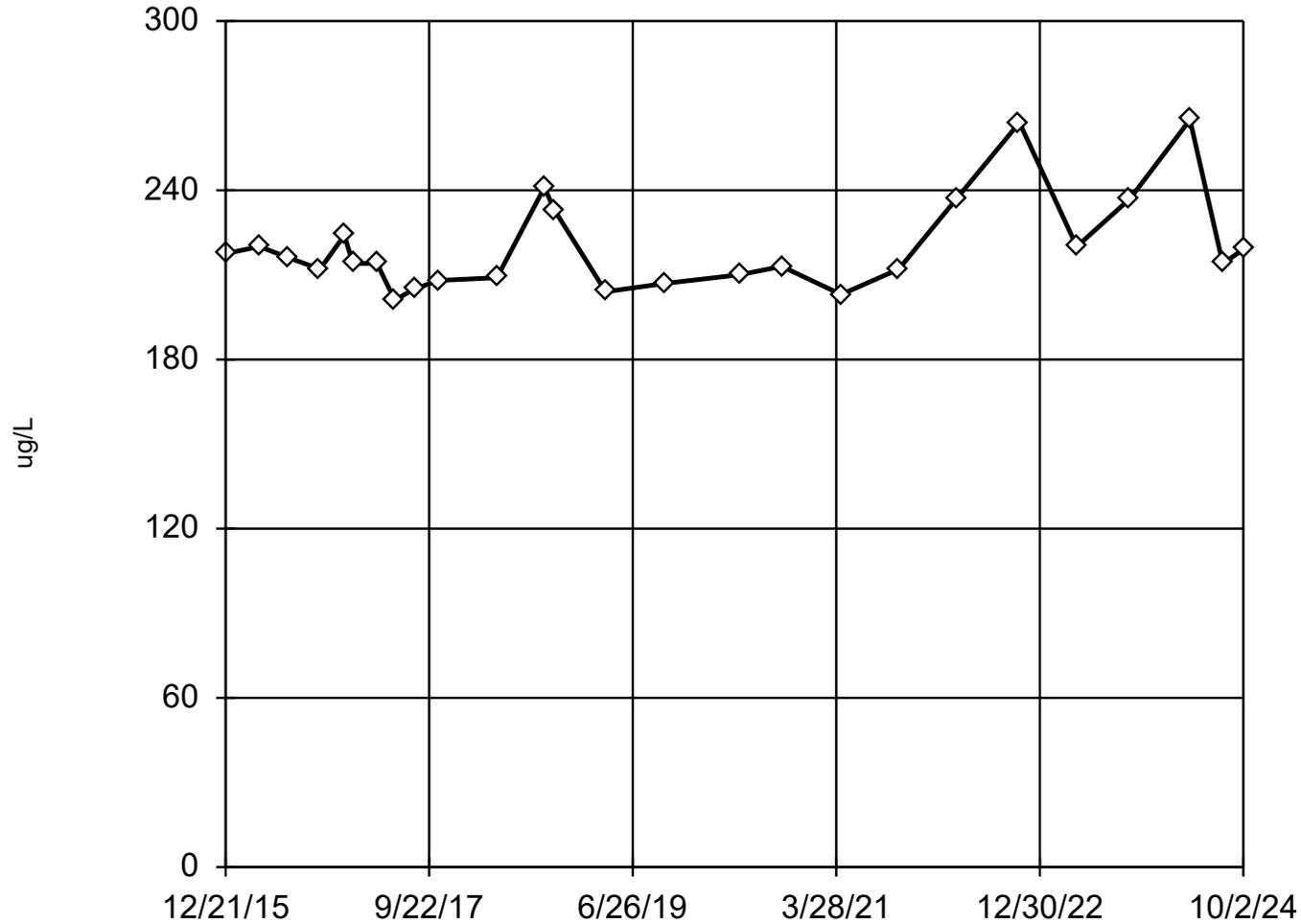
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	954
4/5/2016	813
7/7/2016	794
10/13/2016	827
12/29/2016	812
1/25/2017	763
4/11/2017	760
6/6/2017	692
8/7/2017	697
10/24/2017	678
4/24/2018	601
9/21/2018	683
10/22/2018	682
4/2/2019	568
10/8/2019	548
5/28/2020	566
10/8/2020	569
4/13/2021	473
10/12/2021	564
4/12/2022	558
10/27/2022	586
4/27/2023	532
10/11/2023	485
4/17/2024	531
10/2/2024	477

Tukey's Outlier Screening

MW-34A



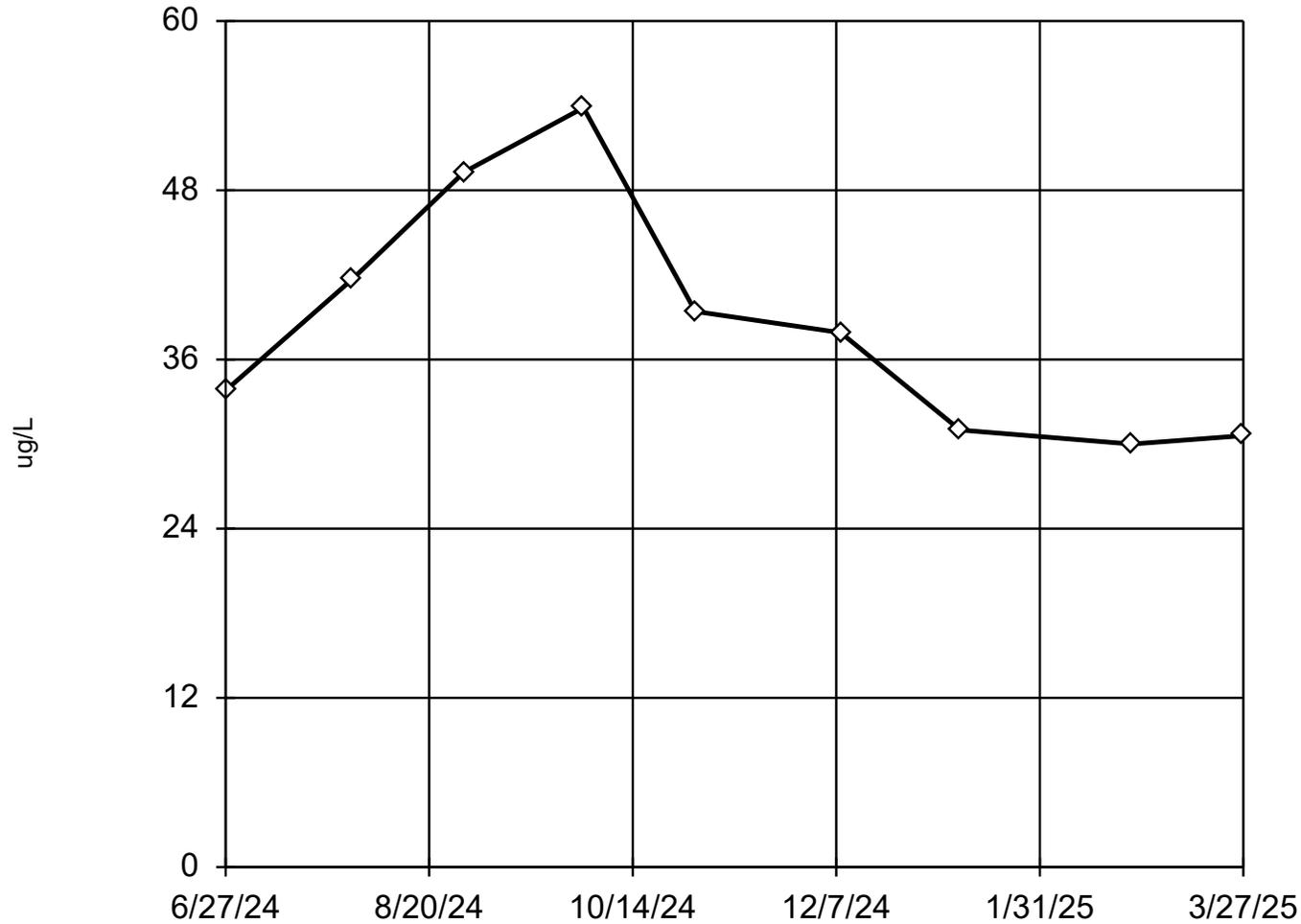
Tukey's Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	217.5 (D)
4/5/2016	220
7/7/2016	216
10/13/2016	212
12/29/2016	224
1/25/2017	214
4/11/2017	214
6/6/2017	201
8/7/2017	205
10/24/2017	208
4/24/2018	209
9/21/2018	241
10/22/2018	233
4/2/2019	204
10/8/2019	207
5/28/2020	210
10/8/2020	213
4/13/2021	203
10/12/2021	212
4/12/2022	237
10/27/2022	264
4/26/2023	220
10/11/2023	237
4/17/2024	265
7/29/2024	214
10/2/2024	219

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 38.62, std. dev. 8.489, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.898
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

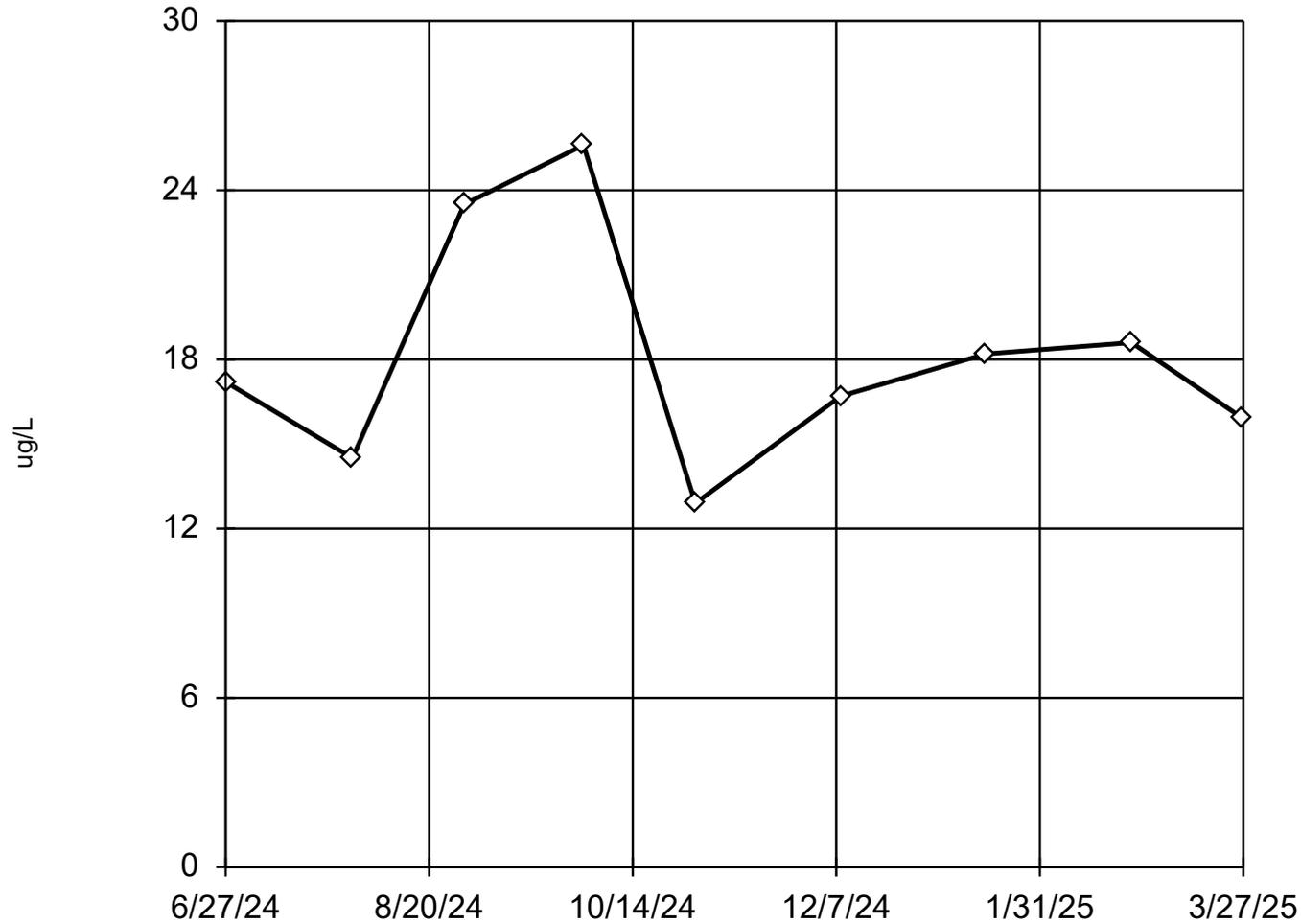
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	33.8
7/31/2024	41.7
8/30/2024	49.3
10/1/2024	53.85 (D)
10/31/2024	39.4
12/9/2024	37.9
1/10/2025	31
2/25/2025	30
3/27/2025	30.6

EPA Screening (suspected outliers for Dixon's Test)

MW-318



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 18.12, std. dev. 4.082, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.92
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

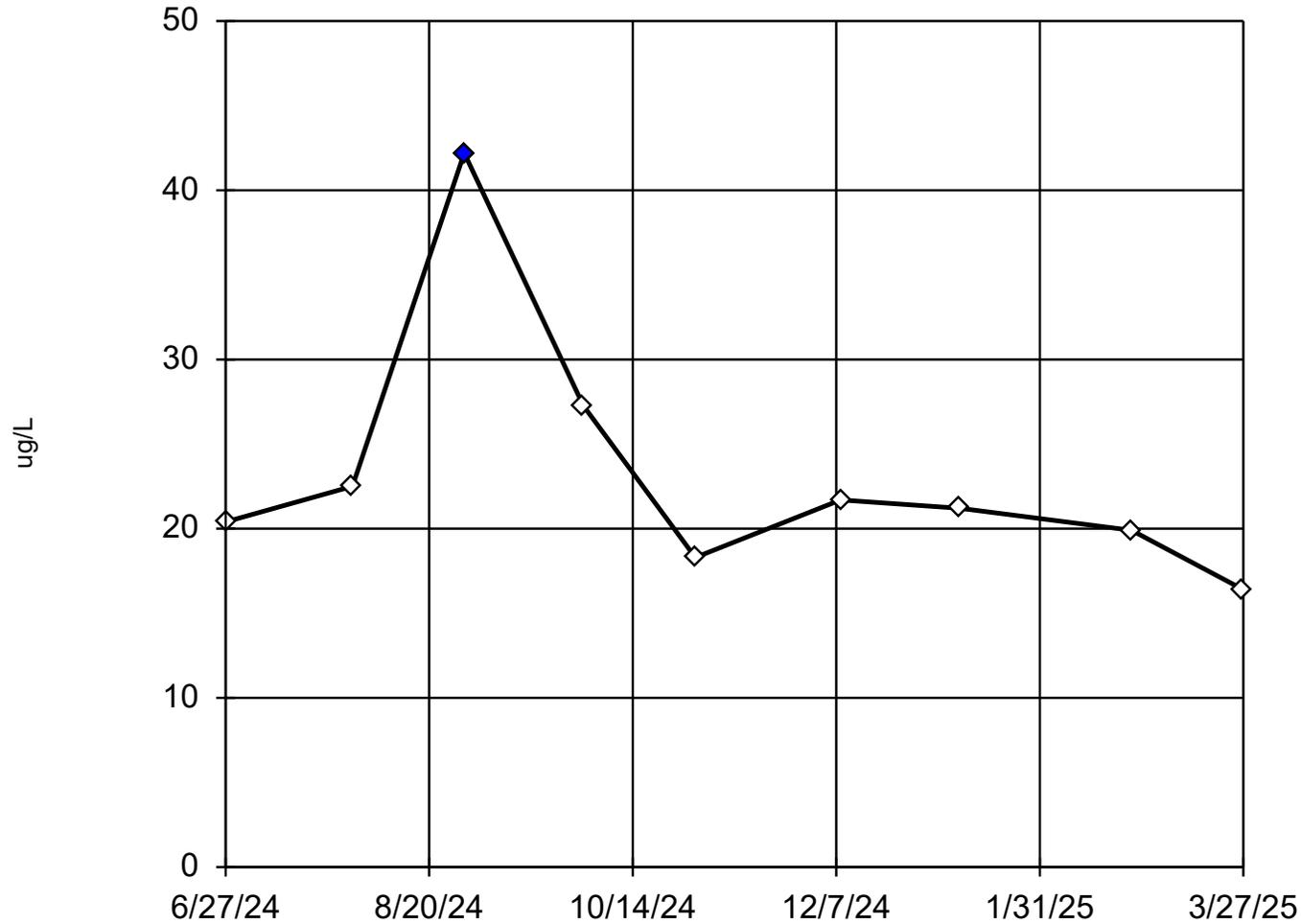
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	17.2
7/31/2024	14.5
8/30/2024	23.5
10/1/2024	25.6 (D)
10/31/2024	12.9
12/9/2024	16.7
1/17/2025	18.2
2/25/2025	18.6
3/27/2025	15.9

Dixon's Outlier Test

MW-319



n = 9

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 23.32.
Std. Dev. = 7.689.
42.2: c = 0.6255
tab1 = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9482
Critical = 0.749
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Boron Analysis Run 5/27/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

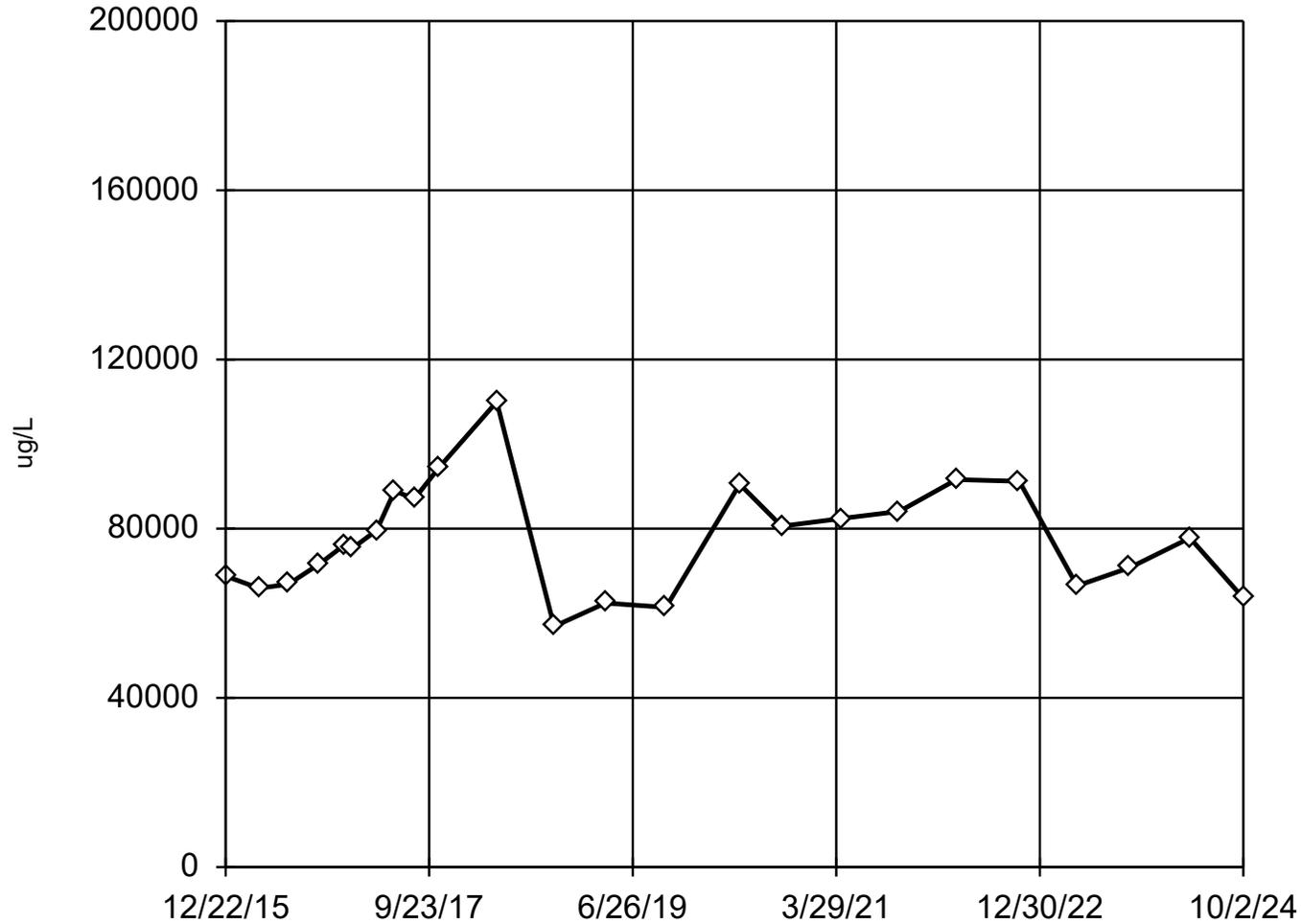
Dixon's Outlier Test

Constituent: Boron (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	20.4
7/31/2024	22.5
8/30/2024	42.2 (O)
10/1/2024	27.25 (D)
10/31/2024	18.3
12/9/2024	21.7
1/10/2025	21.2
2/25/2025	19.9
3/27/2025	16.4

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 24

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 77692, std. dev. 12910, critical Tn 2.644

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9659
Critical = 0.884
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

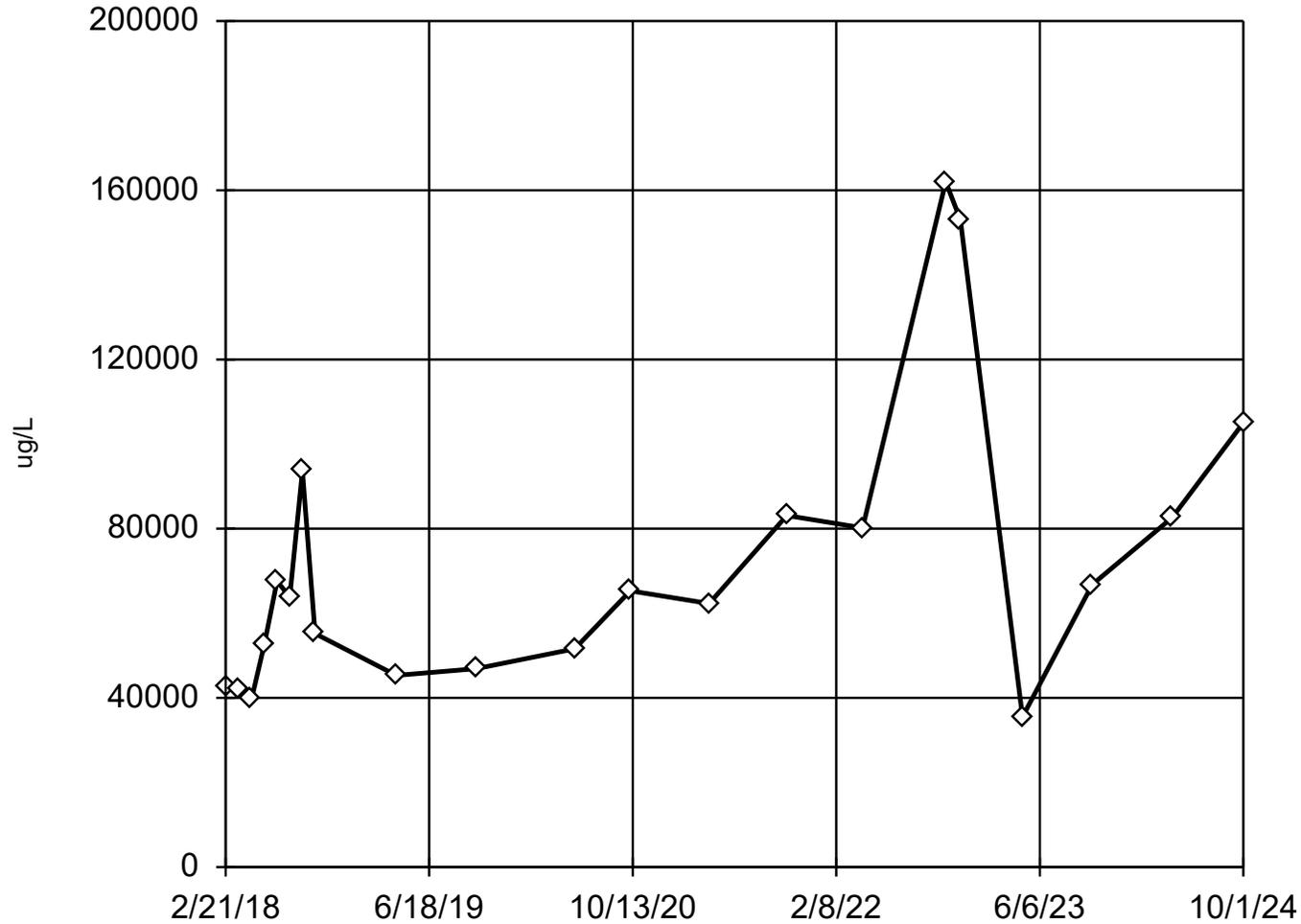
Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	68800
4/5/2016	65900
7/7/2016	66900
10/13/2016	71700
12/29/2016	76100
1/25/2017	75400
4/11/2017	79600
6/6/2017	88900
8/8/2017	87100
10/24/2017	94400
4/24/2018	110000
10/22/2018	56900
4/2/2019	62400
10/9/2019	61400
5/29/2020	90500
10/8/2020	80600
4/13/2021	82400
10/14/2021	84100
4/12/2022	91600
10/27/2022	91200
4/27/2023	66500
10/11/2023	70800
4/17/2024	77800
10/2/2024	63600

EPA Screening (suspected outliers for Dixon's Test)

MW-309



n = 21

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 71267, std. dev. 34152, critical Tn 2.58

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9452
Critical = 0.873 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Calcium Analysis Run 5/27/2025 11:20 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

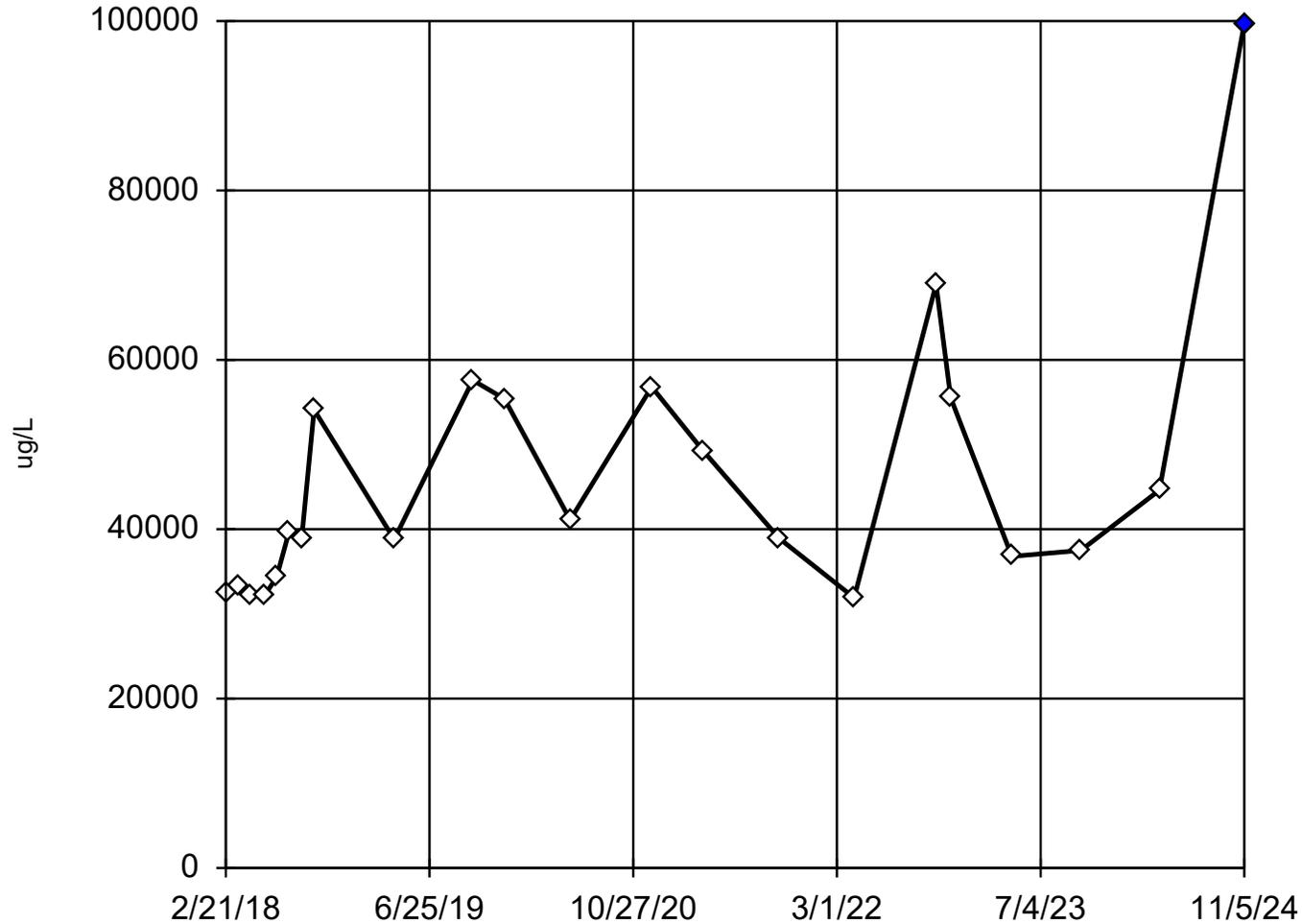
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	42700
3/23/2018	41800
4/23/2018	39600
5/24/2018	52700
6/23/2018	67600
7/23/2018	63800
8/22/2018	93600
9/21/2018	55200
4/2/2019	45300
10/8/2019	46900
5/29/2020	51600
10/8/2020	65300
4/13/2021	62300
10/14/2021	83100
4/12/2022	80200
10/26/2022	162000
11/30/2022	153000
4/26/2023	35500
10/9/2023	66800
4/15/2024	82600
10/1/2024	105000

Dixon's Outlier Test

MW-310



n = 22

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 45895.
Std. Dev. = 15971.
99700 (R): c = 0.6228
tab1 = 0.43.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8805
Critical = 0.873
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:20 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

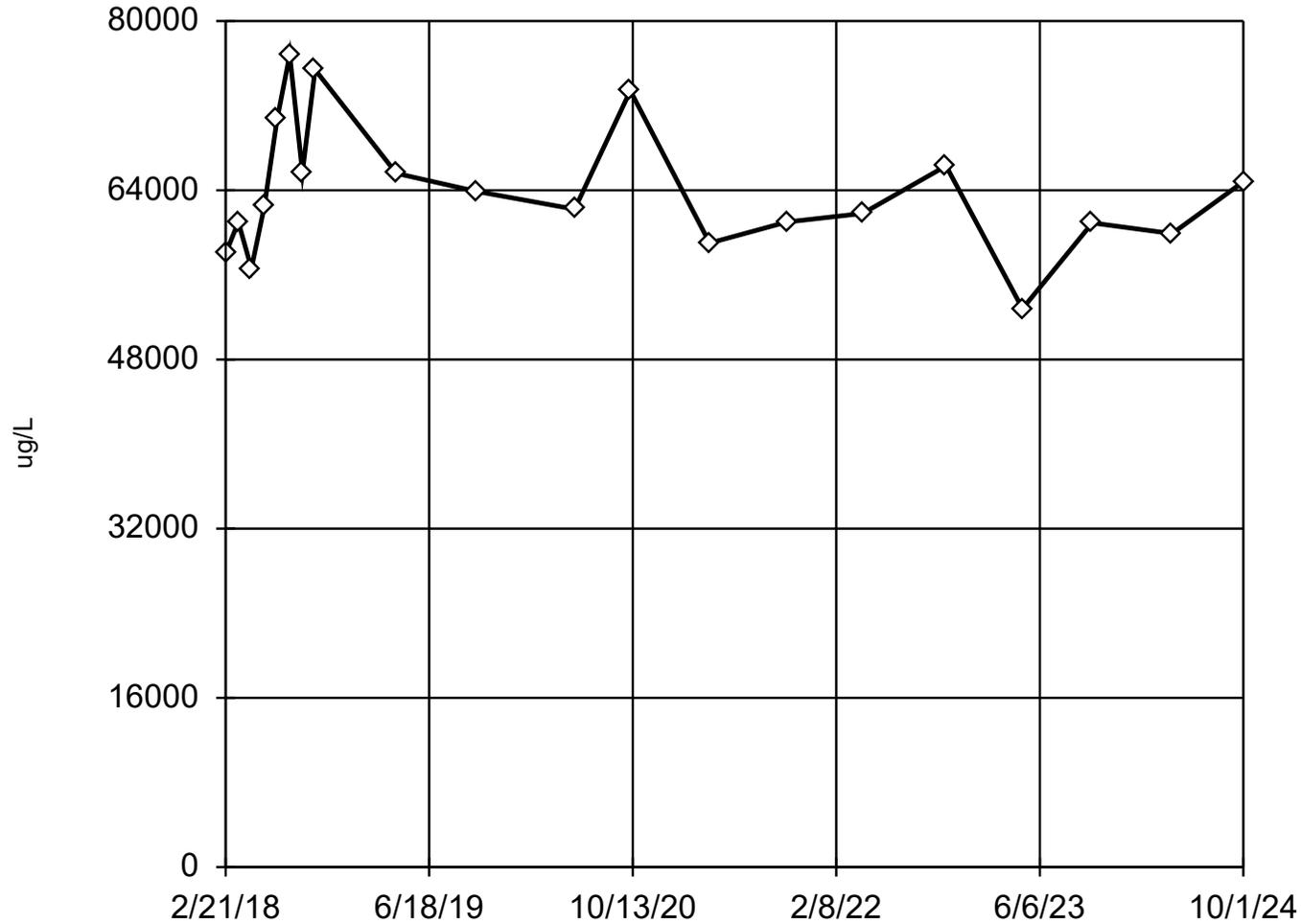
Dixon's Outlier Test

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	32400
3/23/2018	33400
4/23/2018	32100
5/24/2018	32100
6/23/2018	34300
7/23/2018	39700
8/22/2018	38800
9/21/2018	54100
4/2/2019	38800
10/8/2019	57600
12/23/2019	55400
5/29/2020	41100
12/11/2020	56800 (R)
4/13/2021	49300
10/14/2021	38900
4/12/2022	31900
10/26/2022	68900
11/30/2022	55500
4/26/2023	36800
10/9/2023	37500
4/15/2024	44600
11/5/2024	99700 (RO)

EPA Screening (suspected outliers for Dixon's Test)

MW-311



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 63915, std. dev. 6216, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9446
Critical = 0.868
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

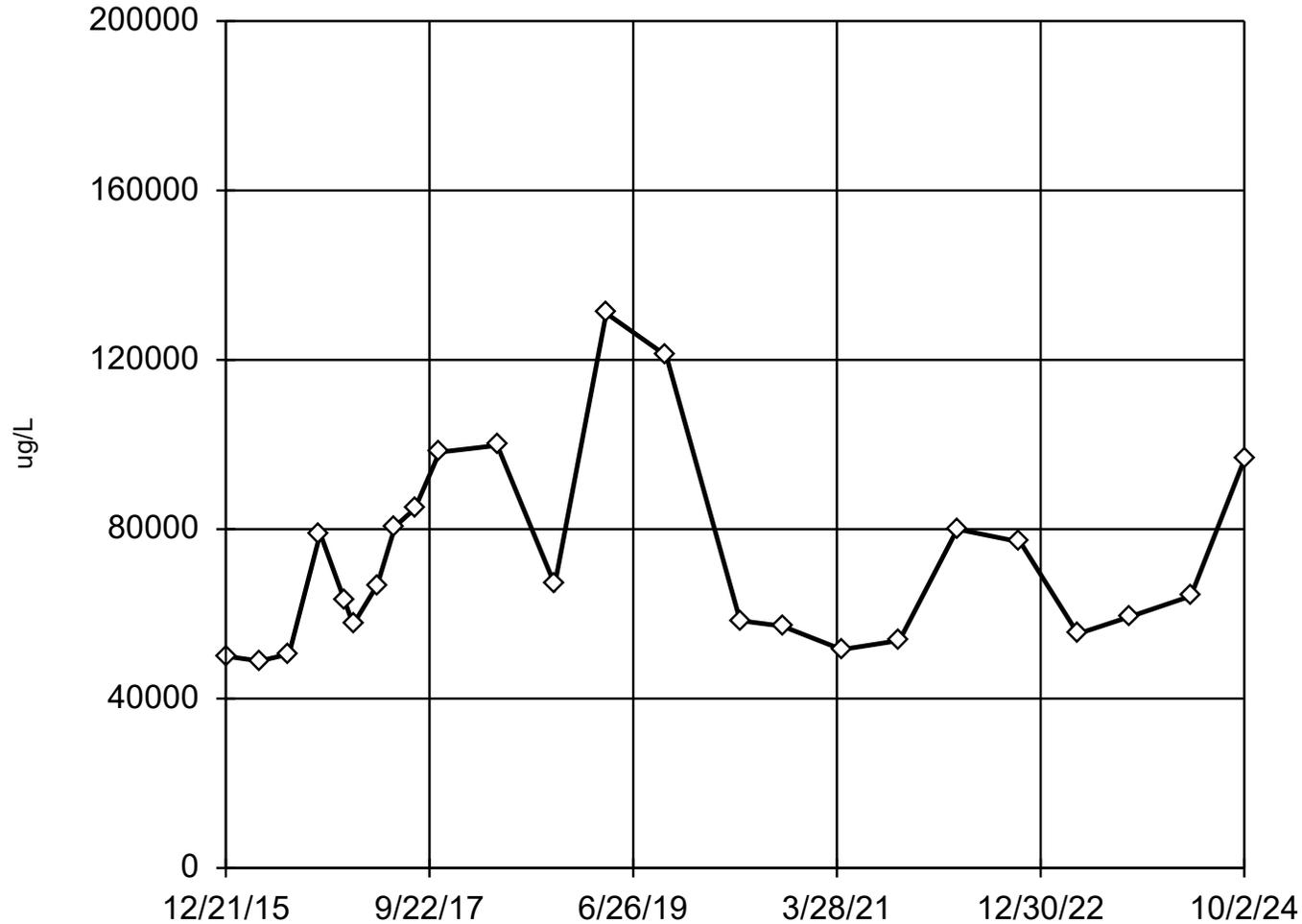
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	58000
3/23/2018	61000
4/23/2018	56600
5/24/2018	62500
6/23/2018	70700
7/23/2018	76800
8/22/2018	65700
9/21/2018	75400
4/2/2019	65600
10/8/2019	63900
5/29/2020	62200
10/8/2020	73400
4/14/2021	59000
10/14/2021	61000
4/12/2022	61800
10/27/2022	66300
4/26/2023	52800
10/9/2023	60900
4/15/2024	59900
10/1/2024	64800

EPA Screening (suspected outliers for Dixon's Test)

MW-33AR



n = 24

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 72971, std. dev. 22622, critical Tn 2.644

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.927
Critical = 0.884 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Calcium Analysis Run 5/27/2025 11:21 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

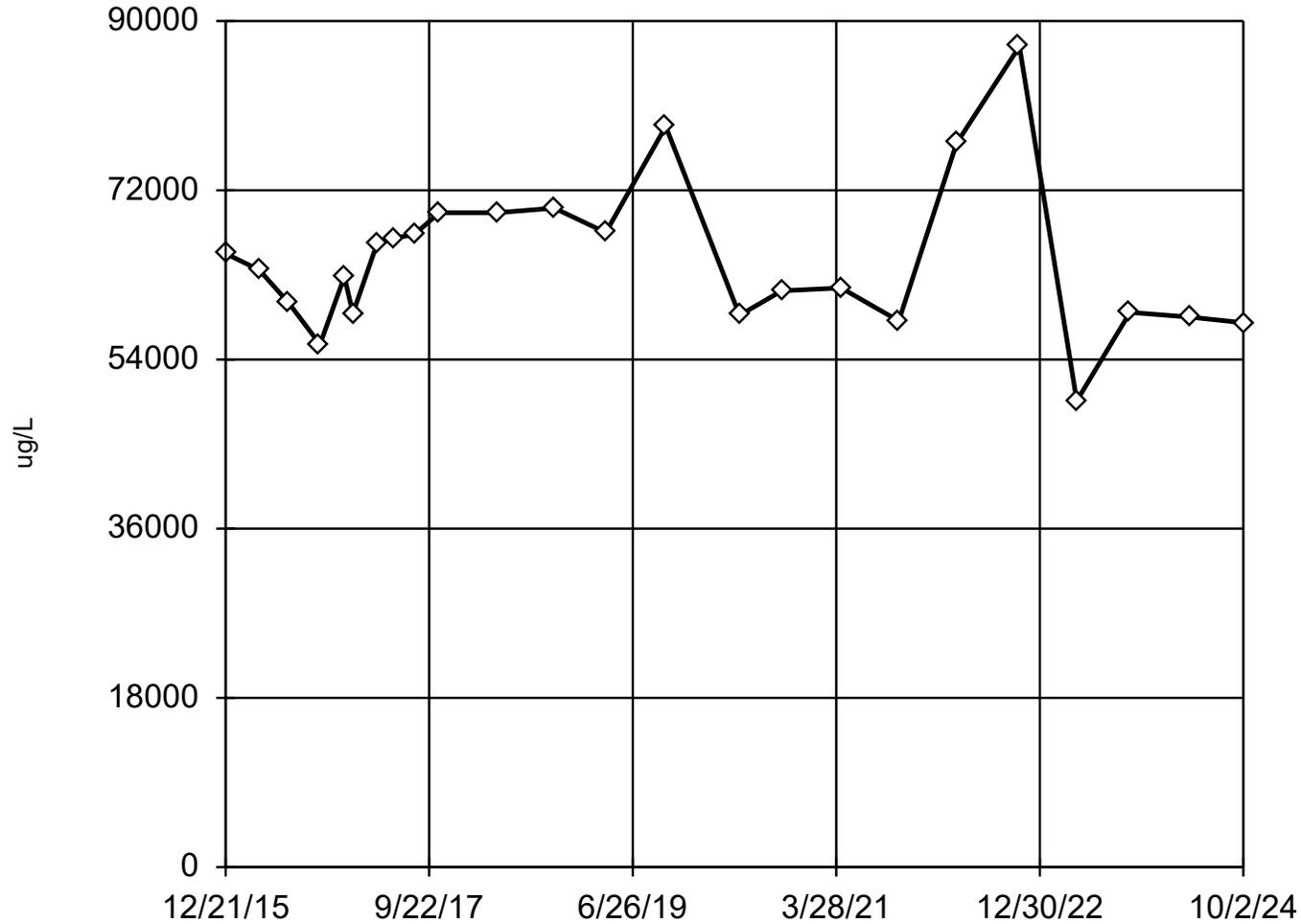
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-33AR
12/21/2015	50000
4/5/2016	48900
7/7/2016	50500
10/13/2016	79000
12/29/2016	63100
1/25/2017	57500
4/11/2017	66800
6/6/2017	80700
8/7/2017	84800
10/24/2017	98200
4/24/2018	99800
10/22/2018	66900
4/2/2019	131000
10/8/2019	121000
5/28/2020	58400
10/8/2020	57100
4/13/2021	51600
10/12/2021	53700
4/12/2022	80000
10/27/2022	77000
4/27/2023	55300
10/11/2023	59400
4/17/2024	64200
10/2/2024	96400

EPA Screening (suspected outliers for Dixon's Test)

MW-34A



n = 24

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 64631, std. dev. 8209, critical Tn 2.644

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9343
Critical = 0.884
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:21 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

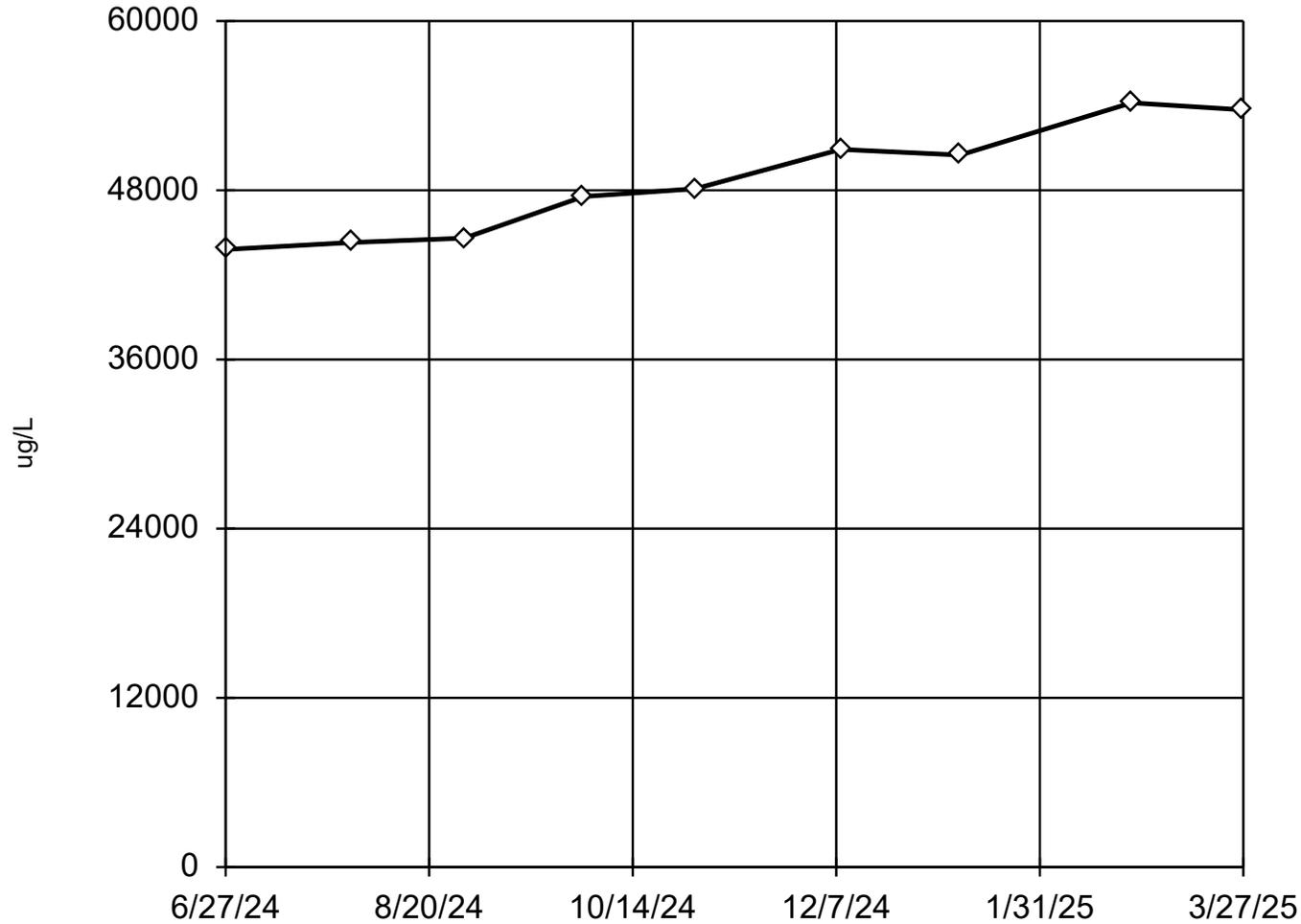
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	65250 (D)
4/5/2016	63500
7/7/2016	60000
10/13/2016	55600
12/29/2016	62800
1/25/2017	58900
4/11/2017	66300
6/6/2017	66900
8/7/2017	67300
10/24/2017	69600
4/24/2018	69600
10/22/2018	70100
4/2/2019	67500
10/8/2019	78800
5/28/2020	58700
10/8/2020	61300
4/13/2021	61600
10/12/2021	58100
4/12/2022	77000
10/27/2022	87300
4/26/2023	49600
10/11/2023	59000
4/17/2024	58500
10/2/2024	57900

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 48628, std. dev. 3955, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9144
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:21 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

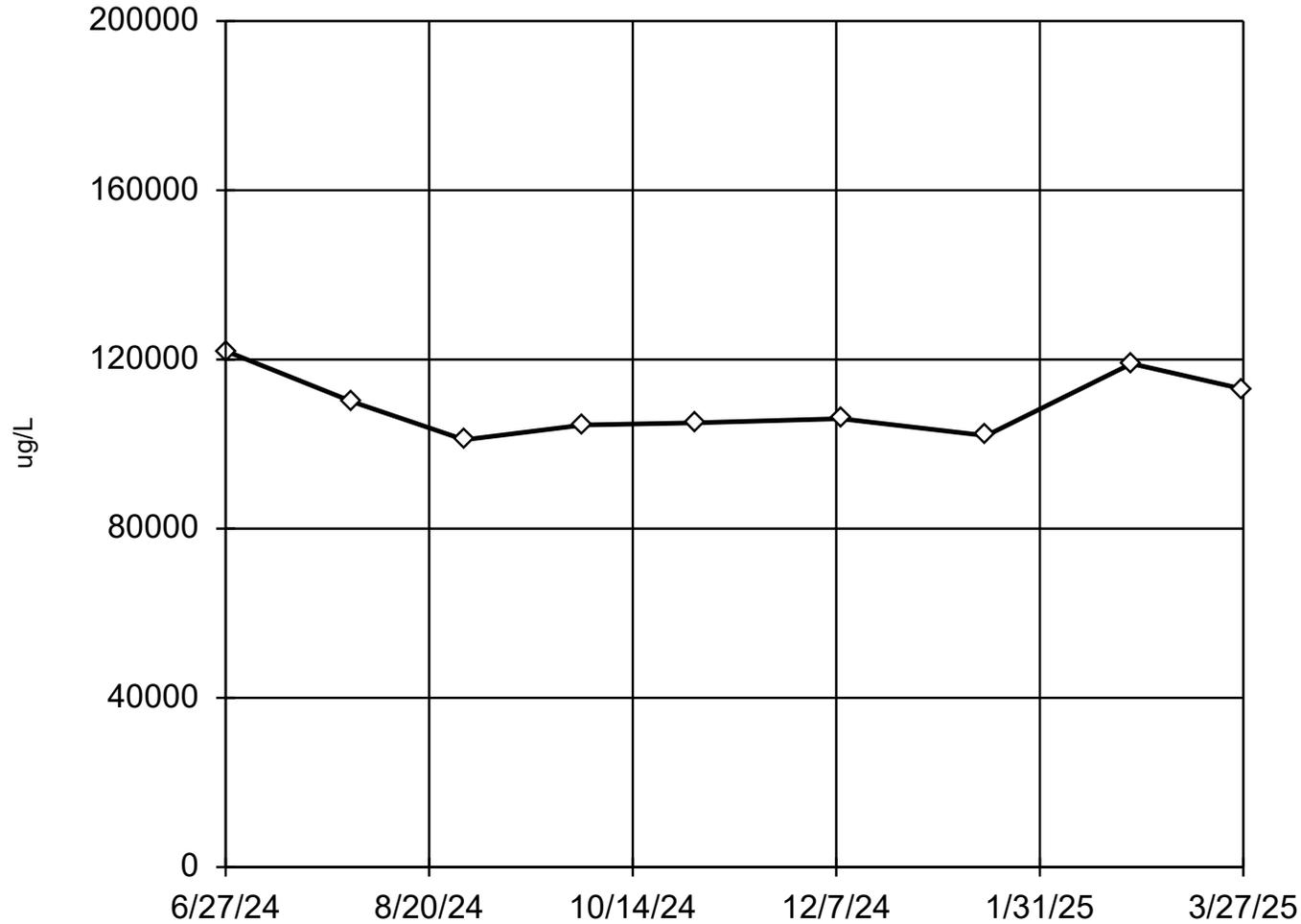
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	43800
7/31/2024	44300
8/30/2024	44600
10/1/2024	47550 (D)
10/31/2024	48100
12/9/2024	50900
1/10/2025	50500
2/25/2025	54200
3/27/2025	53700

EPA Screening (suspected outliers for Dixon's Test)

MW-318



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 109167, std. dev. 7450, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9038
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:21 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

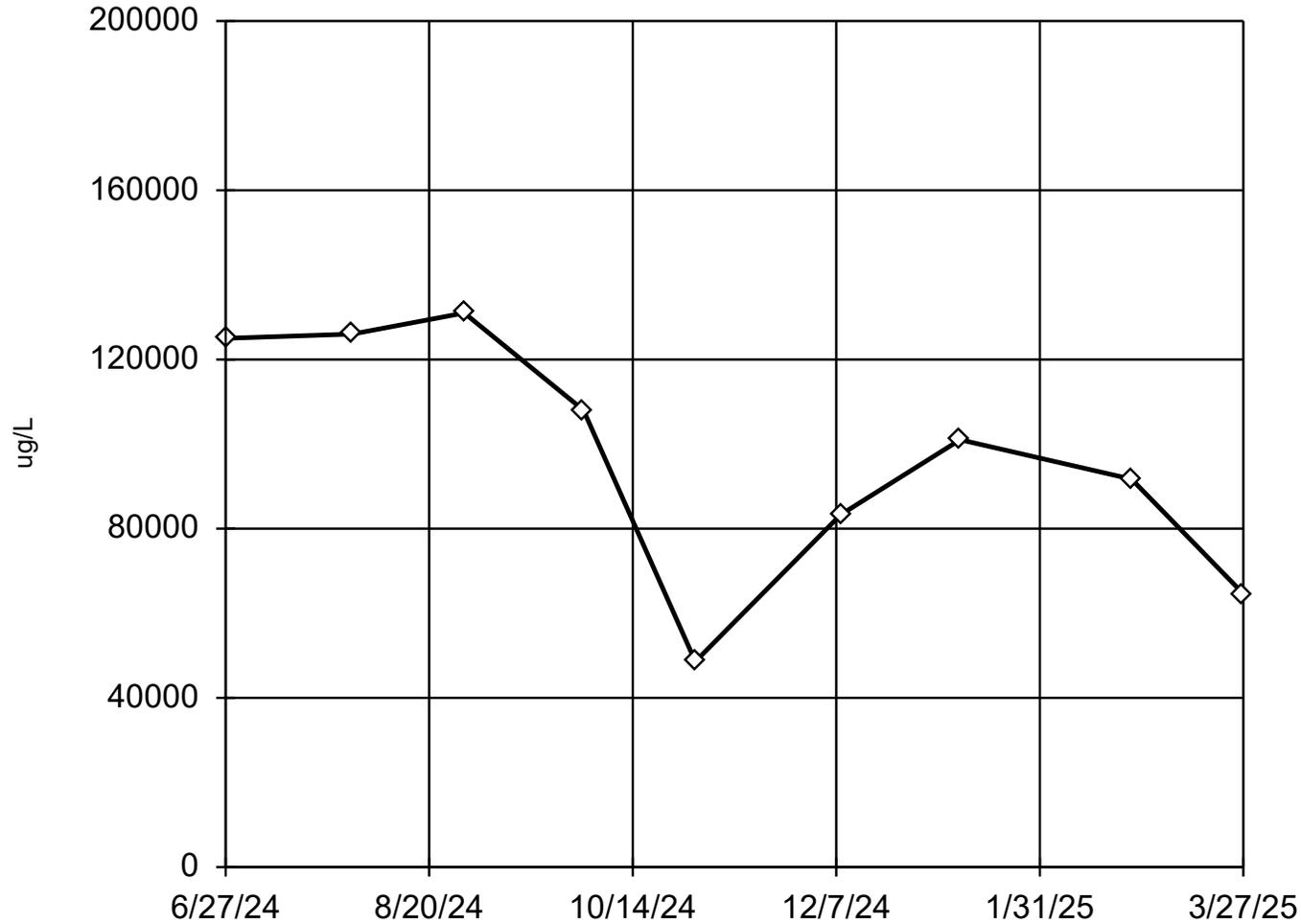
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	122000
7/31/2024	110000
8/30/2024	101000
10/1/2024	104500 (D)
10/31/2024	105000
12/9/2024	106000
1/17/2025	102000
2/25/2025	119000
3/27/2025	113000

EPA Screening (suspected outliers for Dixon's Test)

MW-319



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 97689, std. dev. 28552, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9381
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 5/27/2025 11:22 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

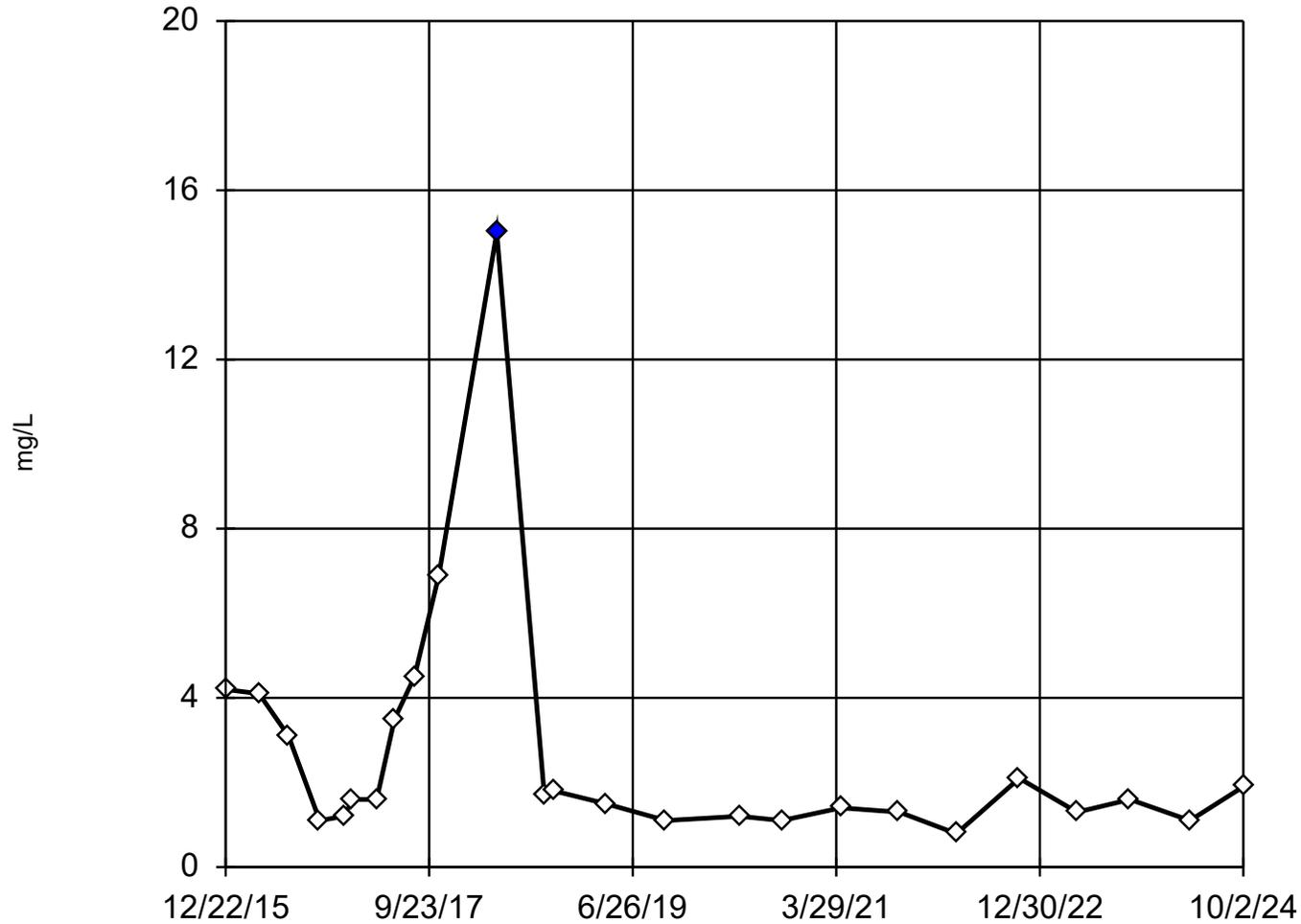
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 5/27/2025 11:42 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	125000
7/31/2024	126000
8/30/2024	131000
10/1/2024	108000 (D)
10/31/2024	48600
12/9/2024	83300
1/10/2025	101000
2/25/2025	91700
3/27/2025	64600

Dixon's Outlier Test

MW-302



n = 25

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 2.668.
Std. Dev. = 2.951.
15: c = 0.4608
tab1 = 0.406.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8989
Critical = 0.884 (after natural log transformation)
The distribution, after removal of suspect value, was found to be log-normal.

Constituent: Chloride Analysis Run 5/27/2025 11:22 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

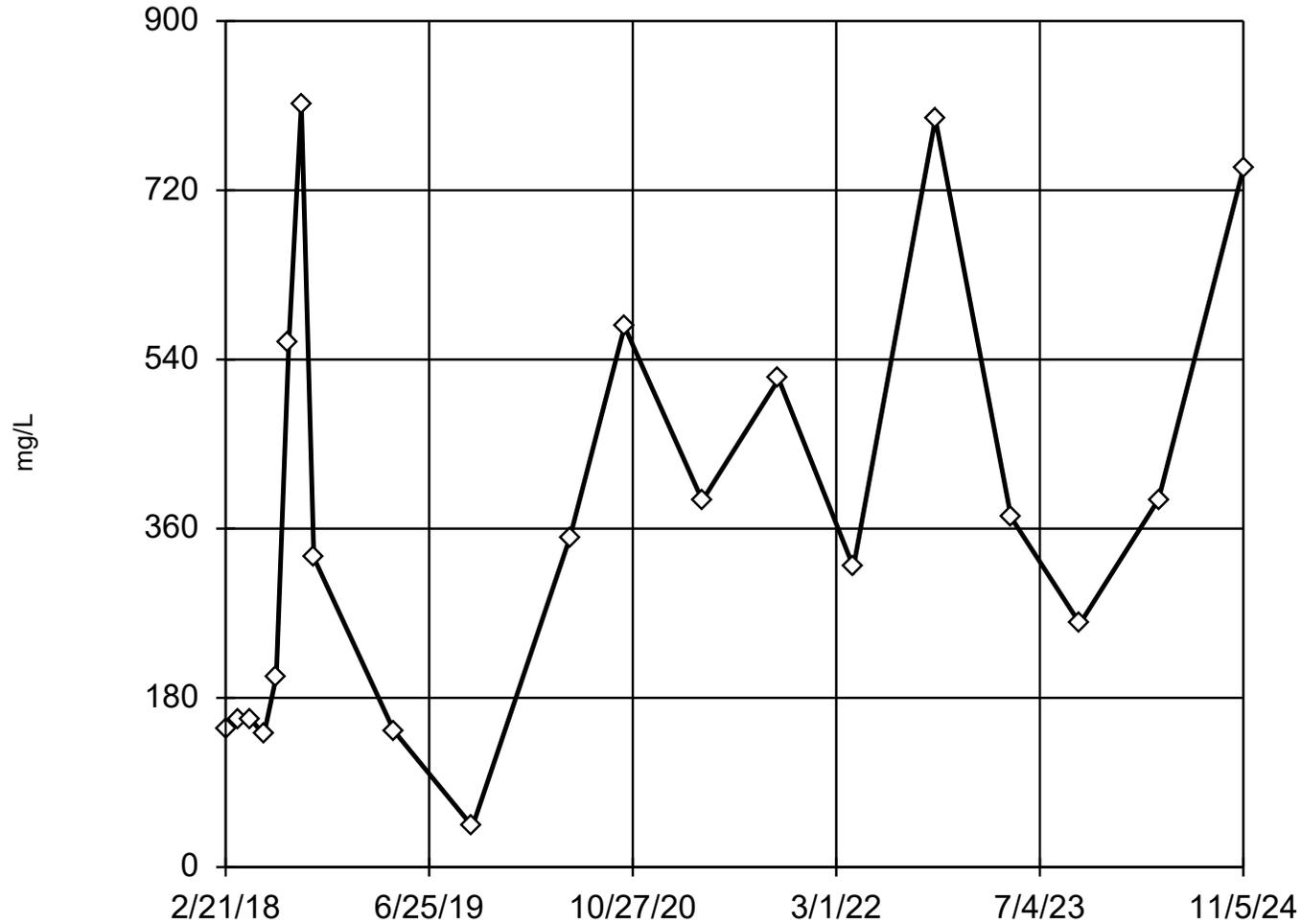
Dixon's Outlier Test

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	4.2
4/5/2016	4.1
7/7/2016	3.1 (J)
10/13/2016	1.1 (J)
12/29/2016	1.2 (J)
1/25/2017	1.6 (J)
4/11/2017	1.6 (J)
6/6/2017	3.5
8/8/2017	4.5
10/24/2017	6.9
4/24/2018	15 (O)
9/21/2018	1.7 (J)
10/22/2018	1.8 (J)
4/2/2019	1.5 (J)
10/9/2019	1.1 (J)
5/29/2020	1.2 (J)
10/8/2020	1.1 (J)
4/13/2021	1.4 (J)
10/14/2021	1.3 (J)
4/12/2022	0.79 (J)
10/27/2022	2.1
4/27/2023	1.3 (J)
10/11/2023	1.6 (J)
4/17/2024	1.1 (J)
10/2/2024	1.9 (J)

Dixon's Outlier Test

MW-309



n = 20

No statistical outliers.
Testing for 1 low outlier.
Mean = 370.2.
Std. Dev. = 230.6.
43.2: c = 0.1455
tab1 = 0.45.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8922
Critical = 0.863
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:22 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

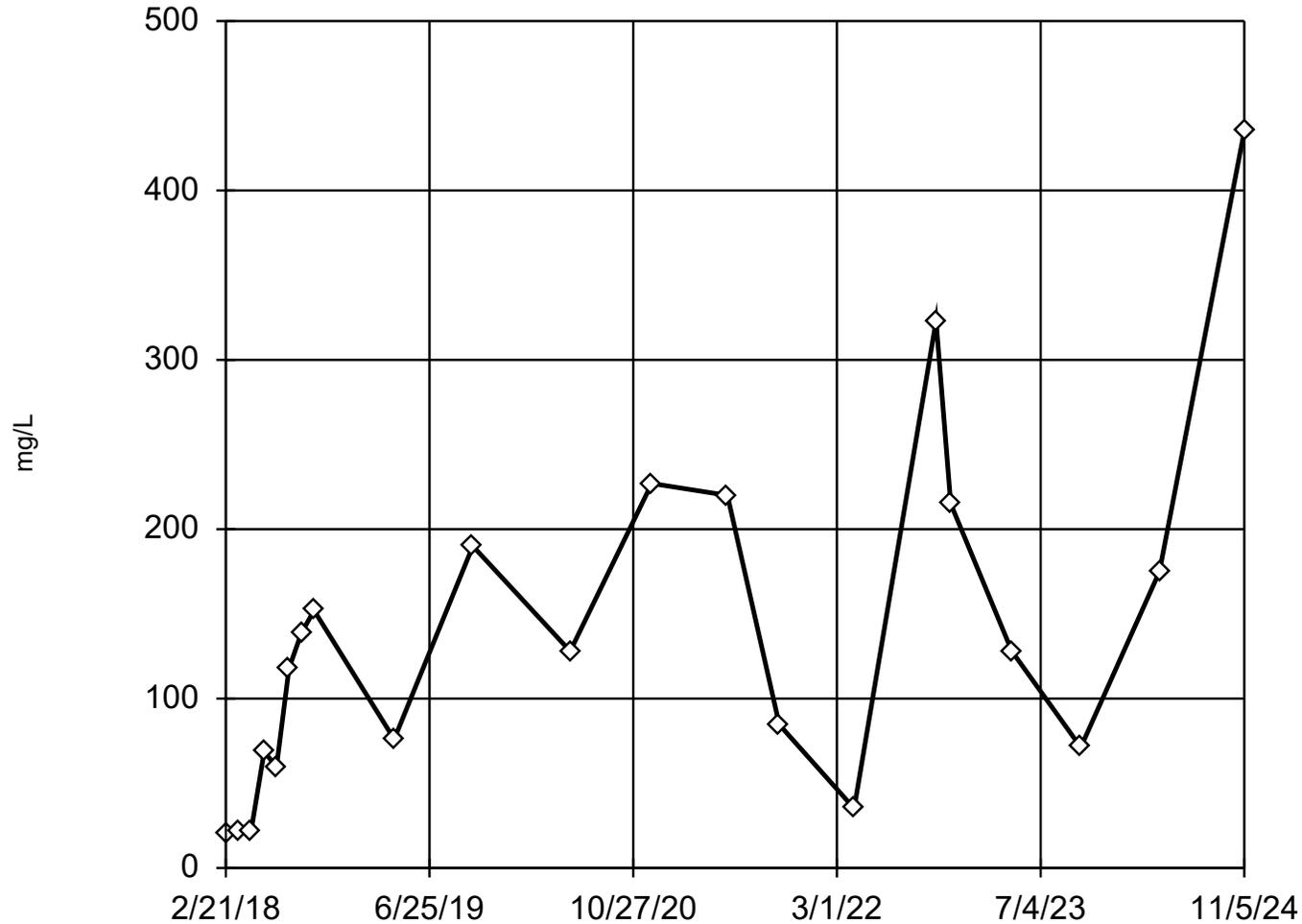
Dixon's Outlier Test

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	147
3/23/2018	157
4/23/2018	157
5/24/2018	141
6/23/2018	203
7/23/2018	557
8/22/2018	811
9/21/2018	329
4/2/2019	145
10/8/2019	43.2
5/29/2020	350
10/8/2020	575
4/13/2021	390
10/14/2021	519
4/12/2022	319
10/26/2022	796
4/26/2023	372
10/9/2023	259
4/15/2024	391
11/5/2024	743 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-310



n = 21

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 138.5, std. dev. 105.2, critical Tn 2.58

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8952
Critical = 0.873
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:22 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

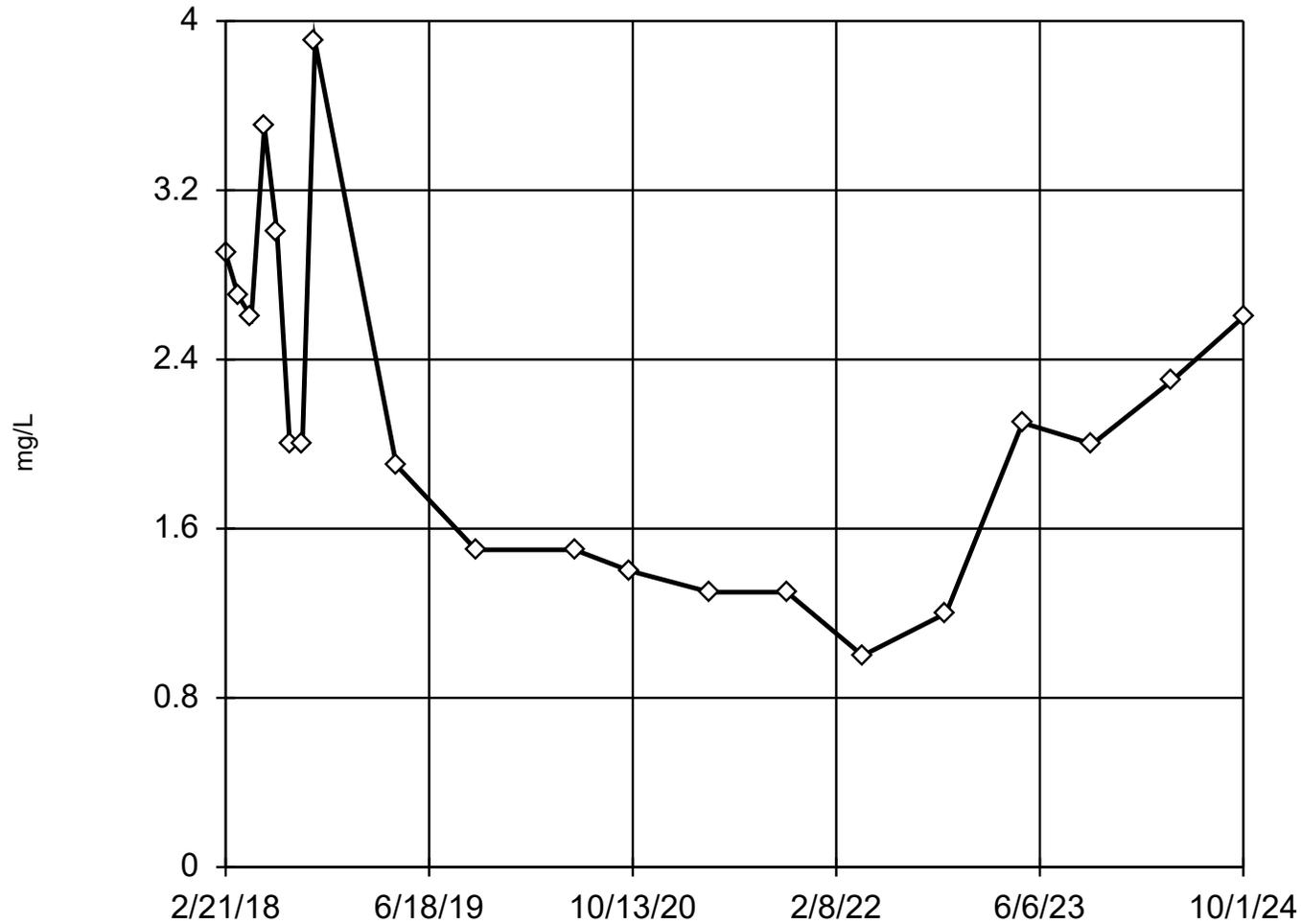
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	19.8
3/23/2018	21.7
4/23/2018	22.1
5/24/2018	68.6
6/23/2018	59.8
7/23/2018	118
8/22/2018	139
9/21/2018	152
4/2/2019	76
10/8/2019	190
5/29/2020	128
12/11/2020	227 (R)
6/11/2021	220 (R)
10/14/2021	84.6
4/12/2022	35.2
10/26/2022	323
11/30/2022	215
4/26/2023	128
10/9/2023	71.3
4/15/2024	175
11/5/2024	435 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-311



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 2.135, std. dev. 0.7982, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9499
Critical = 0.868
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:22 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

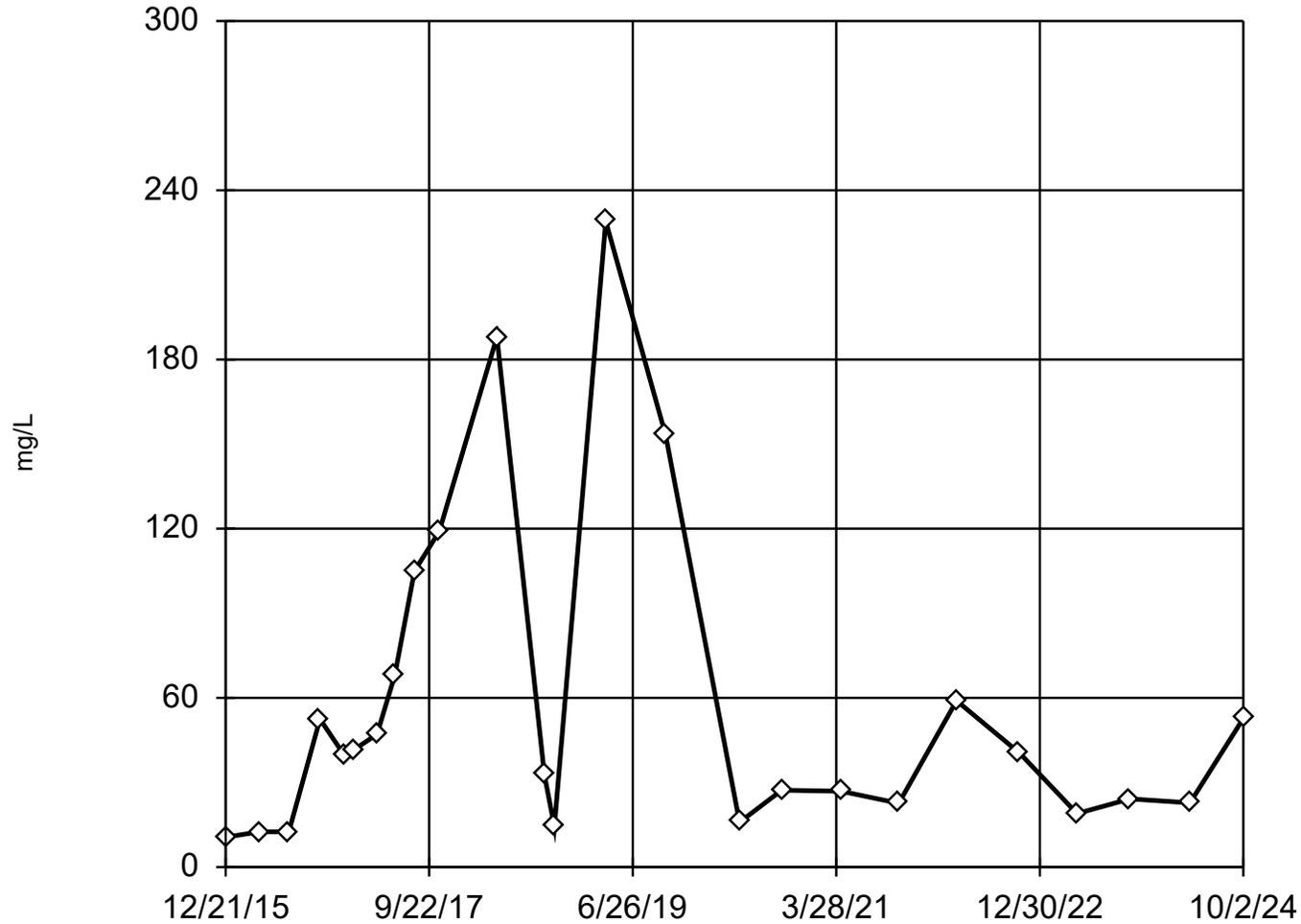
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	2.9
3/23/2018	2.7
4/23/2018	2.6
5/24/2018	3.5
6/23/2018	3
7/23/2018	2 (J)
8/22/2018	2 (J)
9/21/2018	3.9
4/2/2019	1.9 (J)
10/8/2019	1.5 (J)
5/29/2020	1.5 (J)
10/8/2020	1.4 (J)
4/14/2021	1.3 (J)
10/14/2021	1.3 (J)
4/12/2022	1 (J)
10/27/2022	1.2 (J)
4/26/2023	2.1
10/9/2023	2 (J)
4/15/2024	2.3
10/1/2024	2.6

EPA Screening (suspected outliers for Dixon's Test)

MW-33AR



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 57.45, std. dev. 57.76, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9554
Critical = 0.888 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Chloride Analysis Run 5/27/2025 11:23 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

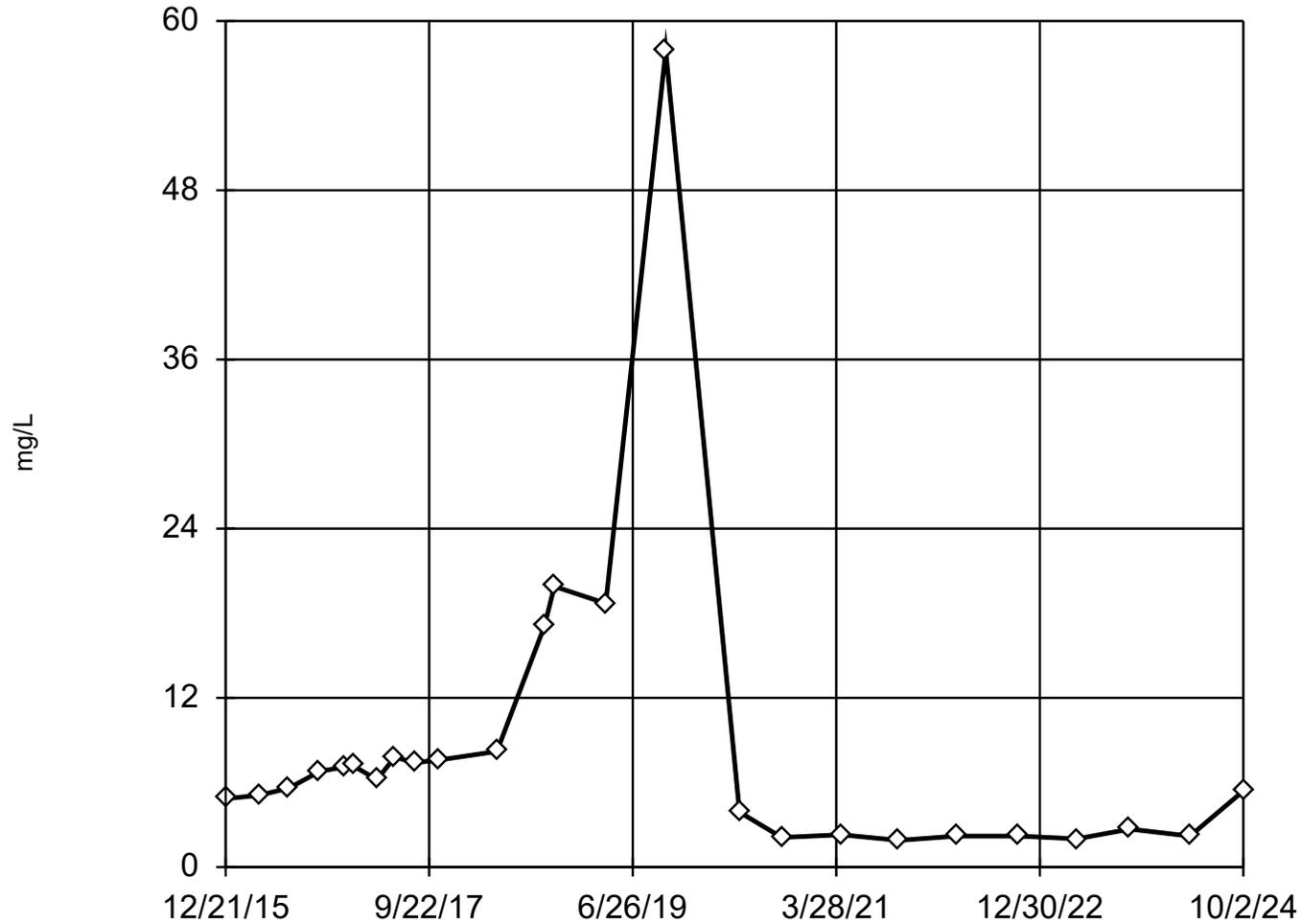
Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	10.6
4/5/2016	12.5
7/7/2016	12.5
10/13/2016	52.5
12/29/2016	39.6
1/25/2017	41.4
4/11/2017	47.1
6/6/2017	68.1
8/7/2017	105
10/24/2017	119
4/24/2018	188
9/21/2018	32.6
10/22/2018	14.4
4/2/2019	229
10/8/2019	153
5/28/2020	15.9
10/8/2020	27.3
4/13/2021	26.9
10/12/2021	22.6
4/12/2022	59
10/27/2022	40.5
4/27/2023	19
10/11/2023	24.2
4/17/2024	22.8
10/2/2024	52.7

Dixon's Outlier Test

MW-34A



n = 25

No statistical outliers.
Testing for 1 high outlier.
Mean = 8.574.
Std. Dev. = 11.45.
57.9: c = 0.3408
tab1 = 0.406.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9097
Critical = 0.884 (after
natural log transforma-
tion)
The distribution was found
to be log-normal.

Constituent: Chloride Analysis Run 5/27/2025 11:23 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

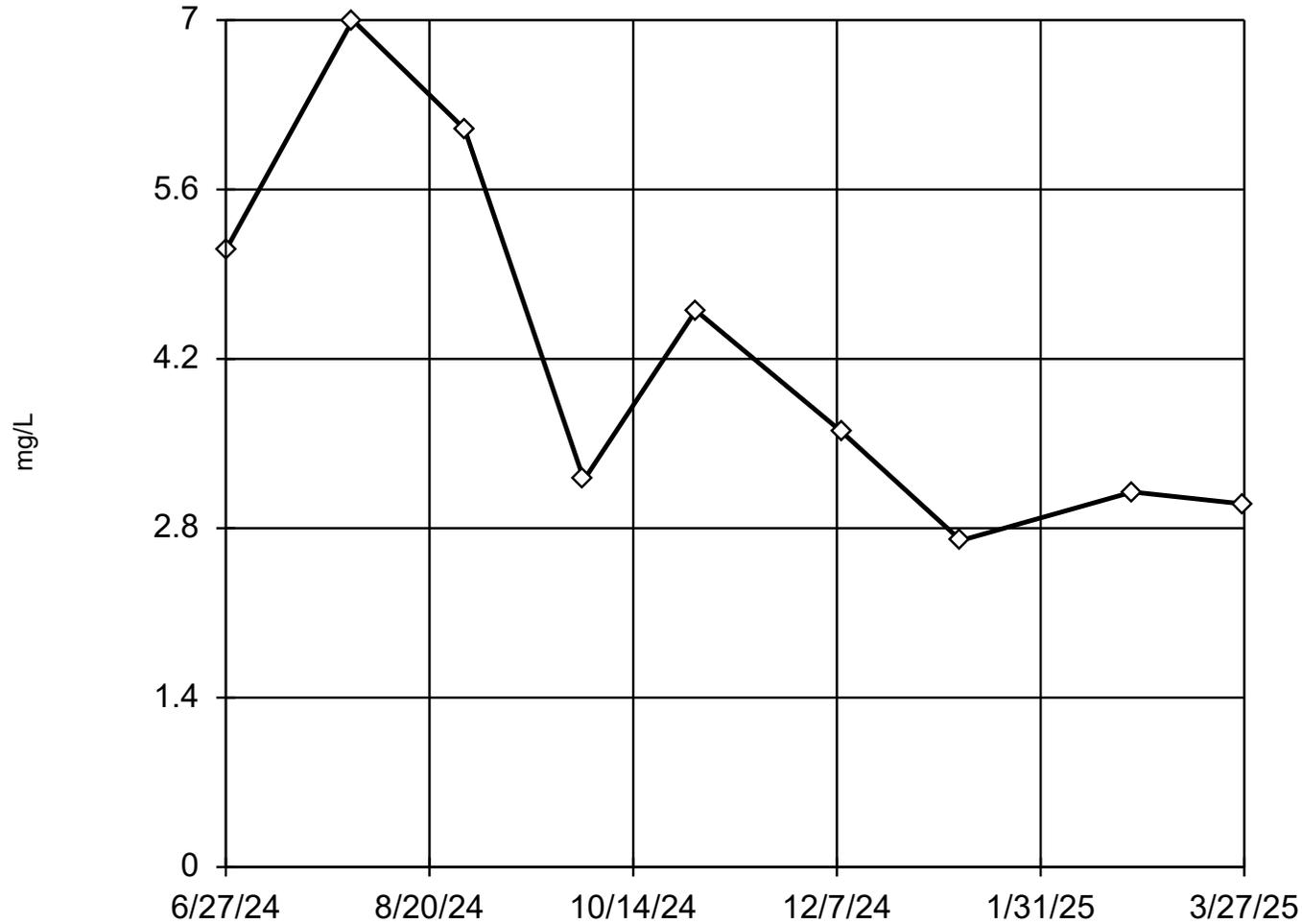
Dixon's Outlier Test

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	4.85 (D)
4/5/2016	5.1
7/7/2016	5.6
10/13/2016	6.8
12/29/2016	7.1
1/25/2017	7.2
4/11/2017	6.2
6/6/2017	7.8
8/7/2017	7.4
10/24/2017	7.6
4/24/2018	8.2
9/21/2018	17.1
10/22/2018	19.9
4/2/2019	18.7
10/8/2019	57.9
5/28/2020	3.9
10/8/2020	2.1
4/13/2021	2.3
10/12/2021	1.9 (J)
4/12/2022	2.2
10/27/2022	2.2
4/26/2023	2
10/11/2023	2.7
4/17/2024	2.2
10/2/2024	5.4

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 4.267, std. dev. 1.526, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8866
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:23 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

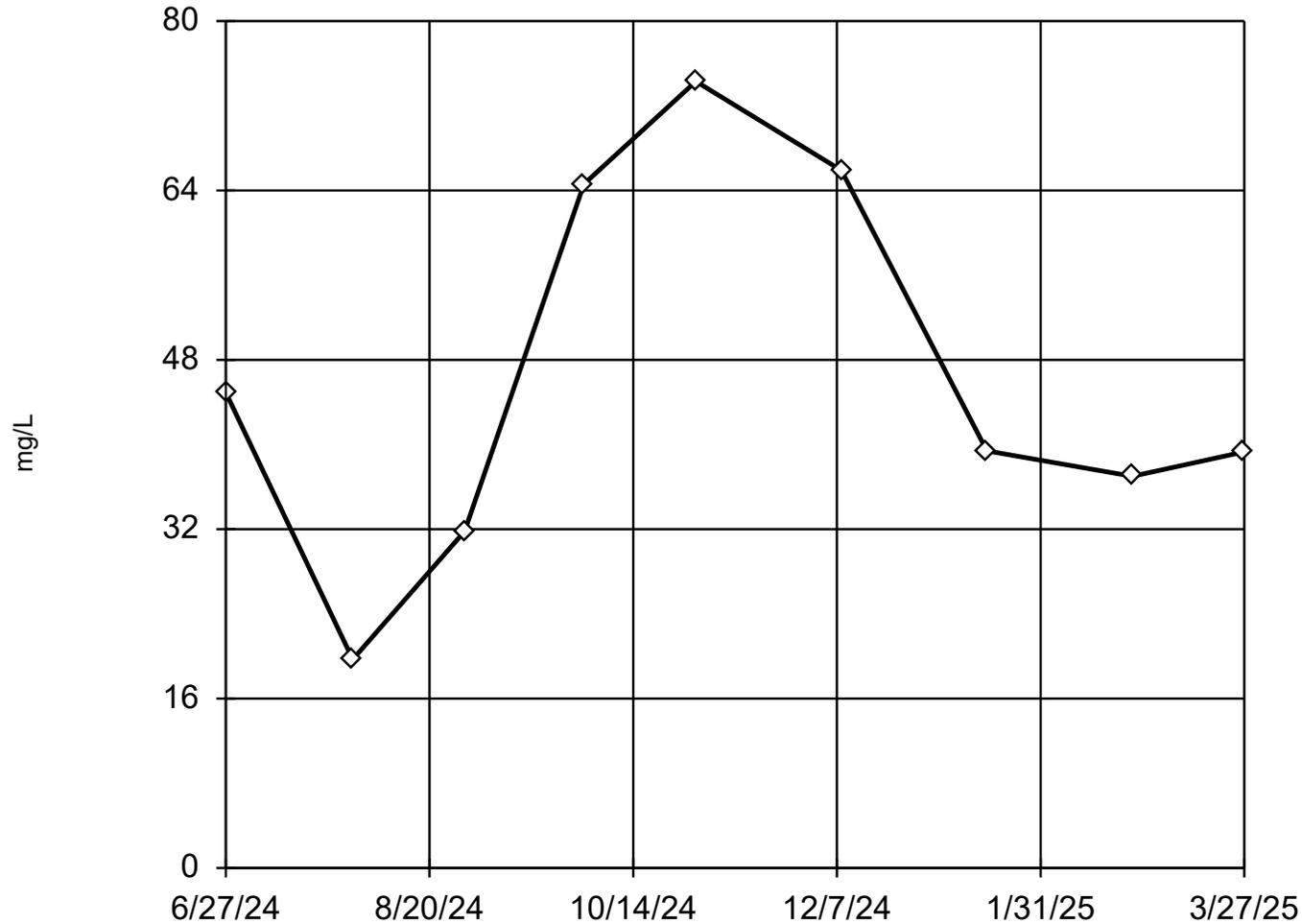
Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	5.1
7/31/2024	7
8/30/2024	6.1
10/1/2024	3.2 (D)
10/31/2024	4.6
12/9/2024	3.6
1/10/2025	2.7
2/25/2025	3.1
3/27/2025	3

EPA Screening (suspected outliers for Dixon's Test)

MW-318



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 46.32, std. dev. 18.05, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9287
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:23 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

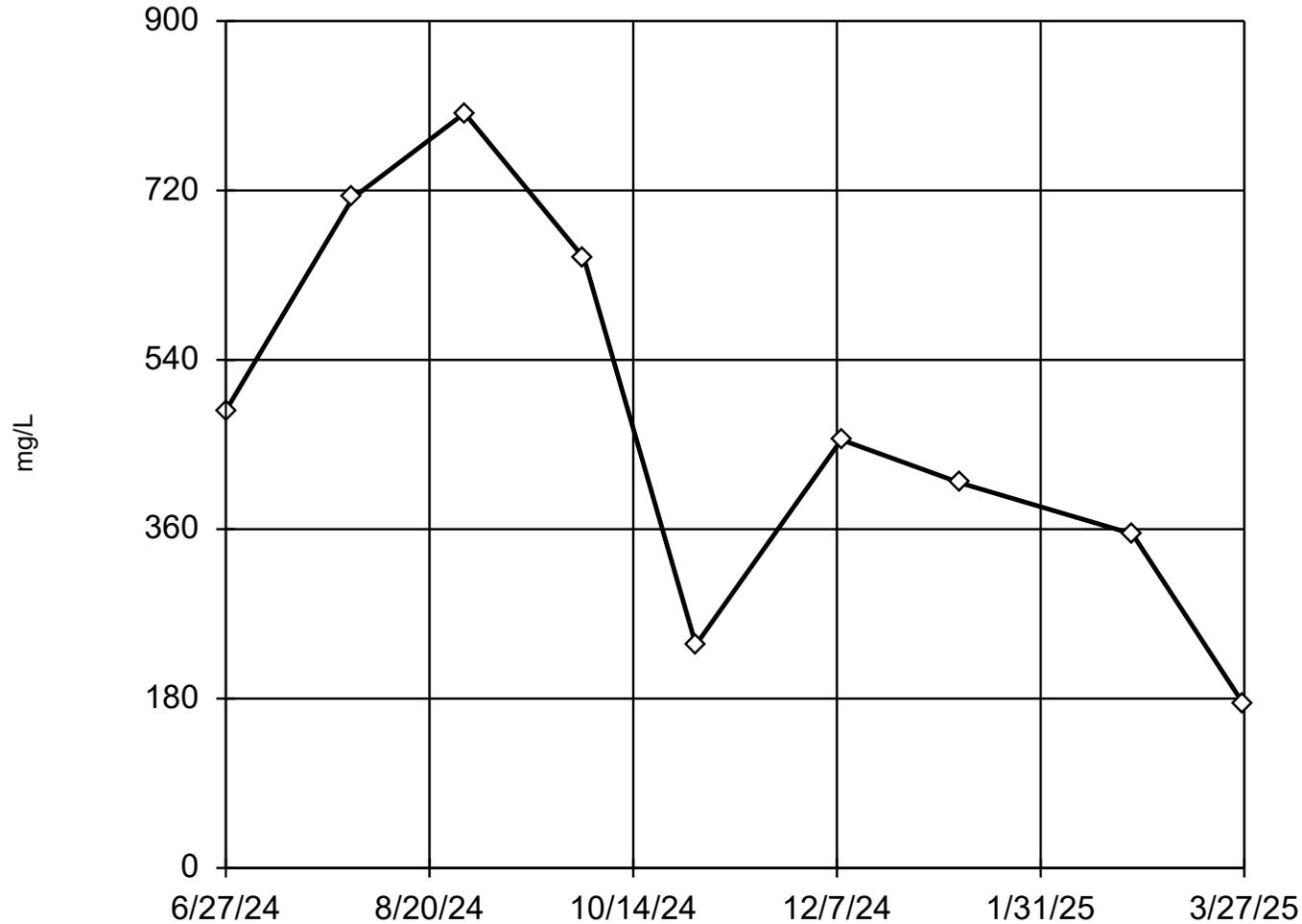
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	44.9
7/31/2024	19.7
8/30/2024	31.8
10/1/2024	64.6 (D)
10/31/2024	74.3
12/9/2024	65.9
1/17/2025	39.4
2/25/2025	37
3/27/2025	39.3

EPA Screening (suspected outliers for Dixon's Test)

MW-319



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 475.2, std. dev. 212.2, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9653
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 5/27/2025 11:23 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

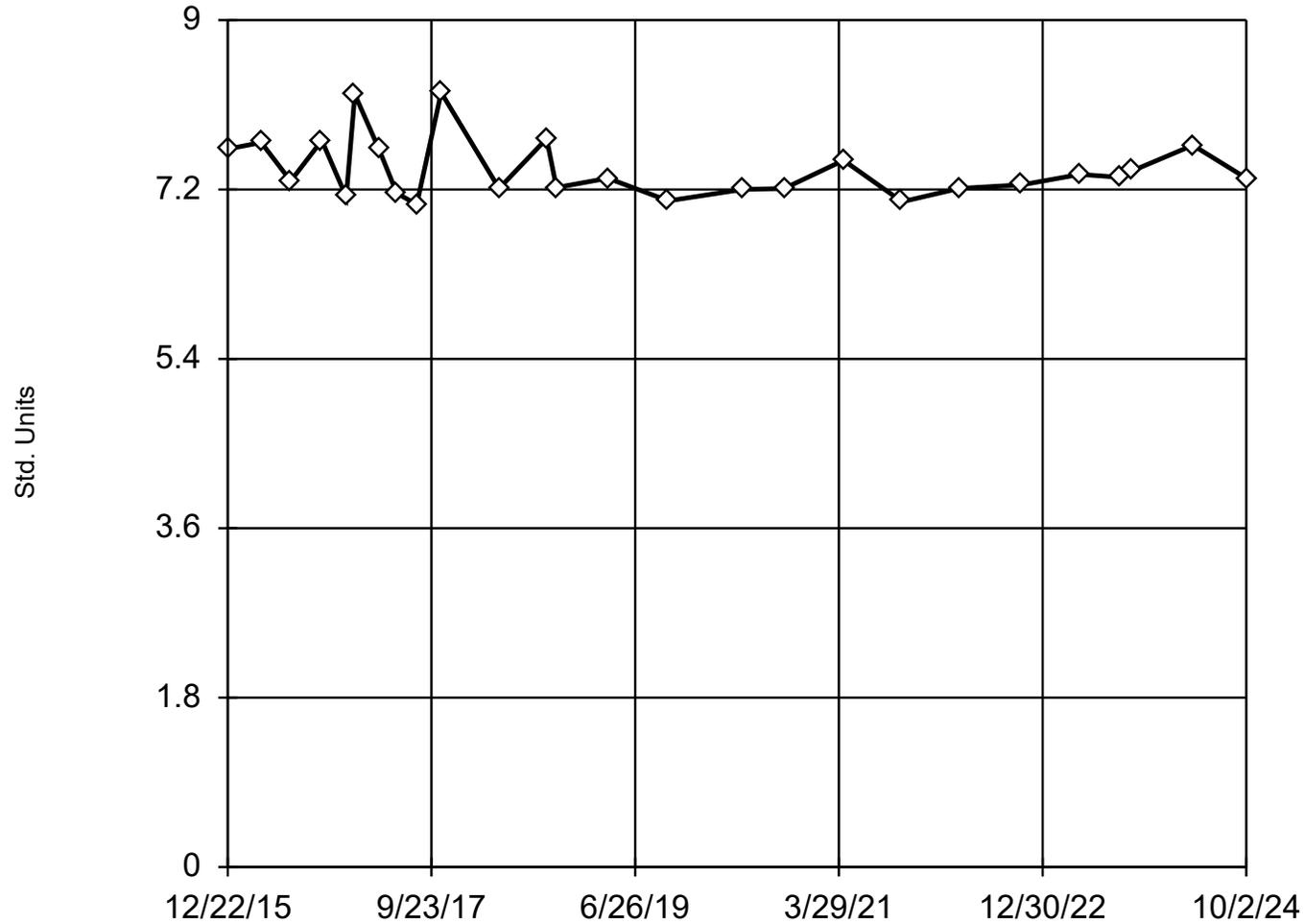
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	486
7/31/2024	712
8/30/2024	802
10/1/2024	648 (D)
10/31/2024	237
12/9/2024	455
1/10/2025	409
2/25/2025	355
3/27/2025	173

Tukey's Outlier Screening

MW-302



n = 26

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.157, low cutoff = 6.019, based on IQR multiplier of 3.

Constituent: Field pH Analysis Run 5/27/2025 11:24 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Tukey's Outlier Screening

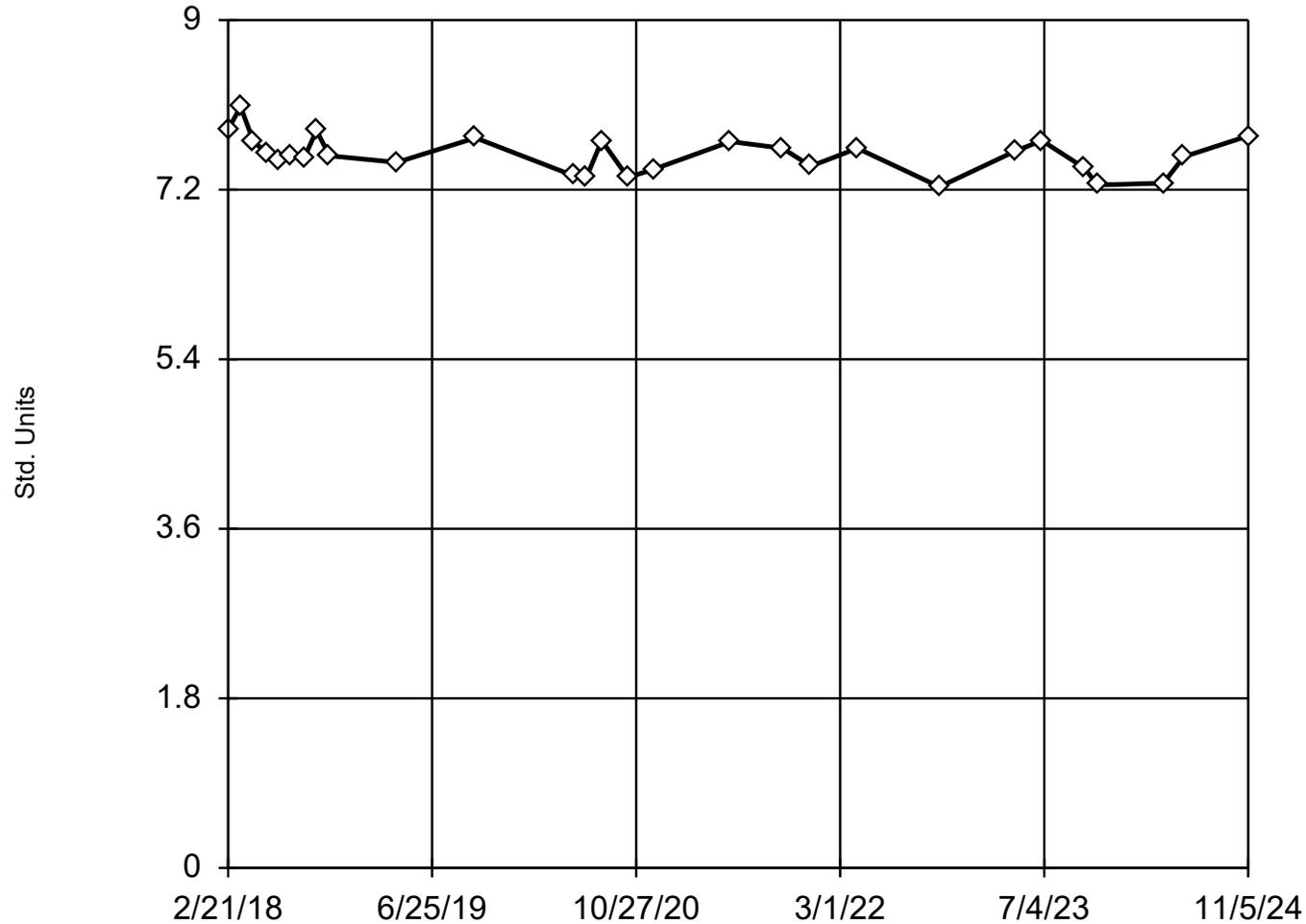
Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-302

12/22/2015	7.63
4/5/2016	7.7
7/7/2016	7.29
10/13/2016	7.72
12/29/2016	7.12
1/25/2017	8.21
4/11/2017	7.63
6/6/2017	7.16
8/8/2017	7.04
10/24/2017	8.23
4/24/2018	7.21
9/21/2018	7.74
10/22/2018	7.22
4/2/2019	7.32
10/9/2019	7.08
5/29/2020	7.2
10/8/2020	7.21
4/13/2021	7.51
10/14/2021	7.07
4/12/2022	7.21
10/27/2022	7.25
4/27/2023	7.36
8/31/2023	7.33
10/11/2023	7.4
4/17/2024	7.67
10/2/2024	7.32

EPA Screening (suspected outliers for Rosner's Test)

MW-309



n = 28

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.566, std. dev. 0.2028, critical Tn 2.714

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9743
Critical = 0.896
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:24 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

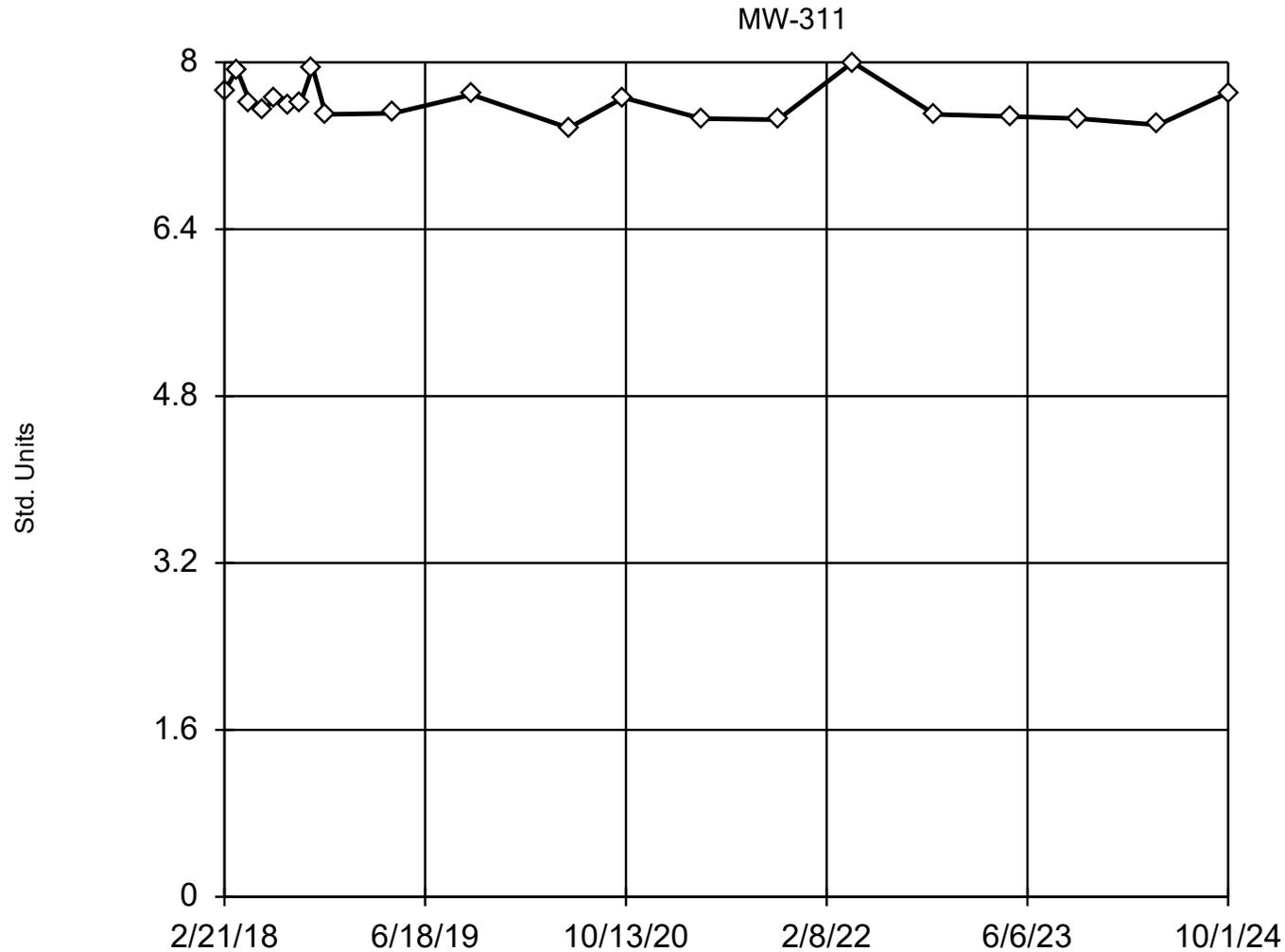
	MW-309
2/21/2018	7.84
3/23/2018	8.08
4/23/2018	7.71
5/24/2018	7.59
6/23/2018	7.5
7/23/2018	7.55
8/22/2018	7.53
9/21/2018	7.83
10/22/2018	7.56
4/2/2019	7.49
10/8/2019	7.75
5/29/2020	7.35
6/30/2020	7.33
8/6/2020	7.72
10/8/2020	7.33
12/11/2020	7.42
6/11/2021	7.71 (R)
10/14/2021	7.64
12/21/2021	7.45
4/12/2022	7.64
10/26/2022	7.23
4/26/2023	7.61
6/29/2023	7.72
10/9/2023	7.43
11/9/2023	7.25
4/15/2024	7.27
6/4/2024	7.55
11/5/2024	7.77 (R)

Dixon's Outlier Test

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	7.85
3/23/2018	8.06
4/23/2018	7.75
5/24/2018	7.74
6/23/2018	7.82
7/23/2018	7.81
8/22/2018	7.77
9/21/2018	7.98
10/22/2018	7.7
4/2/2019	9.79 (XO)
6/12/2019	7.82
10/8/2019	7.82
12/23/2019	7.7
5/29/2020	7.54
10/8/2020	7.52
12/11/2020	7.62
6/11/2021	7.73 (R)
10/14/2021	7.7
4/12/2022	7.74
10/26/2022	7.61
4/26/2023	7.27
8/31/2023	7.75
10/9/2023	7.7
4/15/2024	7.63
11/5/2024	7.7 (R)

EPA Screening (suspected outliers for Dixon's Test)



n = 21

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.609, std. dev. 0.1777, critical Tn 2.58

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9055
Critical = 0.873
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:24 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

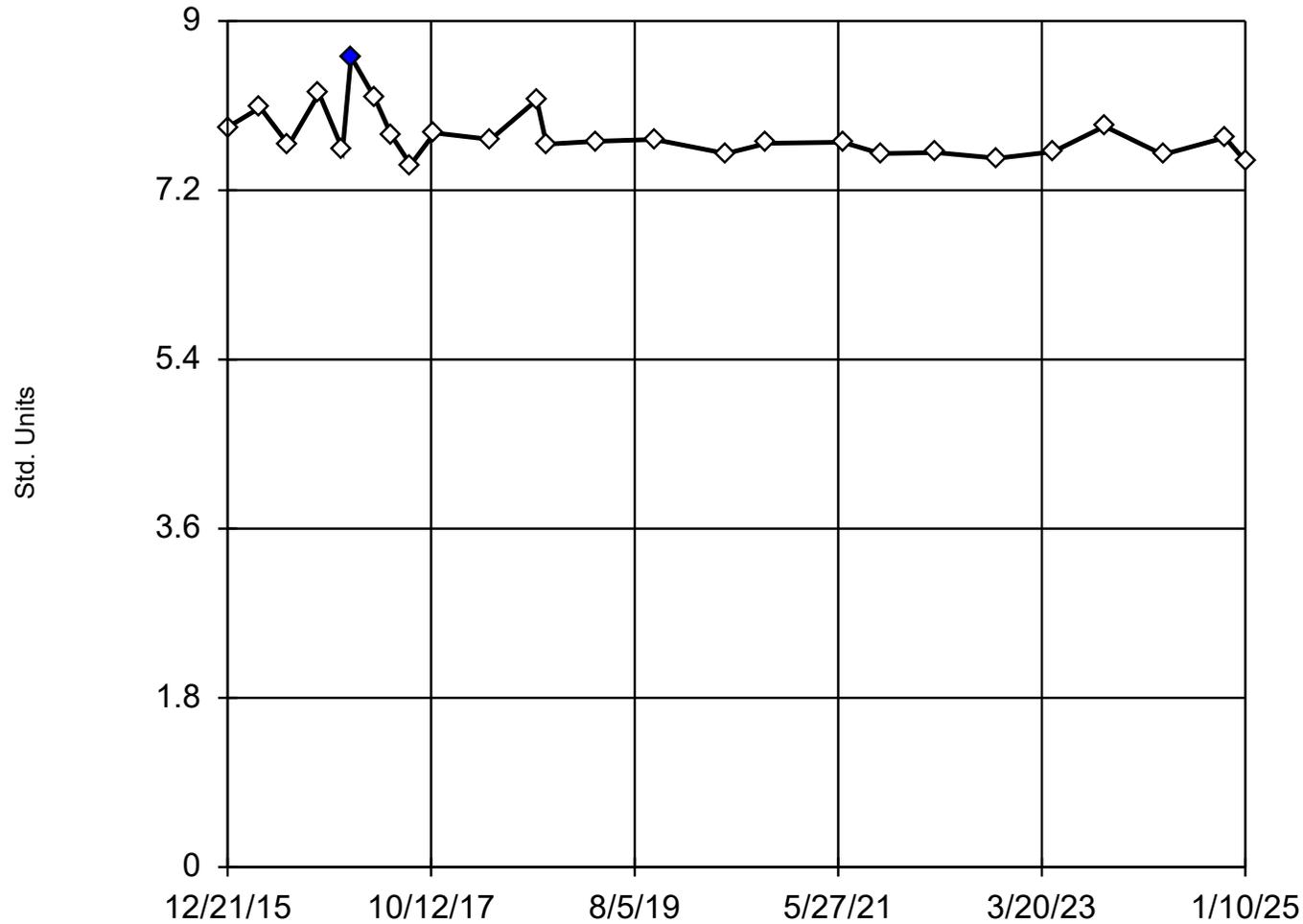
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	7.72
3/23/2018	7.93
4/23/2018	7.62
5/24/2018	7.54
6/23/2018	7.65
7/23/2018	7.59
8/22/2018	7.6
9/21/2018	7.95
10/22/2018	7.5
4/2/2019	7.51
10/8/2019	7.69
5/29/2020	7.37
10/8/2020	7.66
4/14/2021	7.46
10/14/2021	7.45
4/12/2022	8
10/27/2022	7.5
4/26/2023	7.48
10/9/2023	7.46
4/15/2024	7.4
10/1/2024	7.71

Rosner's Outlier Test

MW-33AR



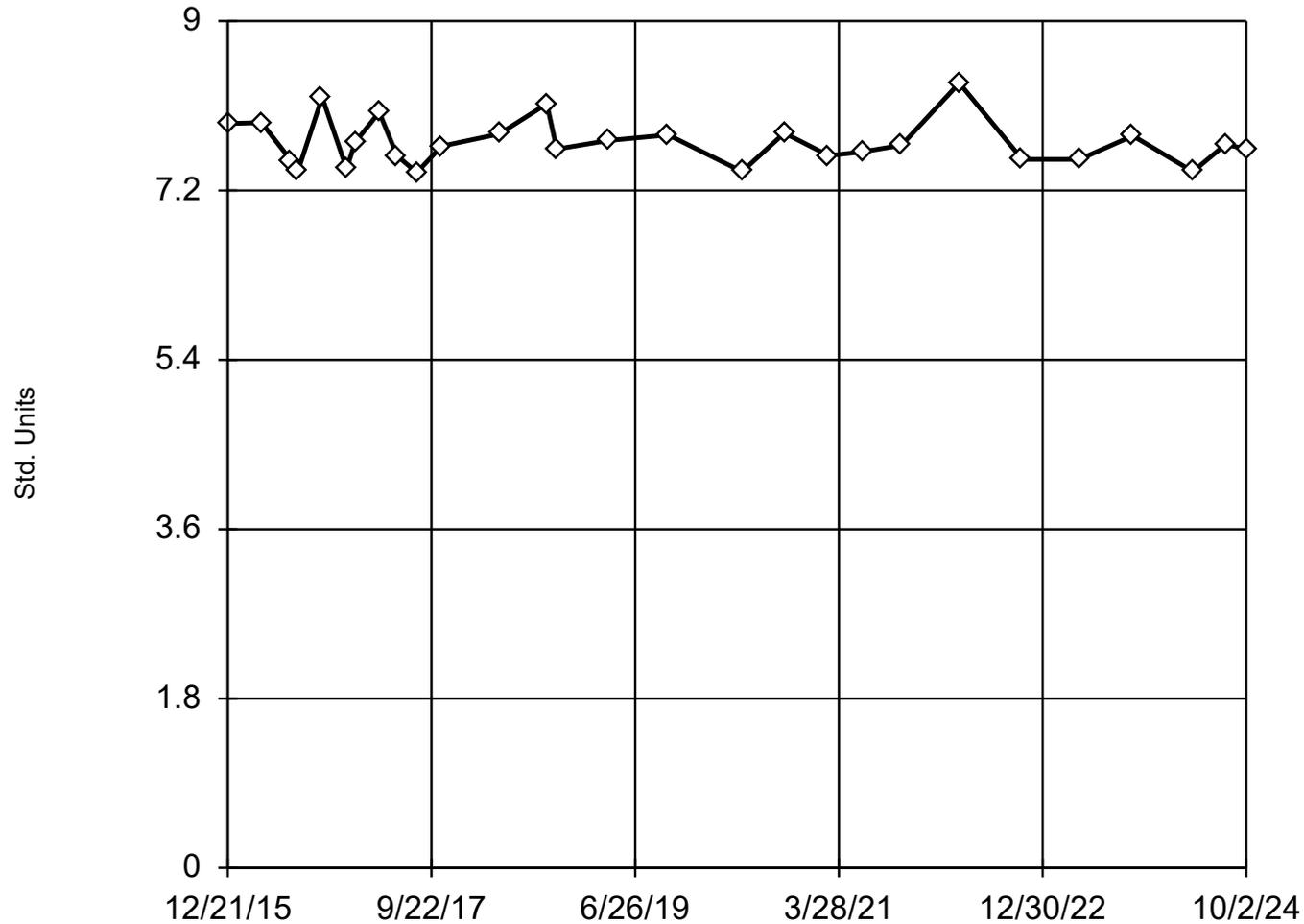
Rosner's Outlier Test

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-33AR
12/21/2015	7.87
4/5/2016	8.08
7/7/2016	7.68
10/13/2016	8.23
12/29/2016	7.63
1/25/2017	8.62 (O)
4/11/2017	8.19
6/6/2017	7.78
8/7/2017	7.47
10/24/2017	7.81
4/24/2018	7.74
9/21/2018	8.16
10/22/2018	7.69
4/2/2019	7.72
10/8/2019	7.74
5/28/2020	7.59
10/8/2020	7.7
6/11/2021	7.71 (R)
10/12/2021	7.59
4/12/2022	7.6
10/27/2022	7.54
4/27/2023	7.61
10/11/2023	7.88
4/17/2024	7.58
11/5/2024	7.76 (R)
1/10/2025	7.51

EPA Screening (suspected outliers for Rosner's Test)

MW-34A



n = 28

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.707, std. dev. 0.2467, critical Tn 2.714

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9297
Critical = 0.896
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

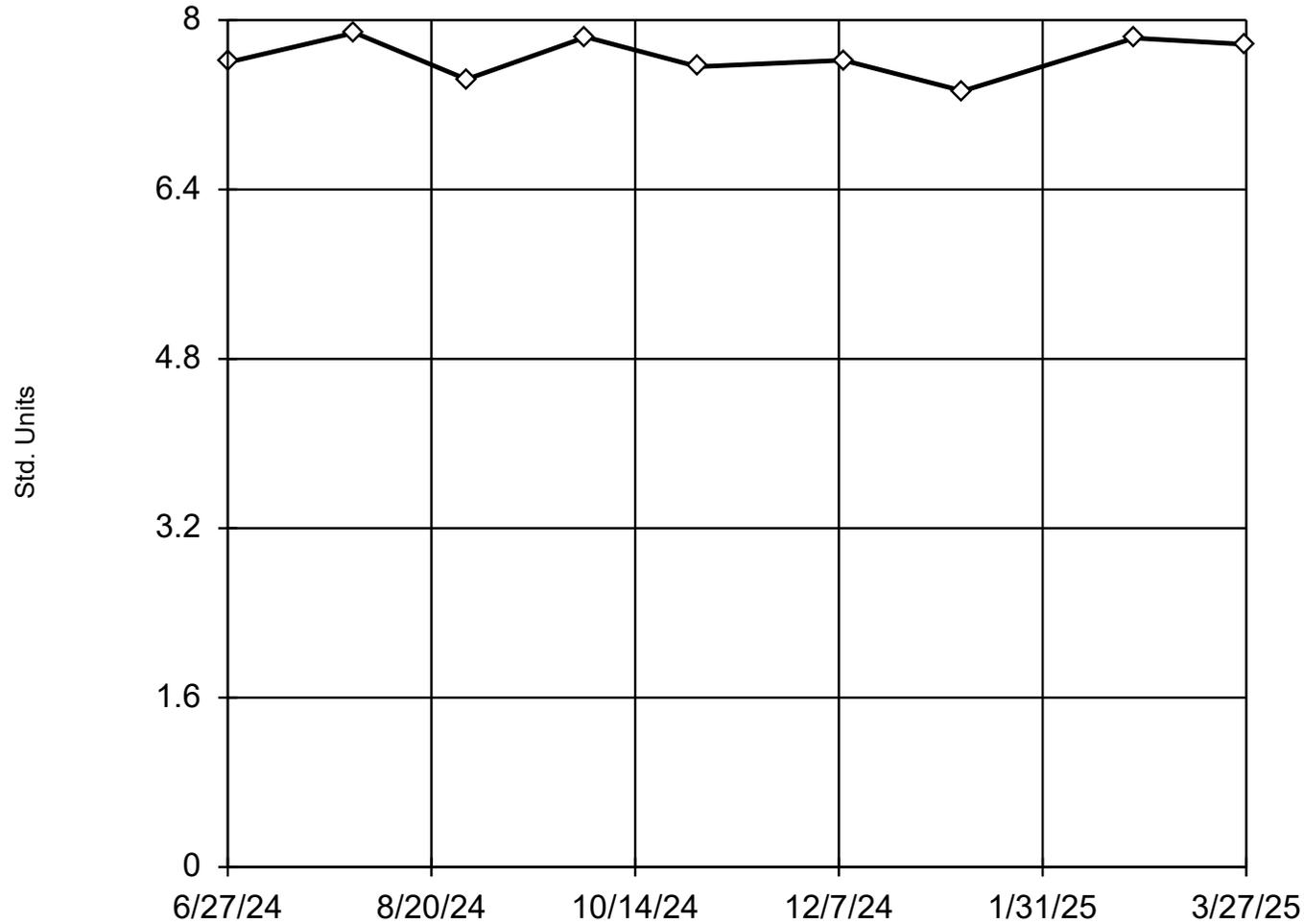
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	7.91
4/5/2016	7.92
7/7/2016	7.52
7/28/2016	7.4
10/13/2016	8.19
12/29/2016	7.43
1/25/2017	7.71
4/11/2017	8.03
6/6/2017	7.57
8/7/2017	7.39
10/24/2017	7.67
4/24/2018	7.8
9/21/2018	8.12
10/22/2018	7.64
4/2/2019	7.73
10/8/2019	7.79
5/28/2020	7.4
10/8/2020	7.81
2/25/2021	7.57
6/11/2021	7.61 (R)
10/12/2021	7.68
4/12/2022	8.34
10/27/2022	7.53
4/26/2023	7.53
10/11/2023	7.78
4/17/2024	7.4
7/29/2024	7.69
10/2/2024	7.64

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.652, std. dev. 0.1916, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9313
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

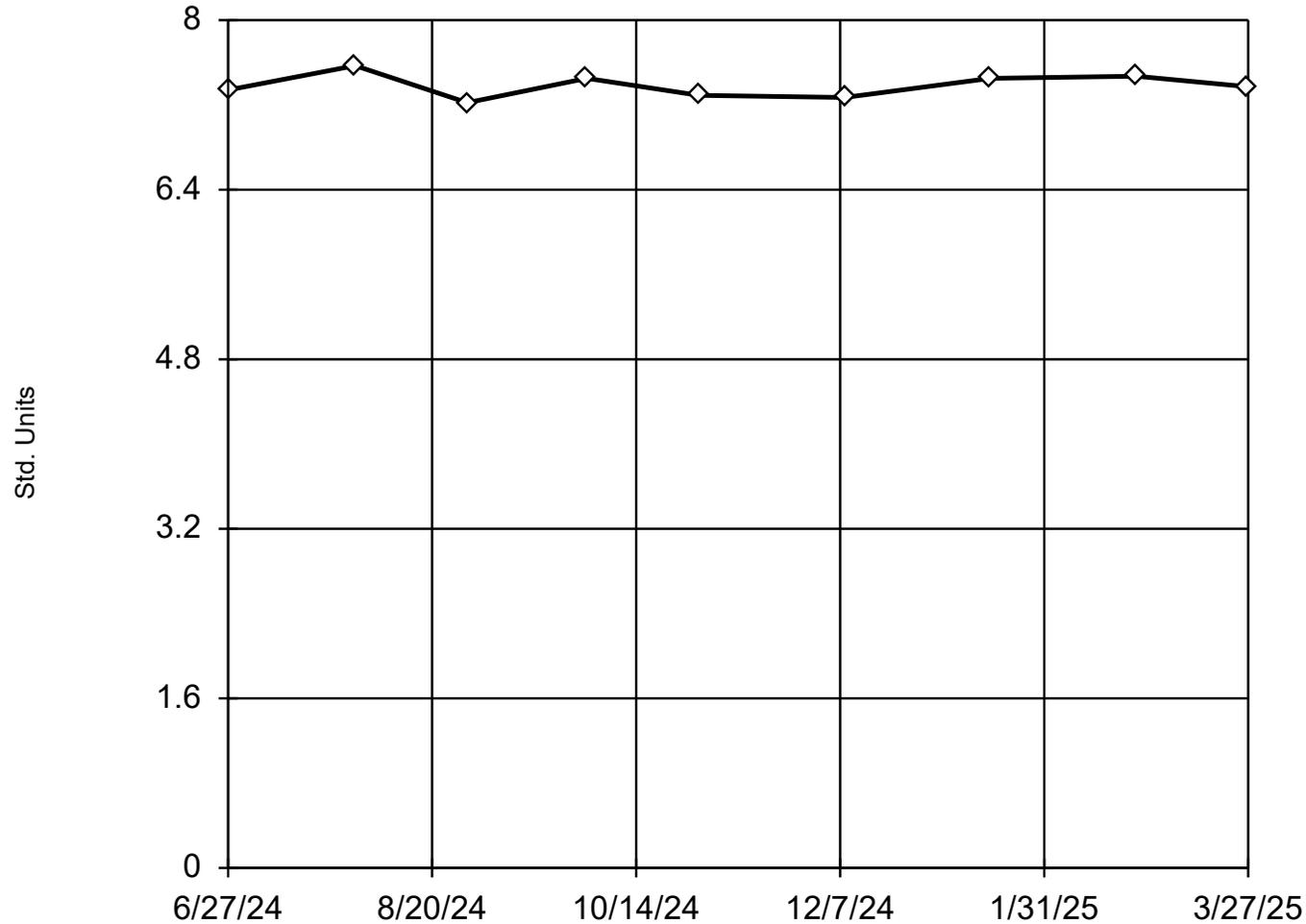
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	7.6
7/31/2024	7.88
8/30/2024	7.44
10/1/2024	7.84 (D)
10/31/2024	7.56
12/9/2024	7.62
1/10/2025	7.33
2/25/2025	7.83
3/27/2025	7.77

EPA Screening (suspected outliers for Dixon's Test)

MW-318



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.381, std. dev. 0.1126, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9653
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

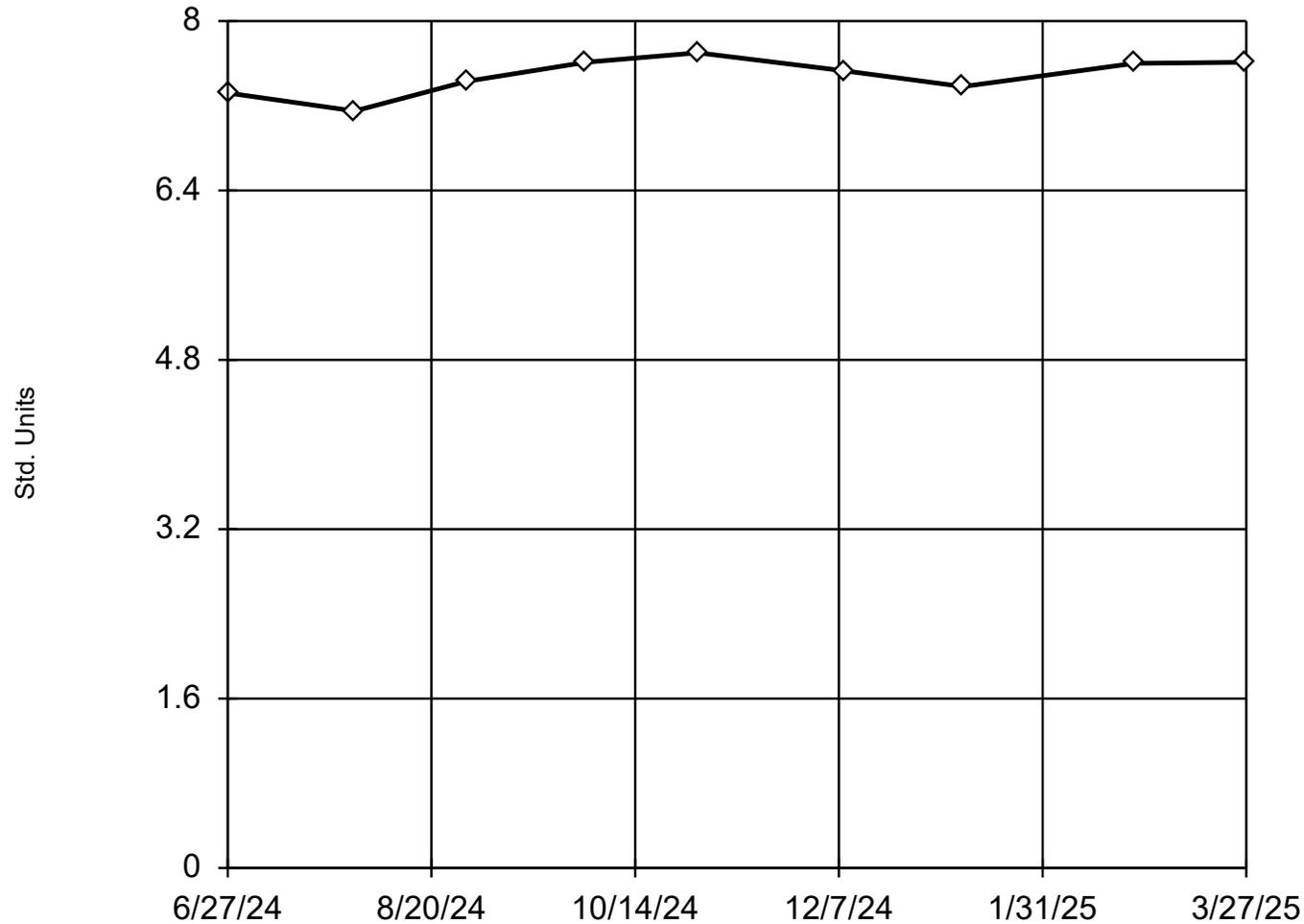
Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318

6/27/2024	7.34
7/31/2024	7.57
8/30/2024	7.22
10/1/2024	7.45 (D)
10/31/2024	7.29
12/9/2024	7.27
1/17/2025	7.45
2/25/2025	7.47
3/27/2025	7.37

EPA Screening (suspected outliers for Dixon's Test)

MW-319



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.481, std. dev. 0.1754, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9342
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

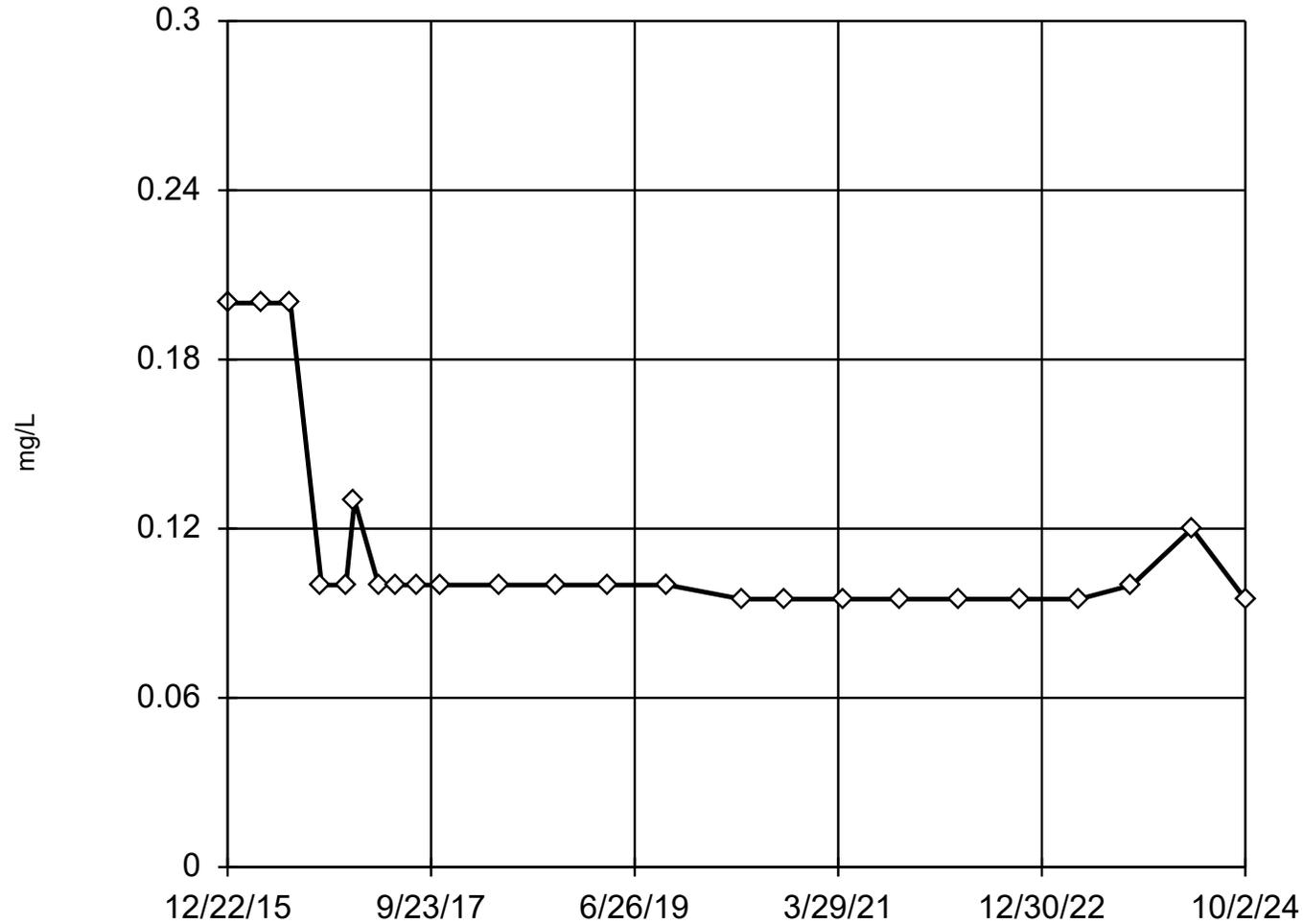
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	7.32
7/31/2024	7.15
8/30/2024	7.43
10/1/2024	7.61 (D)
10/31/2024	7.7
12/9/2024	7.53
1/10/2025	7.38
2/25/2025	7.6
3/27/2025	7.61

Tukey's Outlier Screening

MW-302



n = 24

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Fluoride Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

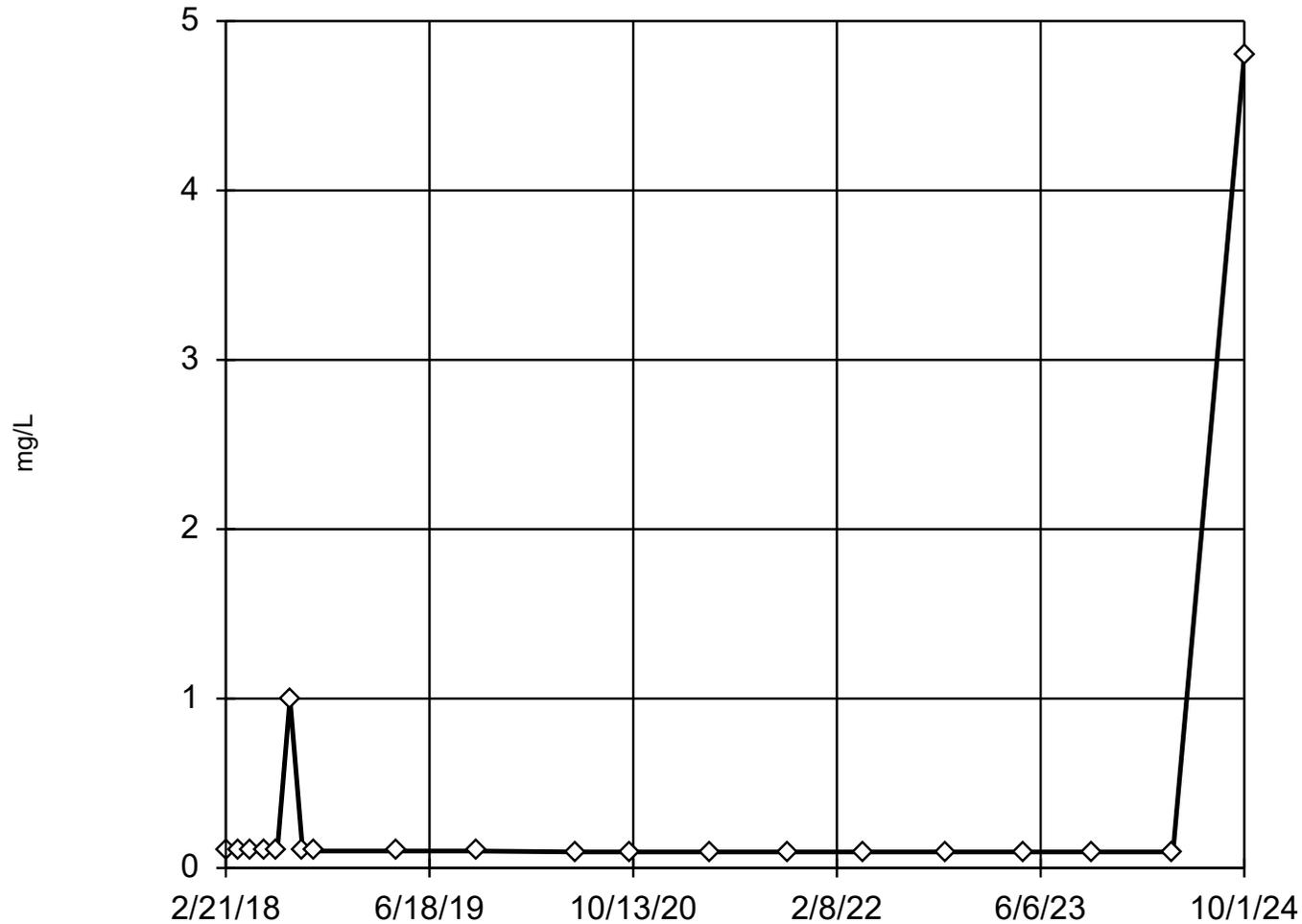
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	<0.2 (U)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.1 (U)
12/29/2016	<0.1 (U)
1/25/2017	0.13 (J)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/8/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/9/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/27/2023	<0.095 (U)
10/11/2023	0.1 (J)
4/17/2024	0.12 (J)
10/2/2024	<0.095

Tukey's Outlier Screening

MW-309



n = 20

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Fluoride Analysis Run 5/27/2025 11:25 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

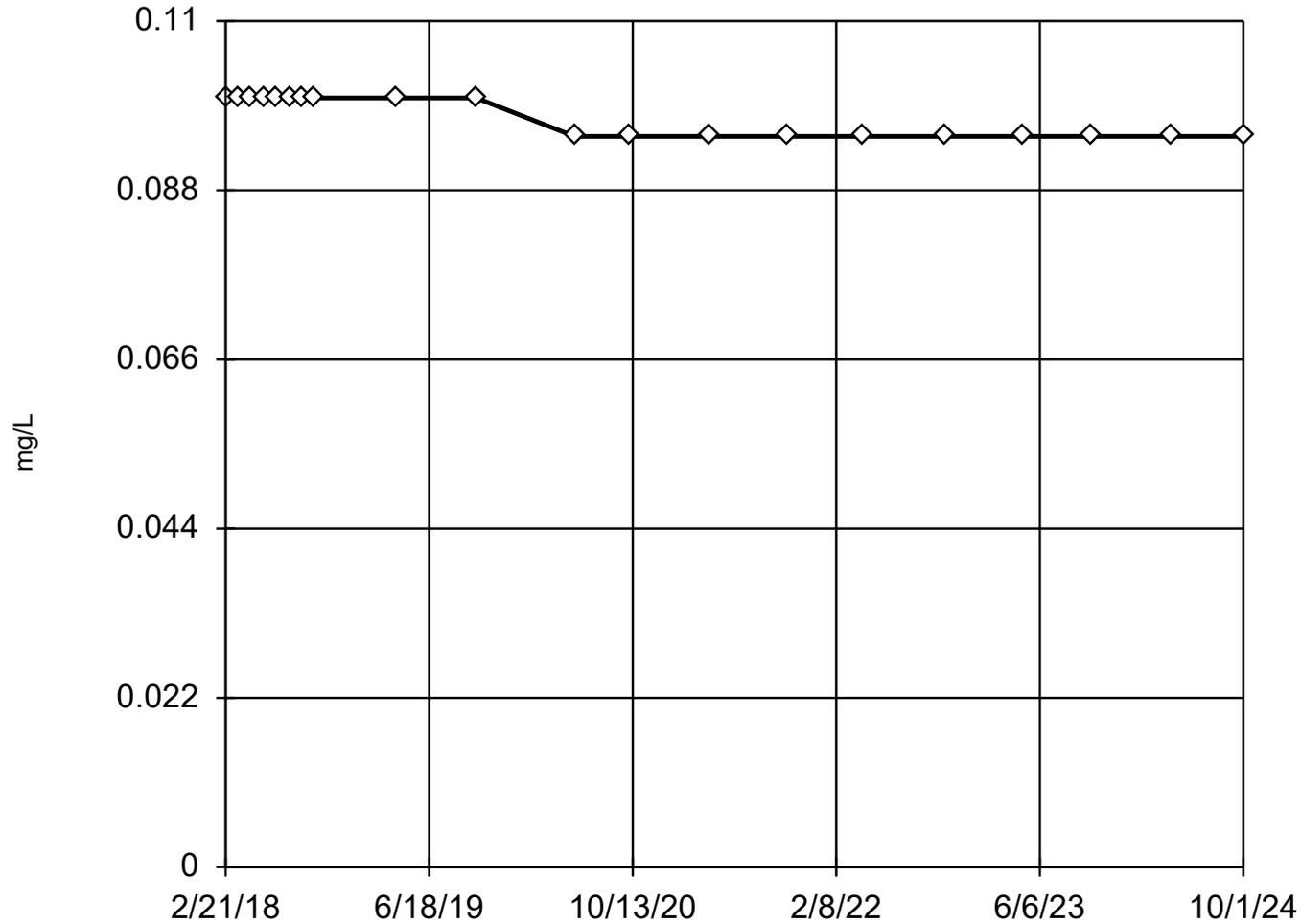
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095 (U)
10/1/2024	<4.8 (U)

Tukey's Outlier Screening

MW-310



n = 20

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Fluoride Analysis Run 5/27/2025 11:26 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

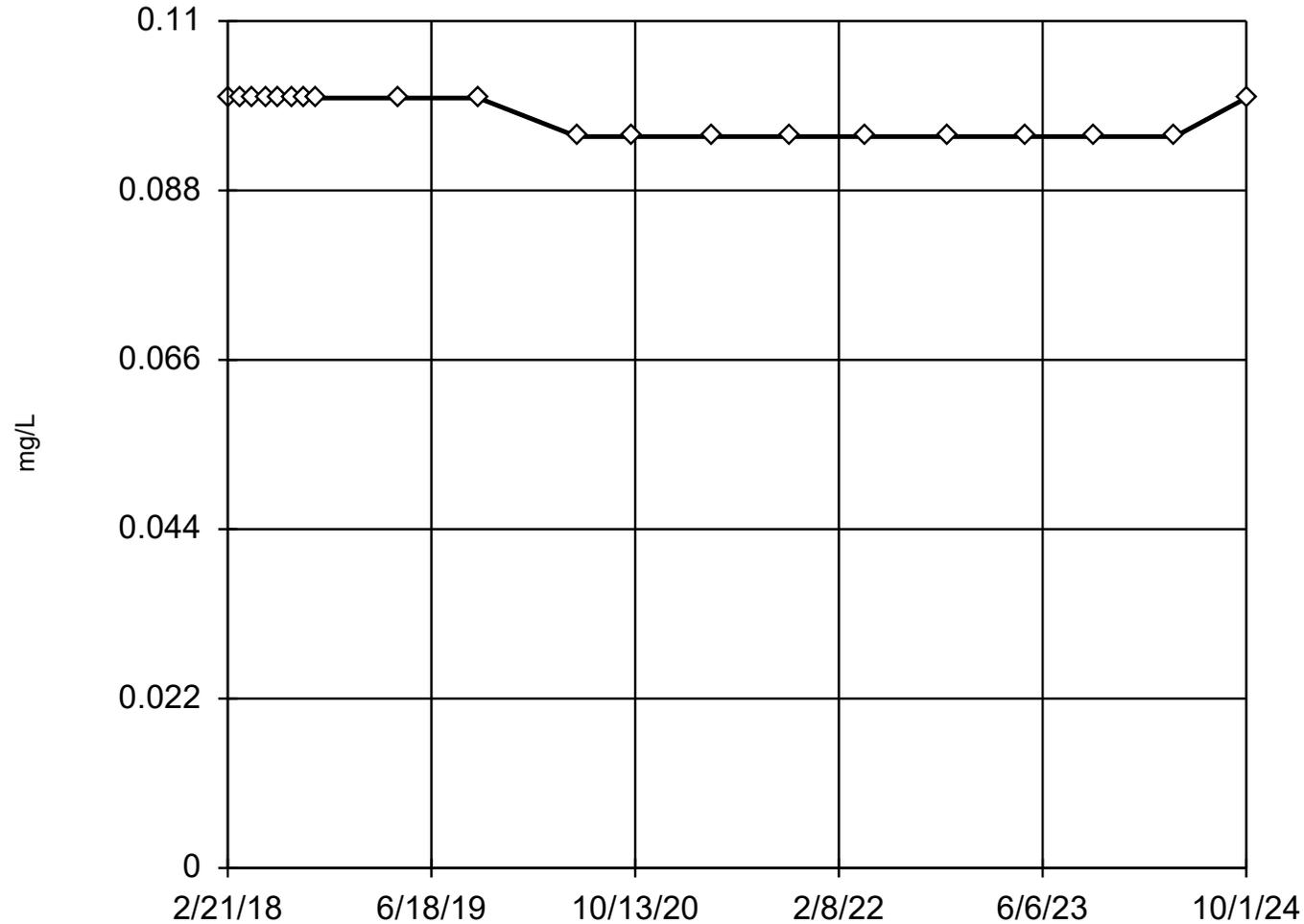
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<0.1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095
10/1/2024	<0.095

Tukey's Outlier Screening

MW-311



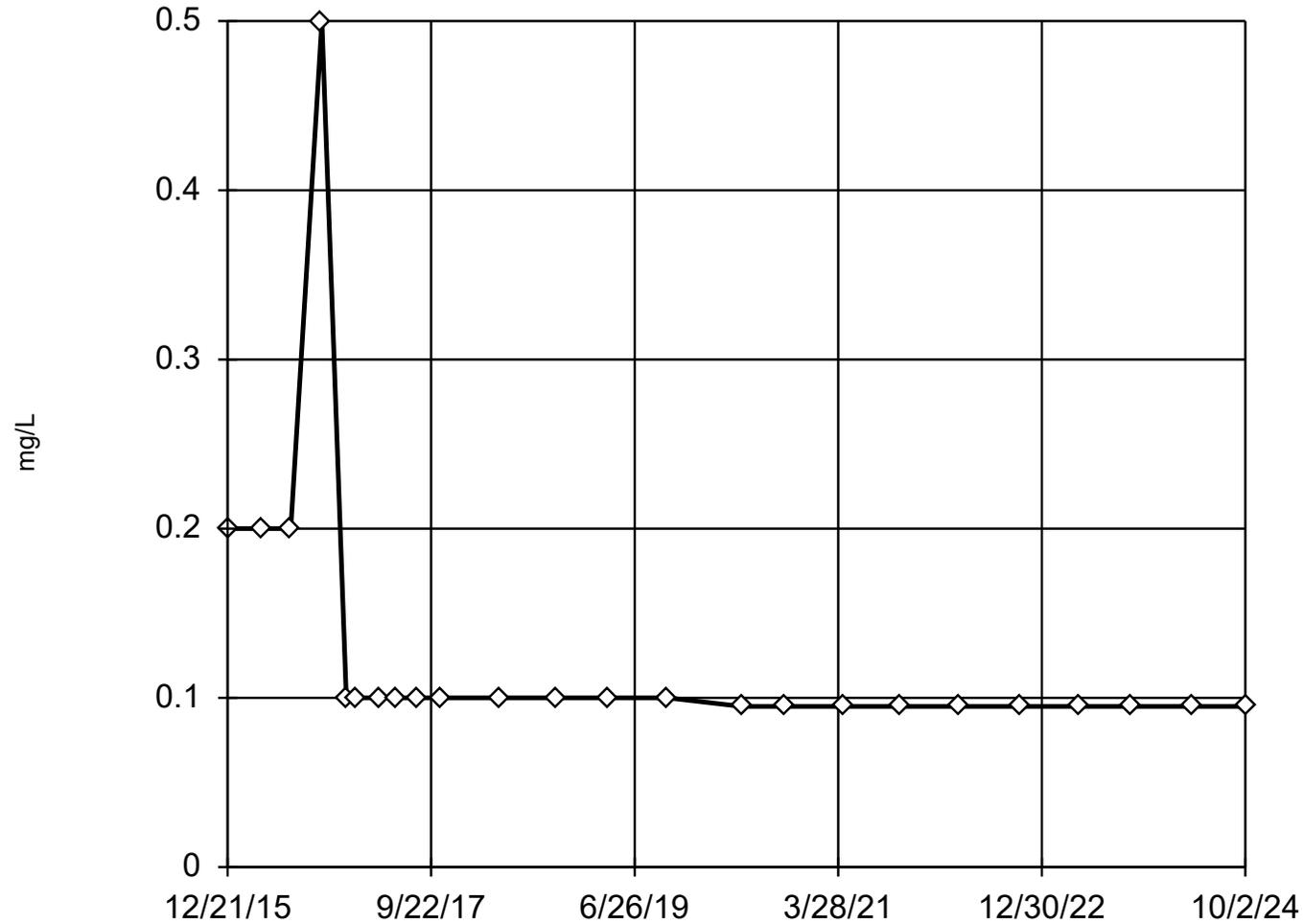
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<0.1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/14/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095
10/1/2024	0.1 (J)

Tukey's Outlier Screening

MW-33AR



n = 24

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Fluoride Analysis Run 5/27/2025 11:26 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

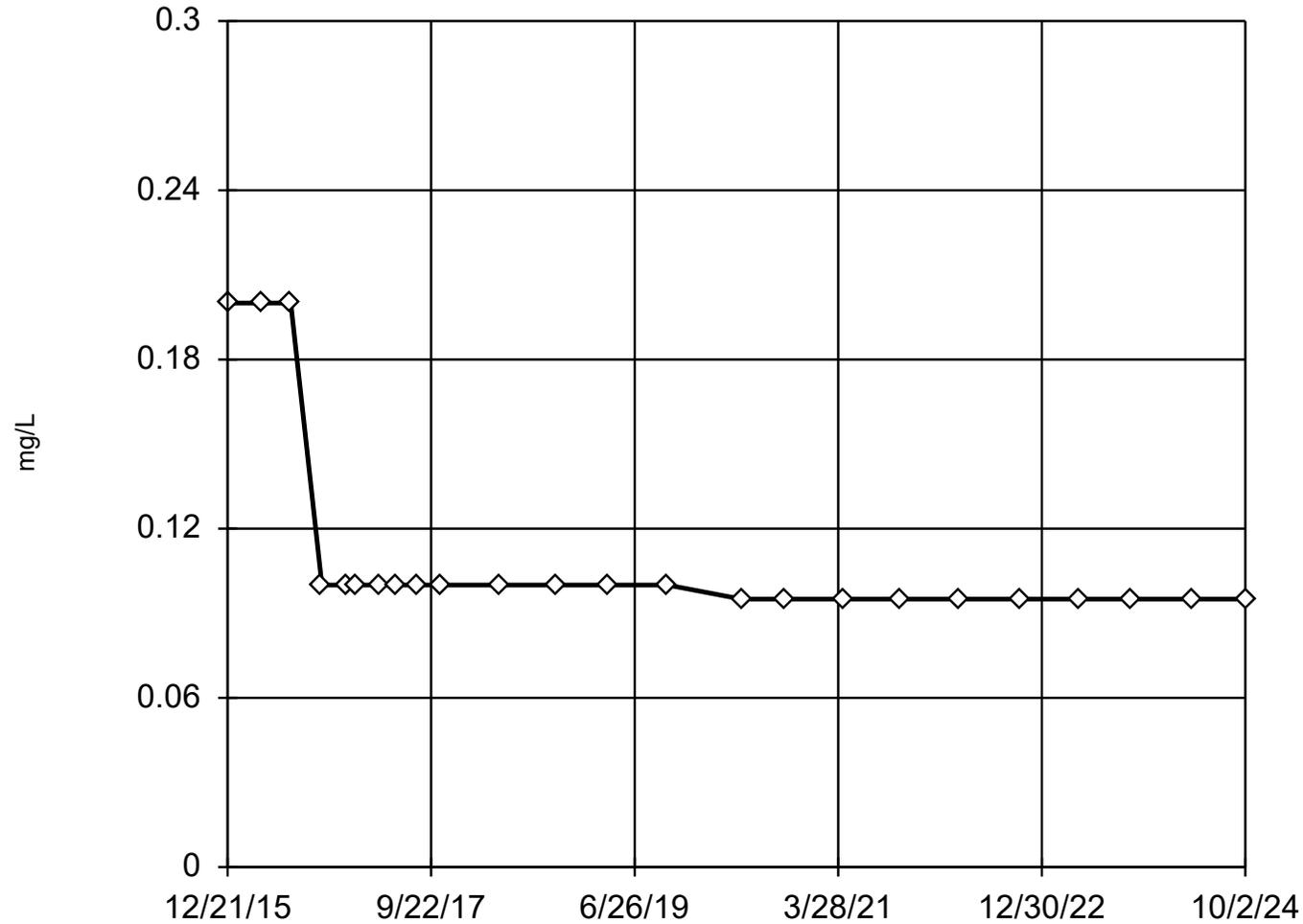
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-33AR
12/21/2015	<0.2 (U)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.5 (U)
12/29/2016	<0.1 (U)
1/25/2017	<0.1 (U)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/7/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/28/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/12/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/27/2023	<0.095 (U)
10/11/2023	<0.095 (U)
4/17/2024	<0.095
10/2/2024	<0.095

Tukey's Outlier Screening

MW-34A



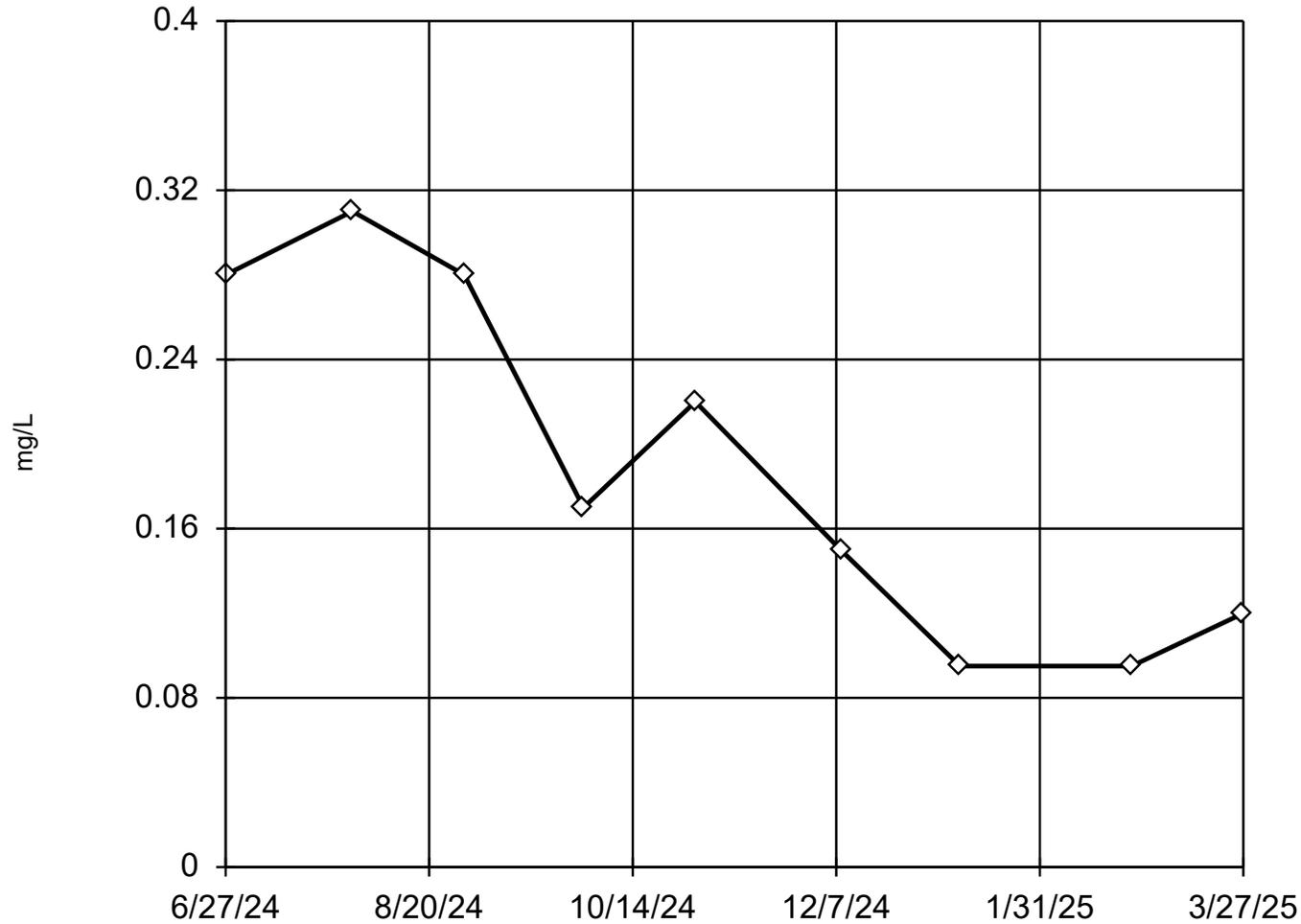
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	<0.2 (UD)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.1 (U)
12/29/2016	<0.1 (U)
1/25/2017	<0.1 (U)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/7/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/28/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/12/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/11/2023	<0.095 (U)
4/17/2024	<0.095
10/2/2024	<0.095

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 0.1911, std. dev. 0.08399, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8958
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Fluoride Analysis Run 5/27/2025 11:27 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

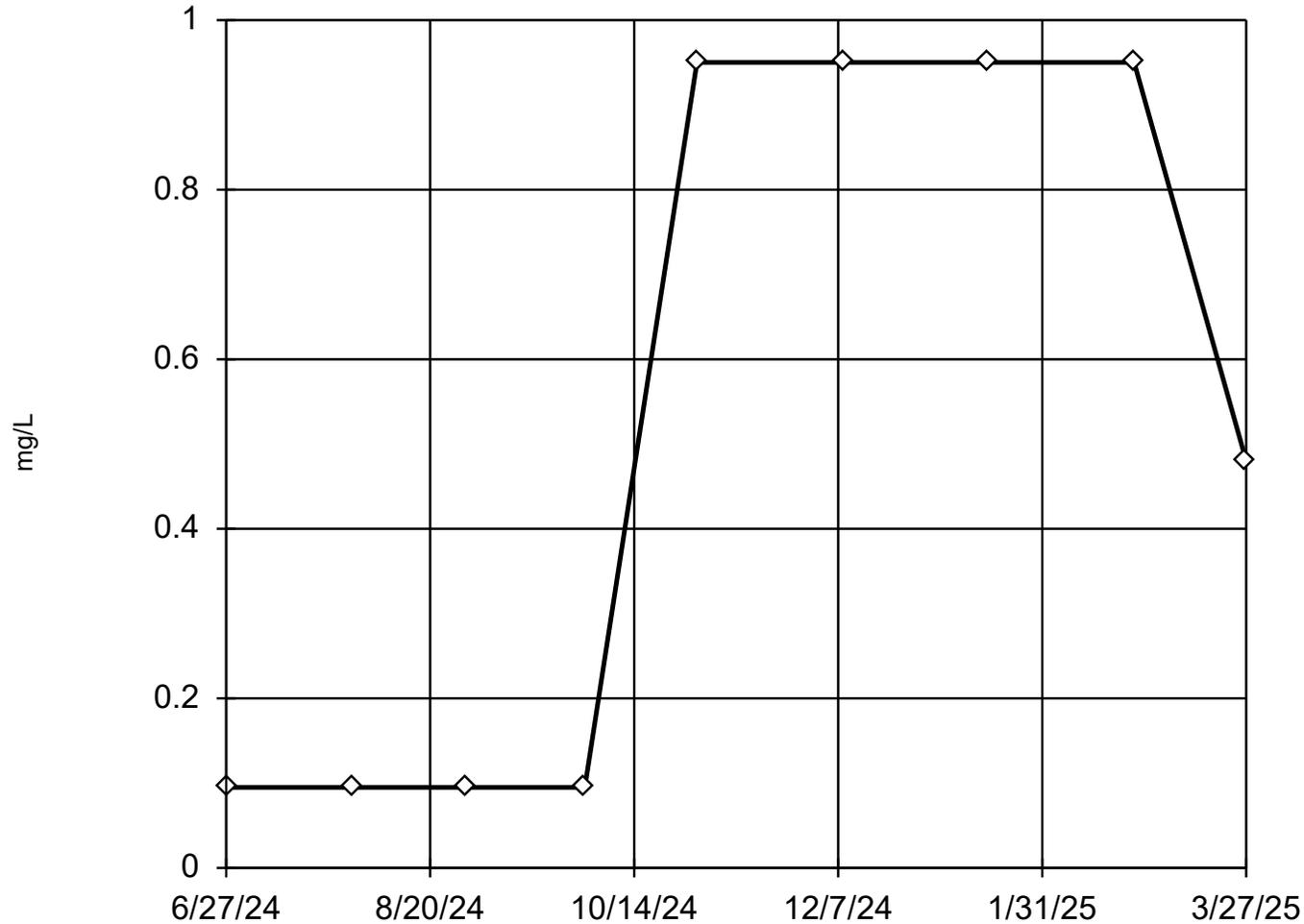
EPA 1989 Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	0.28 (J)
7/31/2024	0.31 (J)
8/30/2024	0.28 (J)
10/1/2024	0.17 (JD)
10/31/2024	0.22 (J)
12/9/2024	0.15 (J)
1/10/2025	<0.095
2/25/2025	<0.095
3/27/2025	0.12 (J)

Tukey's Outlier Screening

MW-318



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Fluoride Analysis Run 5/27/2025 11:27 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

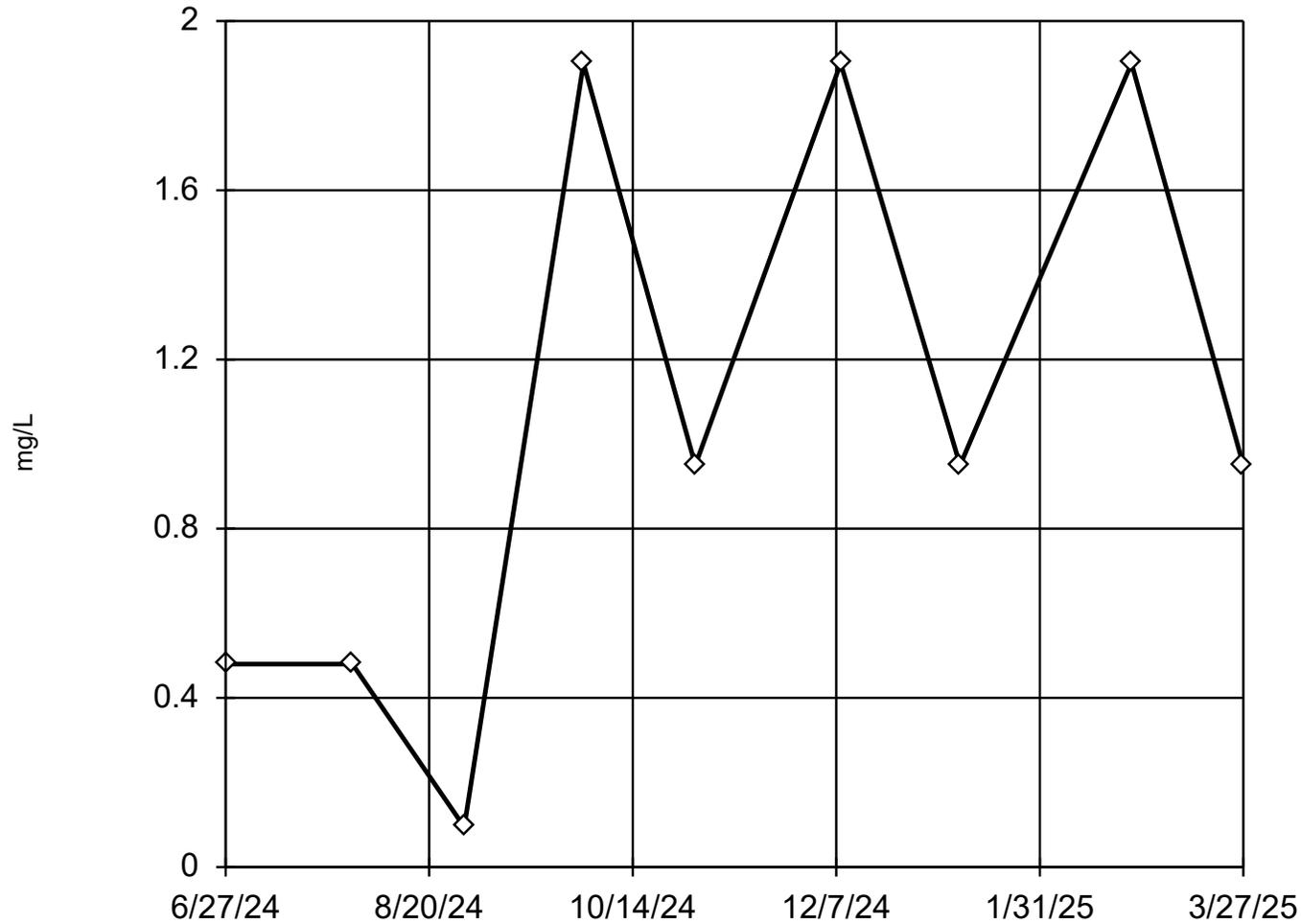
Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	<0.095
7/31/2024	<0.095
8/30/2024	<0.095
10/1/2024	<0.095 (D)
10/31/2024	<0.95
12/9/2024	<0.95
1/17/2025	<0.95
2/25/2025	<0.95
3/27/2025	<0.48 (U)

Dixon's Outlier Test

MW-319



n = 9

No statistical outliers.
Testing for 1 low outlier.
Mean = 1.067.
Std. Dev. = 0.6853.
<0.095: c = 0.2133
tab1 = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.807
Critical = 0.749
The distribution was found to be normally distributed.

Constituent: Fluoride Analysis Run 5/27/2025 11:27 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

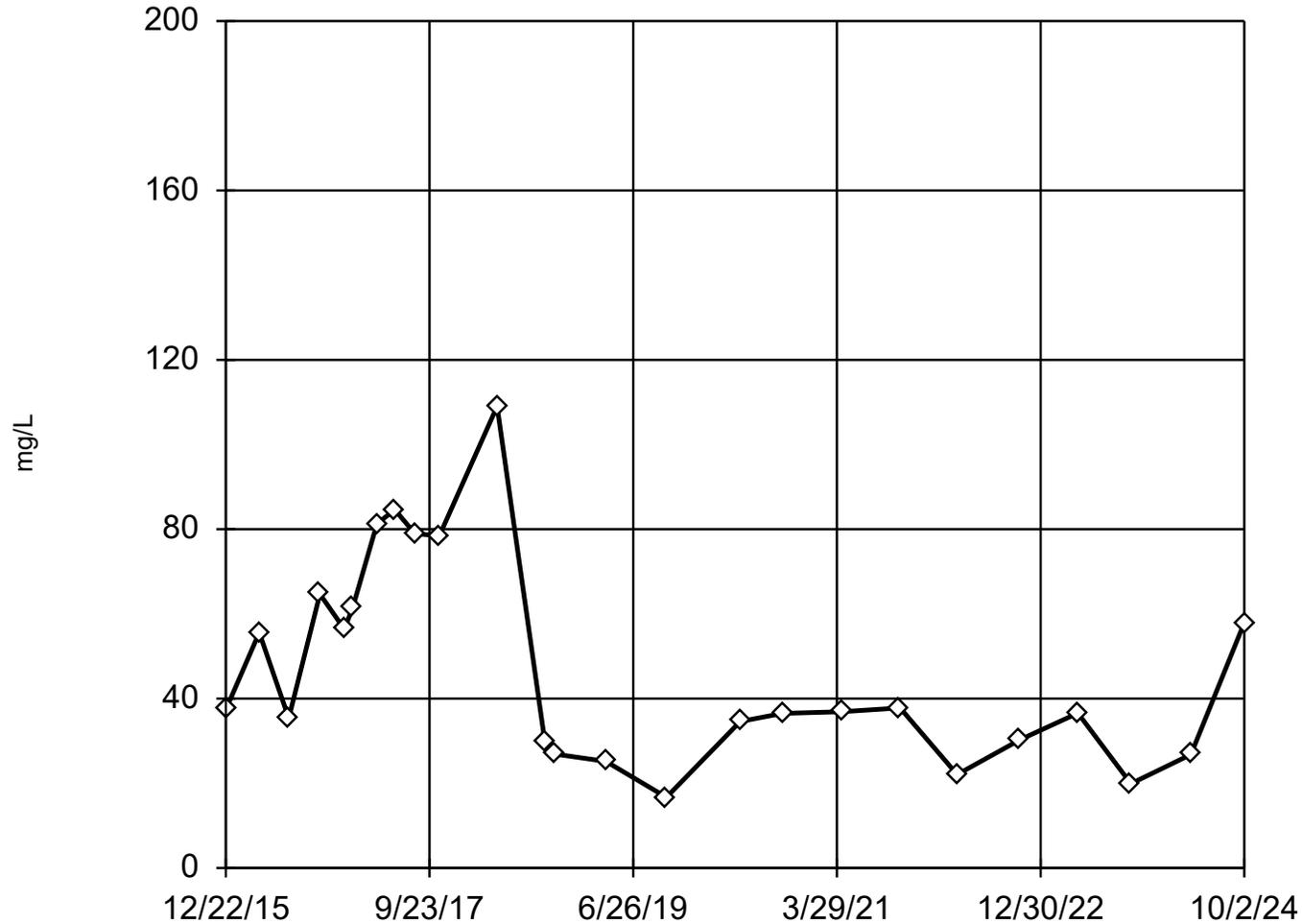
Dixon's Outlier Test

Constituent: Fluoride (mg/L) Analysis Run 5/27/2025 11:43 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	<0.48
7/31/2024	<0.48
8/30/2024	<0.095
10/1/2024	<1.9 (D)
10/31/2024	<0.95
12/9/2024	<1.9
1/10/2025	<0.95
2/25/2025	<1.9
3/27/2025	<0.95 (U)

EPA Screening (suspected outliers for Dixon's Test)

MW-302



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 47.26, std. dev. 24.29, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8983
Critical = 0.888
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 5/27/2025 11:27 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

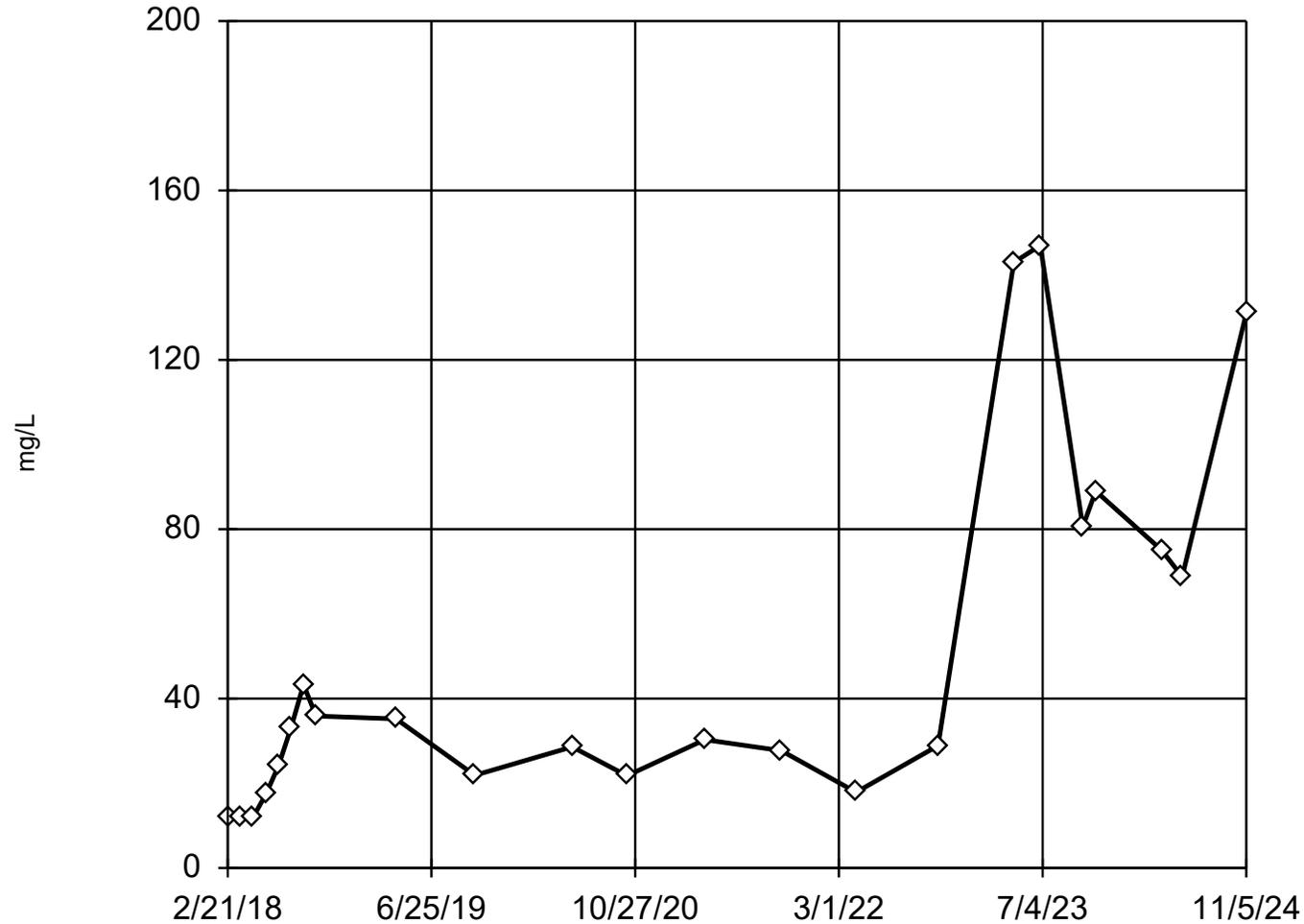
Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	37.4
4/5/2016	55.6
7/7/2016	35.4
10/13/2016	64.7
12/29/2016	56.4
1/25/2017	61.6
4/11/2017	81.3
6/6/2017	84.6
8/8/2017	79
10/24/2017	78.4
4/24/2018	109
9/21/2018	30
10/22/2018	26.9
4/2/2019	25.2
10/9/2019	16.7
5/29/2020	34.6
10/8/2020	36.5
4/13/2021	36.9
10/14/2021	37.8
4/12/2022	22.1
10/27/2022	30.3
4/27/2023	36.6
10/11/2023	19.9
4/17/2024	26.8
10/2/2024	57.9

EPA Screening (suspected outliers for Dixon's Test)

MW-309



n = 23

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 49.44, std. dev. 42.23, critical Tn 2.624

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9323
Critical = 0.881 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF

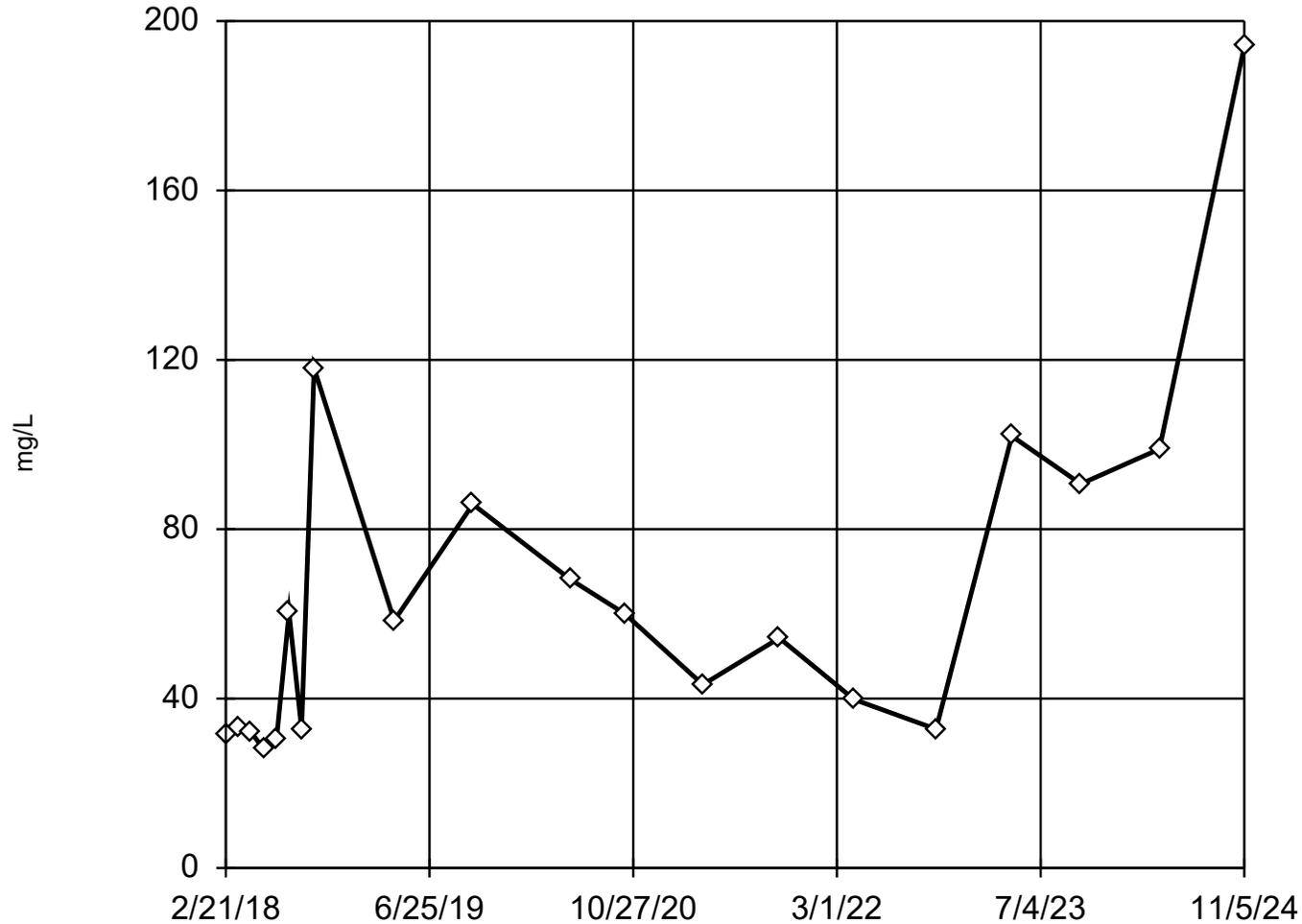
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-309

2/21/2018	12.2
3/23/2018	12.2
4/23/2018	12
5/24/2018	17.5
6/23/2018	24.1
7/23/2018	33.1
8/22/2018	43.3
9/21/2018	35.9
4/2/2019	35.2
10/8/2019	21.9
5/29/2020	28.6
10/8/2020	21.8
4/13/2021	30.3
10/14/2021	27.7
4/12/2022	17.9
10/26/2022	28.9
4/26/2023	143 (X)
6/29/2023	147 (X)
10/9/2023	80.6
11/9/2023	89
4/15/2024	75.1
6/4/2024	68.8
11/5/2024	131 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-310



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 64.72, std. dev. 41.2, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9203
Critical = 0.868 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

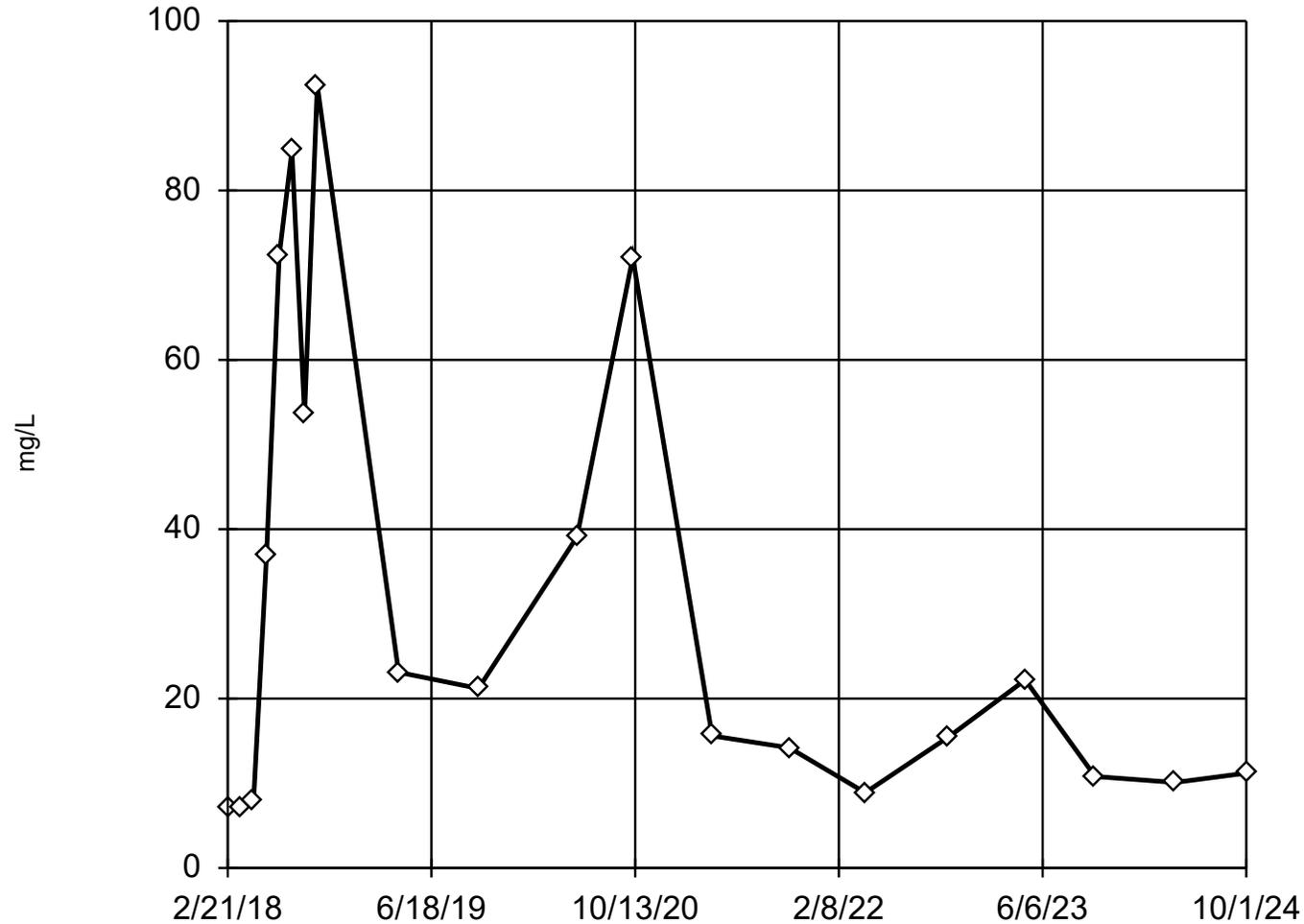
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	31.6
3/23/2018	33.1
4/23/2018	32
5/24/2018	28
6/23/2018	30.4
7/23/2018	60.2
8/22/2018	32.8
9/21/2018	118
4/2/2019	58.4
10/8/2019	85.9
5/29/2020	68.2
10/8/2020	60
4/13/2021	43.3
10/14/2021	54.3
4/12/2022	39.8
10/26/2022	32.8
4/26/2023	102
10/9/2023	90.7
4/15/2024	98.9
11/5/2024	194 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-311



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 31.31, std. dev. 28.14, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9137
Critical = 0.868 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

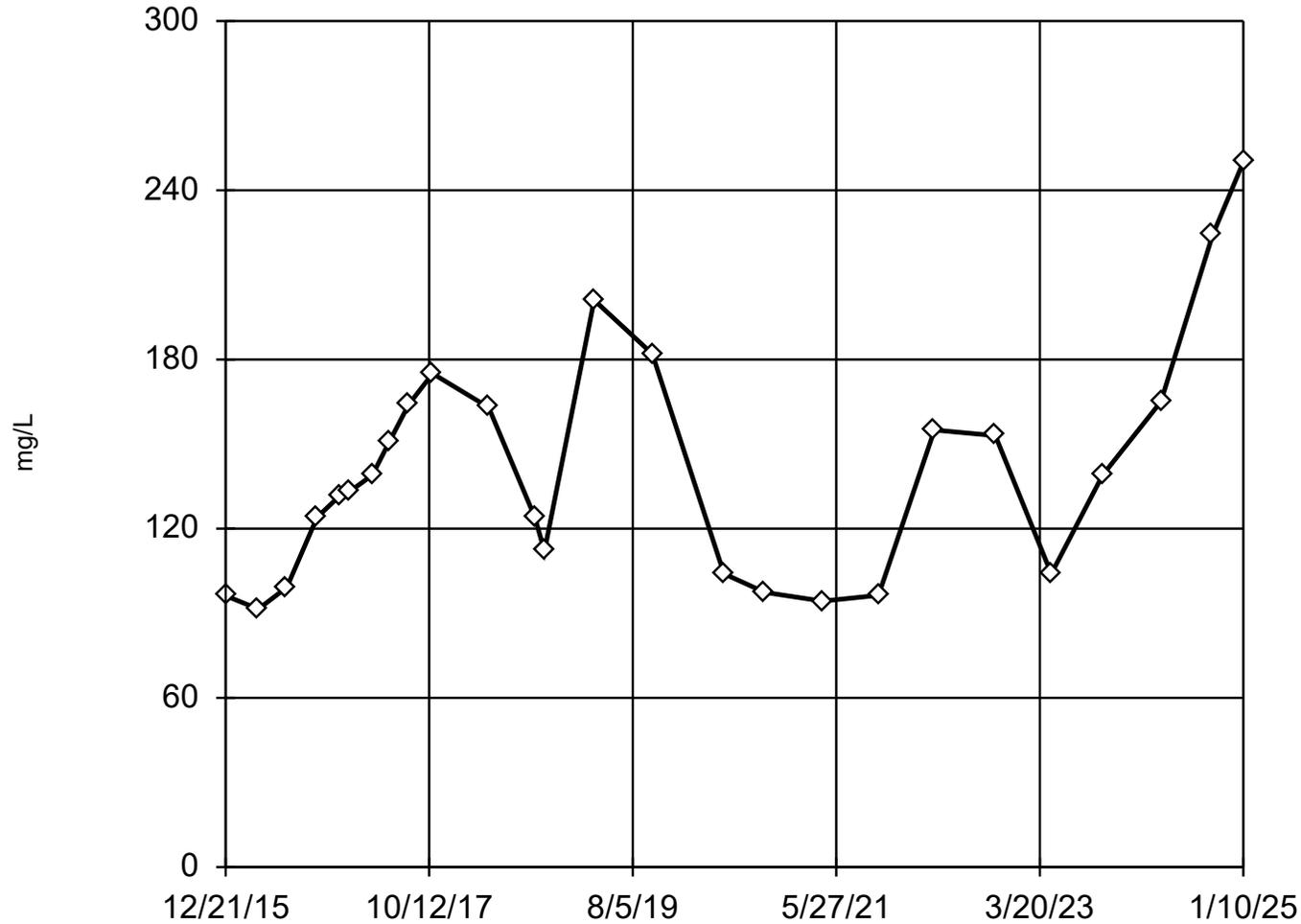
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	7.1
3/23/2018	7.2
4/23/2018	7.9
5/24/2018	36.9
6/23/2018	72.3
7/23/2018	84.7
8/22/2018	53.6
9/21/2018	92.4
4/2/2019	23.1
10/8/2019	21.2
5/29/2020	39.1
10/8/2020	72.1
4/14/2021	15.6
10/14/2021	14.2
4/12/2022	8.9
10/27/2022	15.5
4/26/2023	22.2
10/9/2023	10.8
4/15/2024	10.1
10/1/2024	11.2

EPA Screening (suspected outliers for Rosner's Test)

MW-33AR



n = 26

Rosner's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 141.1, std. dev. 41.87, critical Tn 2.681

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9163
Critical = 0.891
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF

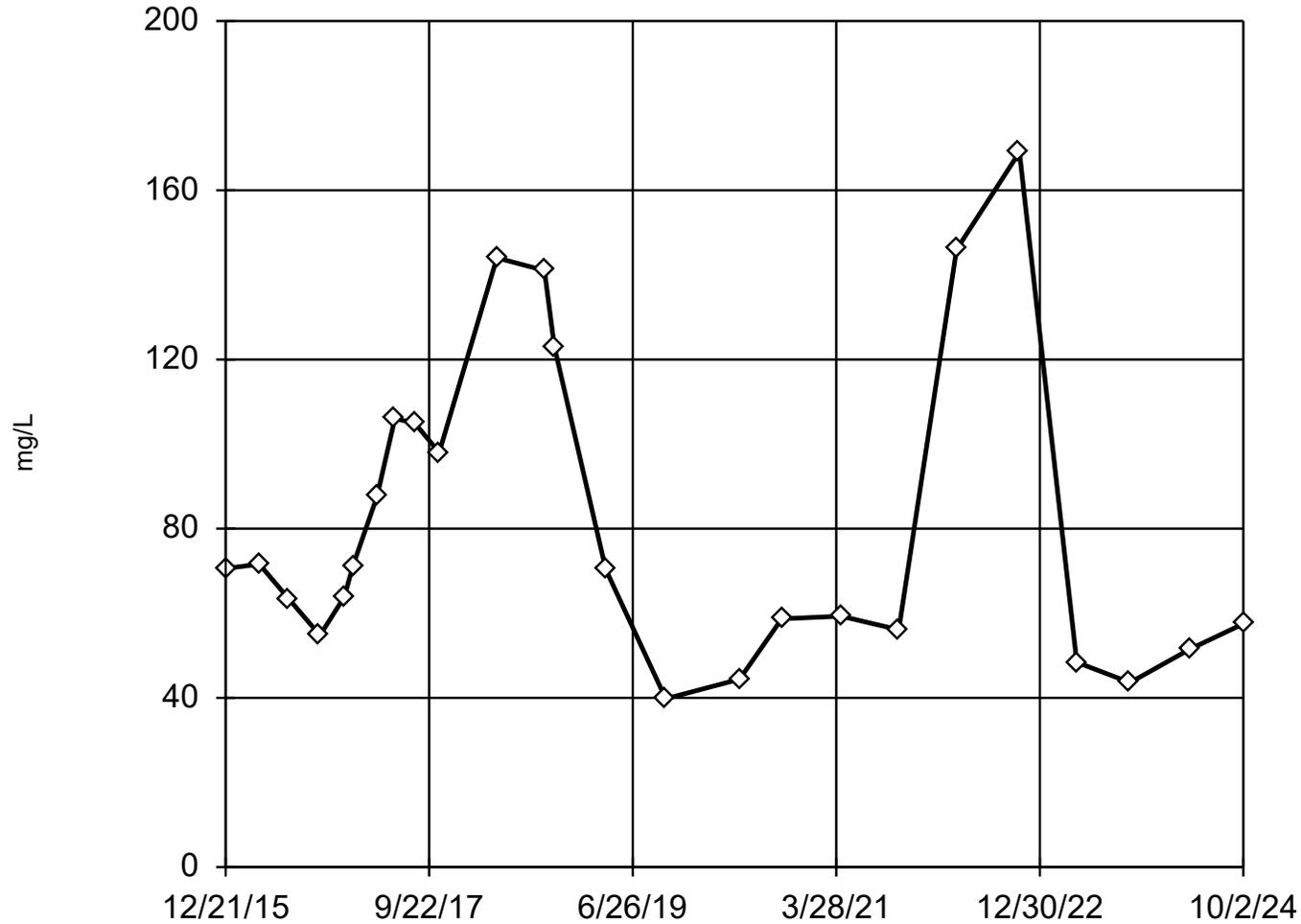
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	96.2
4/5/2016	91.5
7/7/2016	99.2
10/13/2016	124
12/29/2016	132
1/25/2017	133
4/11/2017	139
6/6/2017	151
8/7/2017	164
10/24/2017	175
4/24/2018	163
9/21/2018	124
10/22/2018	112
4/2/2019	201
10/8/2019	182
5/28/2020	104
10/8/2020	97.4
4/13/2021	94.3
10/12/2021	96.4
4/12/2022	155
10/27/2022	153
4/27/2023	104
10/11/2023	139
4/17/2024	165
10/2/2024	224
1/10/2025	250

EPA Screening (suspected outliers for Dixon's Test)

MW-34A



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 81.79, std. dev. 37.09, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9348
Critical = 0.888 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

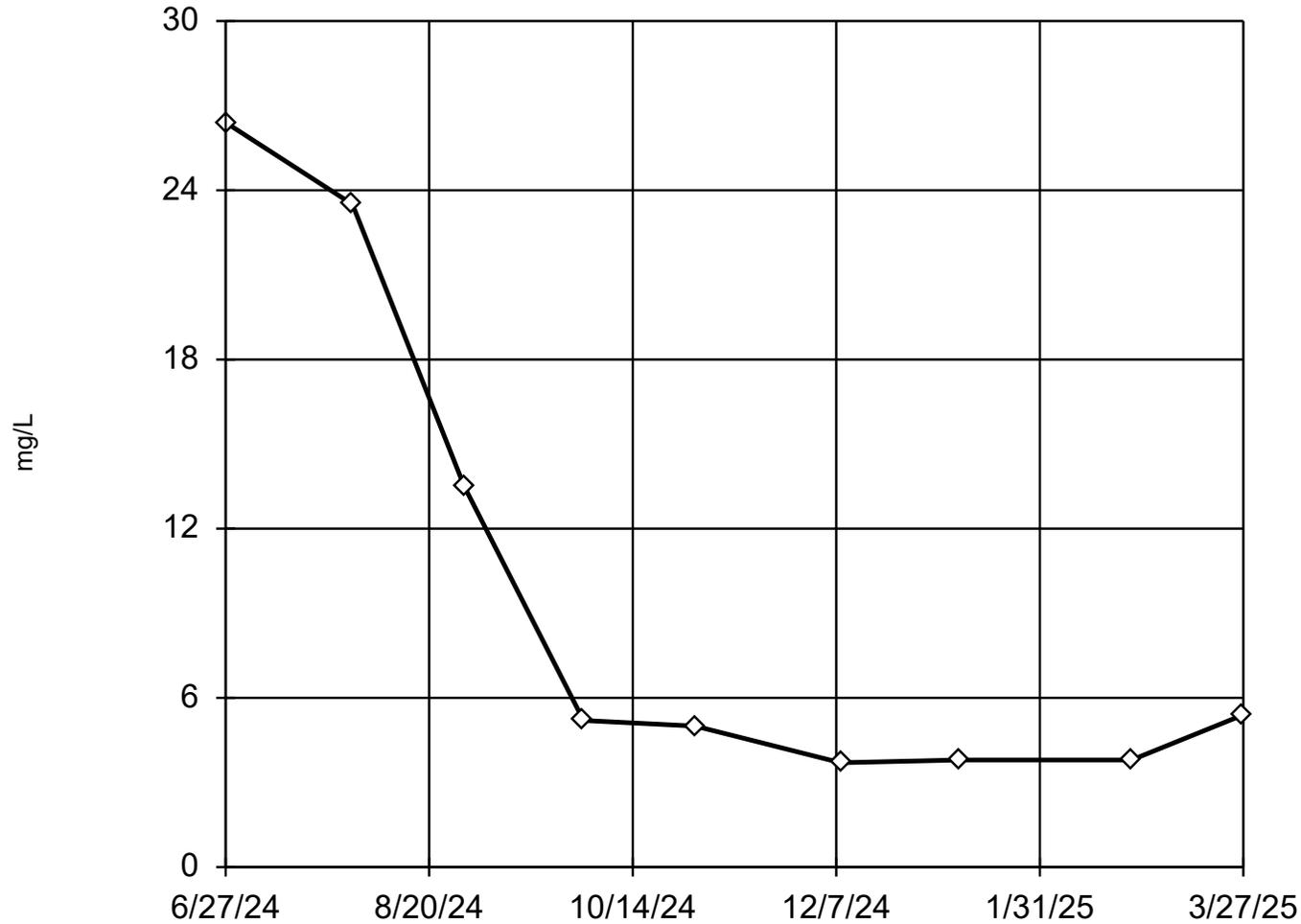
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	70.6 (D)
4/5/2016	71.6
7/7/2016	63.4
10/13/2016	54.8
12/29/2016	63.9
1/25/2017	71.2
4/11/2017	87.6
6/6/2017	106
8/7/2017	105
10/24/2017	98
4/24/2018	144
9/21/2018	141
10/22/2018	123
4/2/2019	70.4
10/8/2019	39.8
5/28/2020	44.4
10/8/2020	58.7
4/13/2021	59.3
10/12/2021	56.1
4/12/2022	146
10/27/2022	169
4/26/2023	48.4
10/11/2023	43.6
4/17/2024	51.5
10/2/2024	57.5

EPA Screening (suspected outliers for Dixon's Test)

MW-317



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 10.03, std. dev. 9.008, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.7951
Critical = 0.764 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 5/27/2025 11:28 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

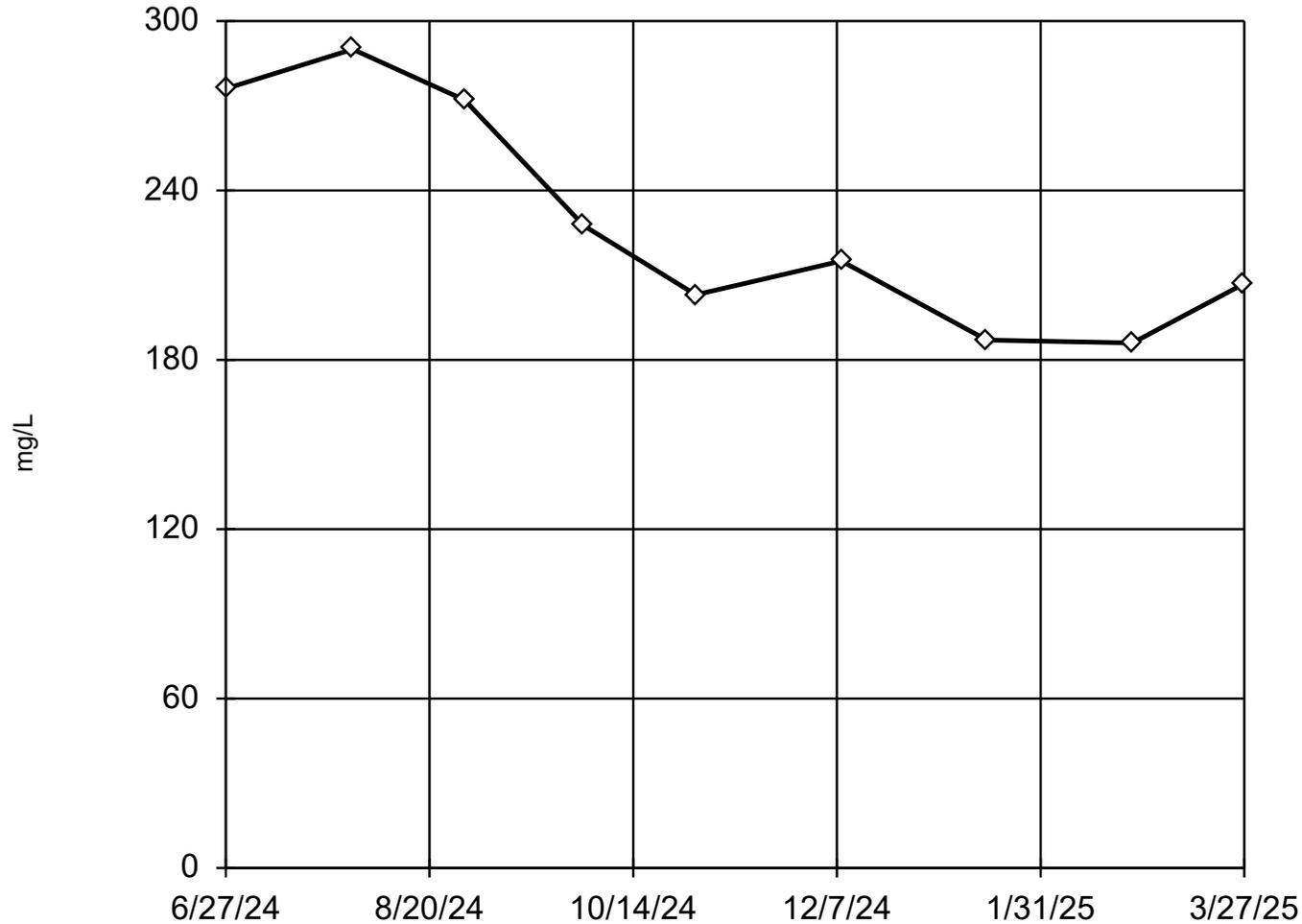
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	26.4
7/31/2024	23.5
8/30/2024	13.5
10/1/2024	5.2 (D)
10/31/2024	5
12/9/2024	3.7
1/10/2025	3.8
2/25/2025	3.8
3/27/2025	5.4

EPA Screening (suspected outliers for Dixon's Test)

MW-318



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 229.3, std. dev. 39.92, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.876
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 5/27/2025 11:29 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

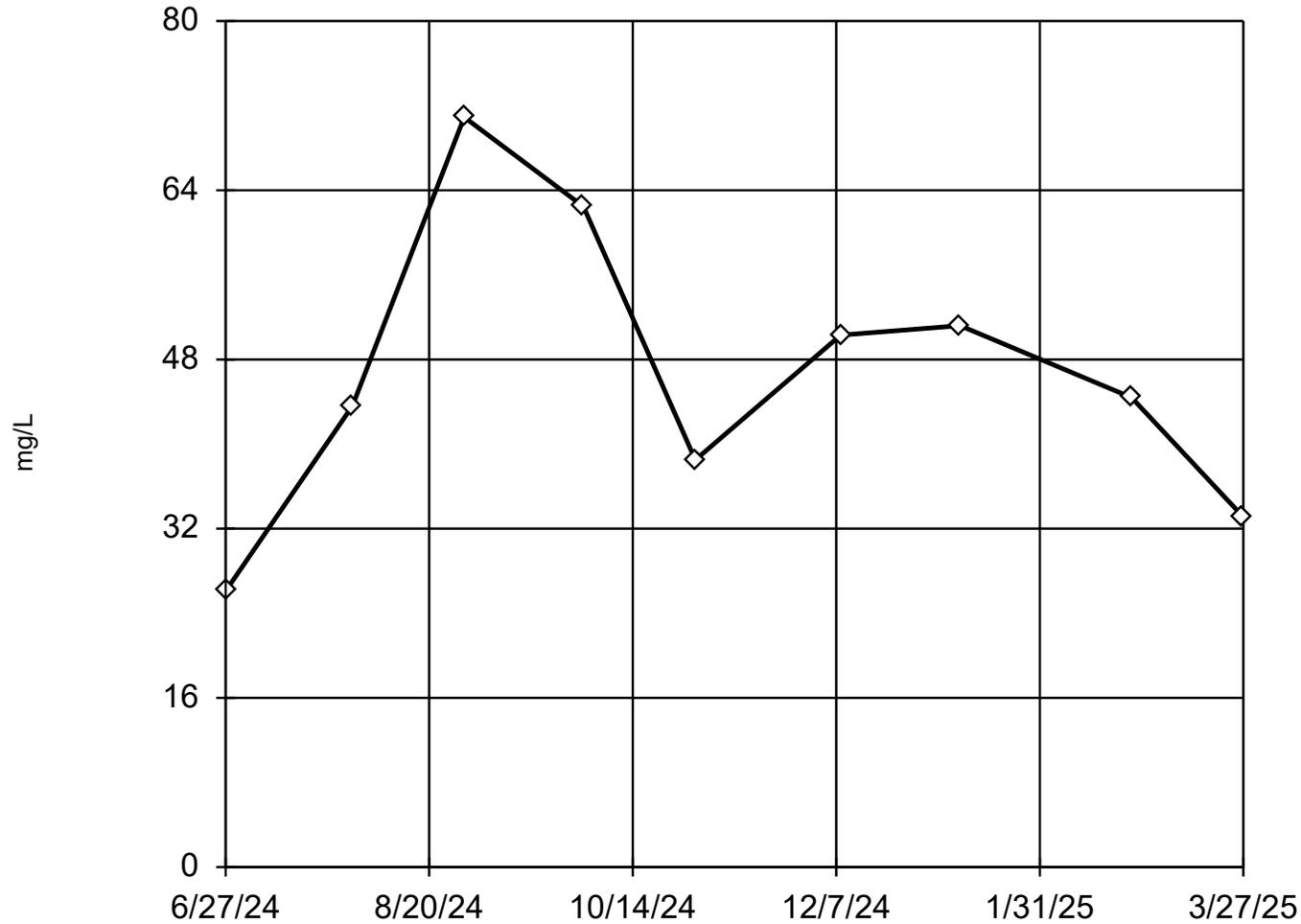
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	276
7/31/2024	290
8/30/2024	272
10/1/2024	227.5 (D)
10/31/2024	203
12/9/2024	215
1/17/2025	187
2/25/2025	186
3/27/2025	207

EPA Screening (suspected outliers for Dixon's Test)

MW-319



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 46.73, std. dev. 13.96, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9782
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 5/27/2025 11:29 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

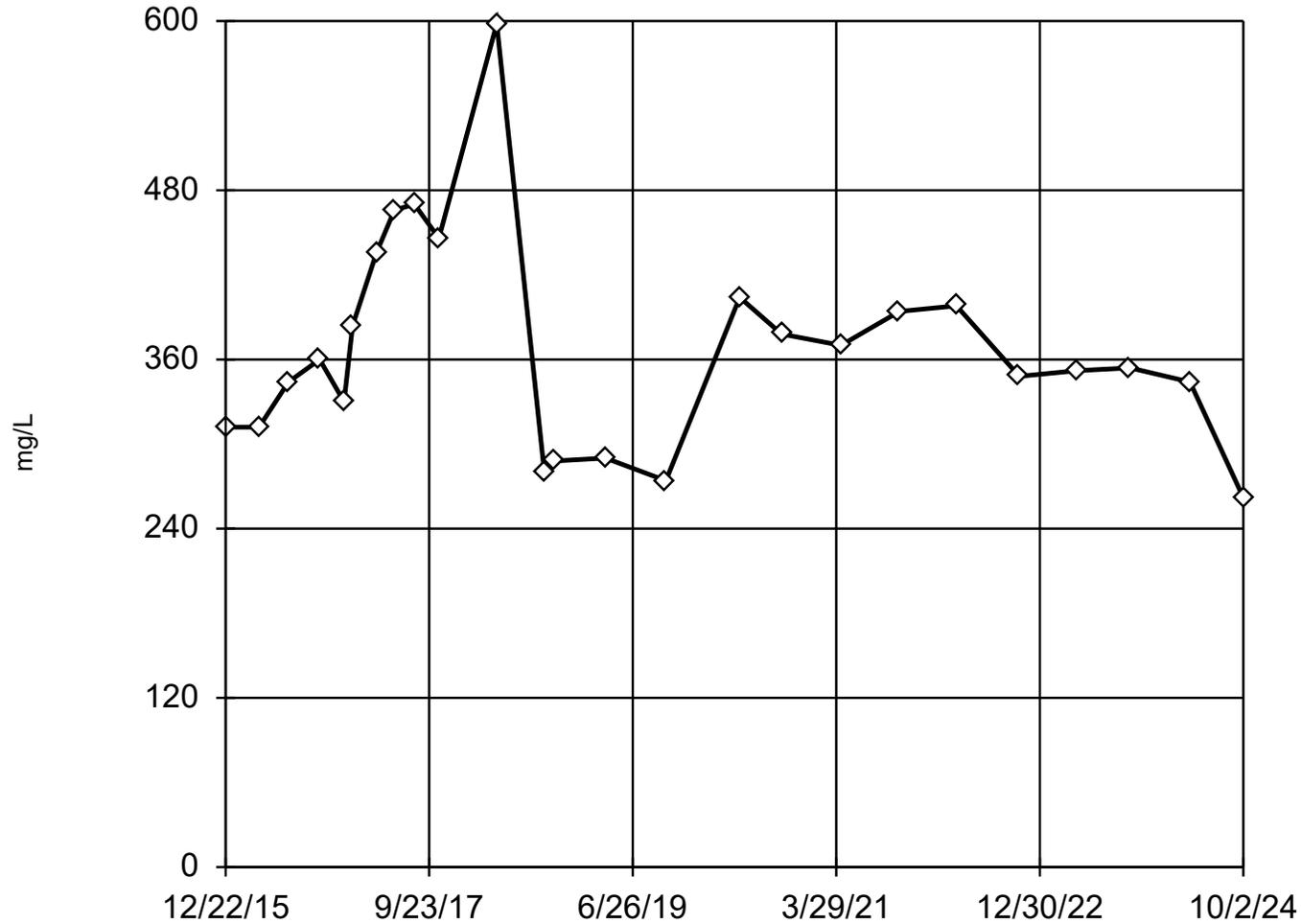
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	26.1
7/31/2024	43.6
8/30/2024	70.9 (J)
10/1/2024	62.45 (D)
10/31/2024	38.5
12/9/2024	50.3
1/10/2025	51.2
2/25/2025	44.4
3/27/2025	33.1

EPA Screening (suspected outliers for Dixon's Test)

MW-302



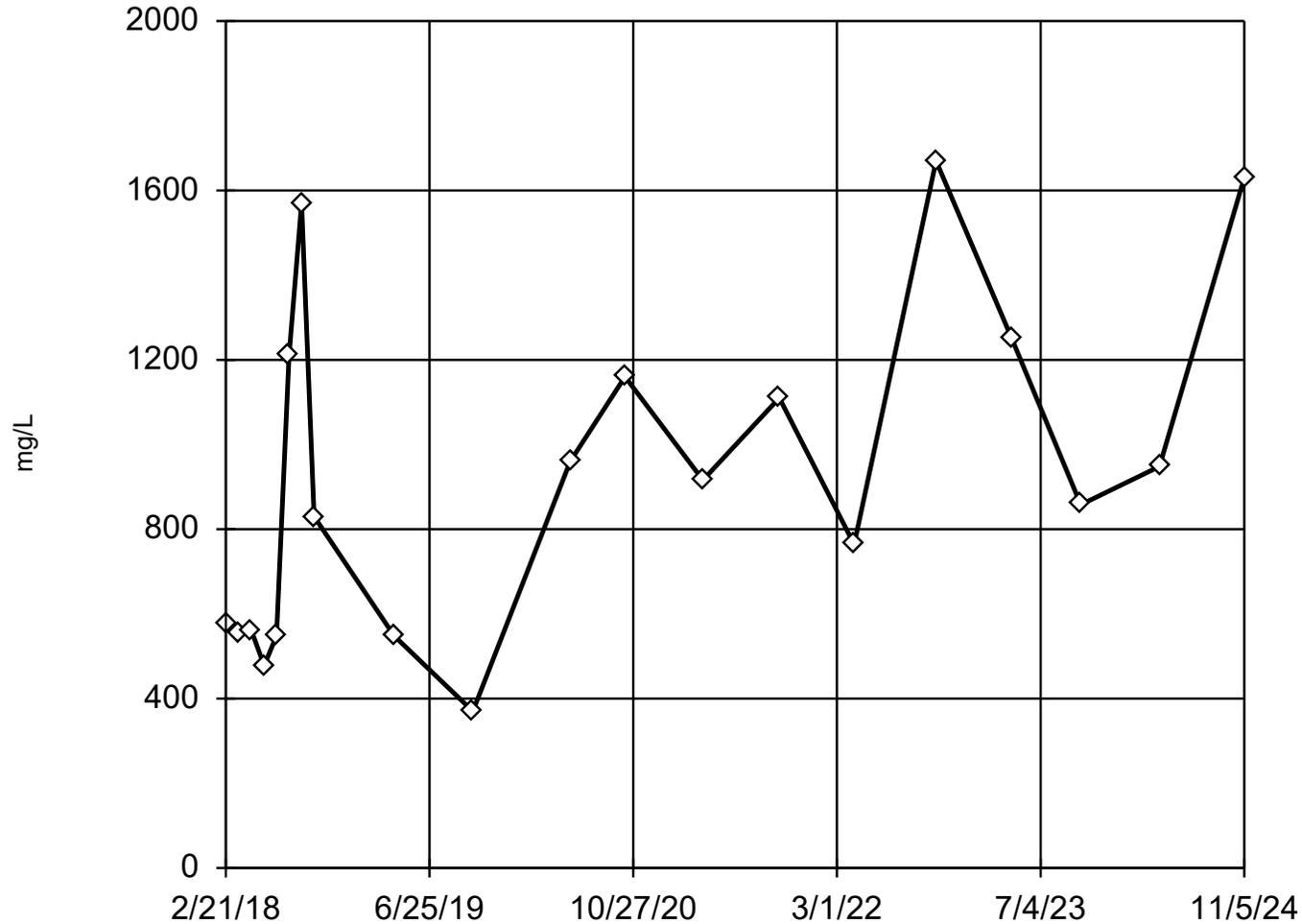
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	312
4/5/2016	312
7/7/2016	344
10/13/2016	360
12/29/2016	330
1/25/2017	384
4/11/2017	436
6/6/2017	466
8/8/2017	470
10/24/2017	446
4/24/2018	598
9/21/2018	280
10/22/2018	288
4/2/2019	290
10/9/2019	274
5/29/2020	404
10/8/2020	378
4/13/2021	370
10/14/2021	394
4/12/2022	398
10/27/2022	348
4/27/2023	352
10/11/2023	354
4/17/2024	344
10/2/2024	262

EPA Screening (suspected outliers for Dixon's Test)

MW-309



n = 20

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 925.5, std. dev. 395.4, critical Tn 2.557

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9259
Critical = 0.868
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:29 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

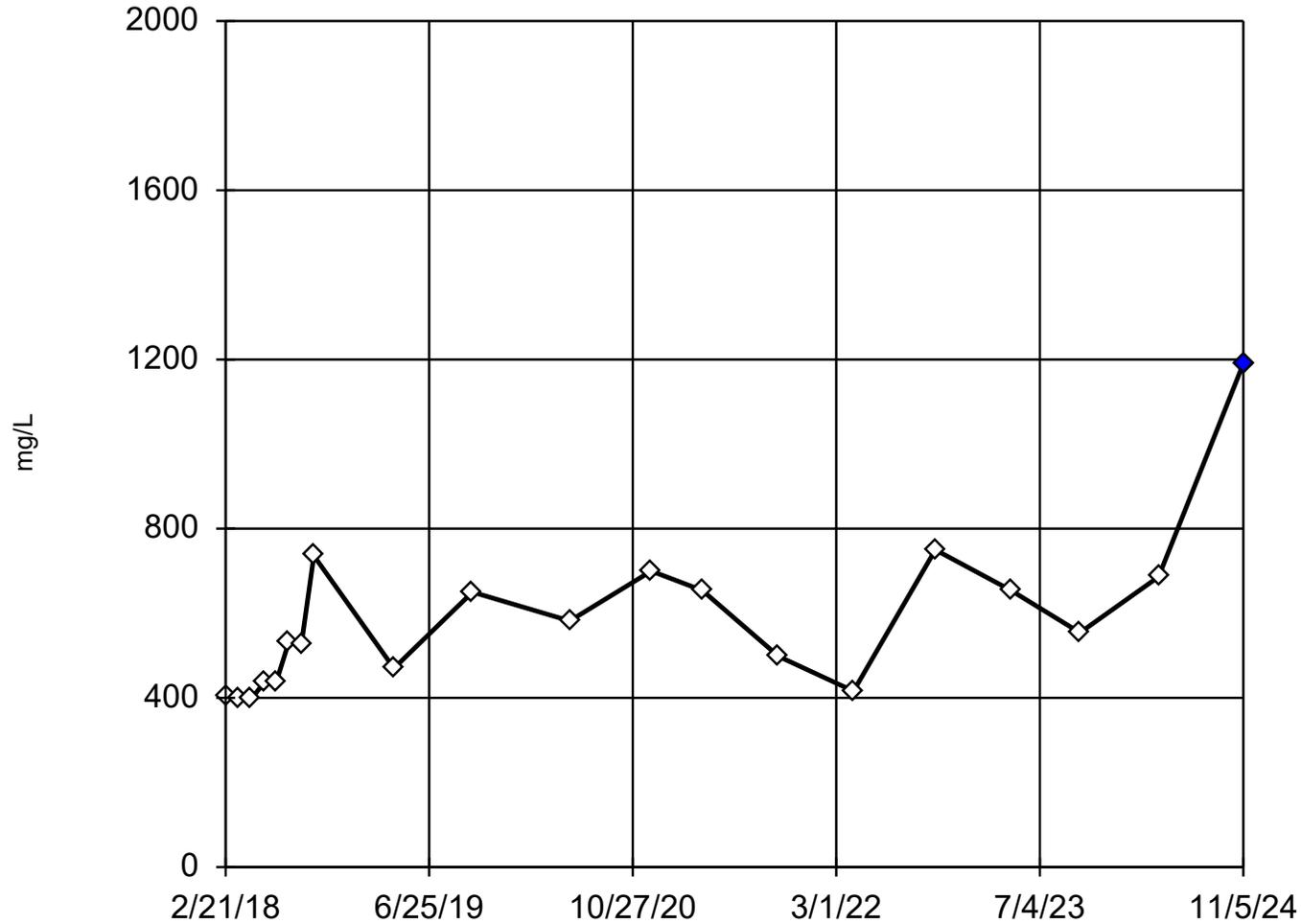
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	576
3/23/2018	552
4/23/2018	562
5/24/2018	478
6/23/2018	548
7/23/2018	1210
8/22/2018	1570
9/21/2018	830
4/2/2019	548
10/8/2019	370
5/29/2020	960
10/8/2020	1160
4/13/2021	916
10/14/2021	1110
4/12/2022	764
10/26/2022	1670
4/26/2023	1250
10/9/2023	858
4/15/2024	948
11/5/2024	1630 (R)

Dixon's Outlier Test

MW-310



n = 20

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 583.6.
Std. Dev. = 185.9.
1190 (R): c = 0.5791
tab1 = 0.45.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9148
Critical = 0.863
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:29 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

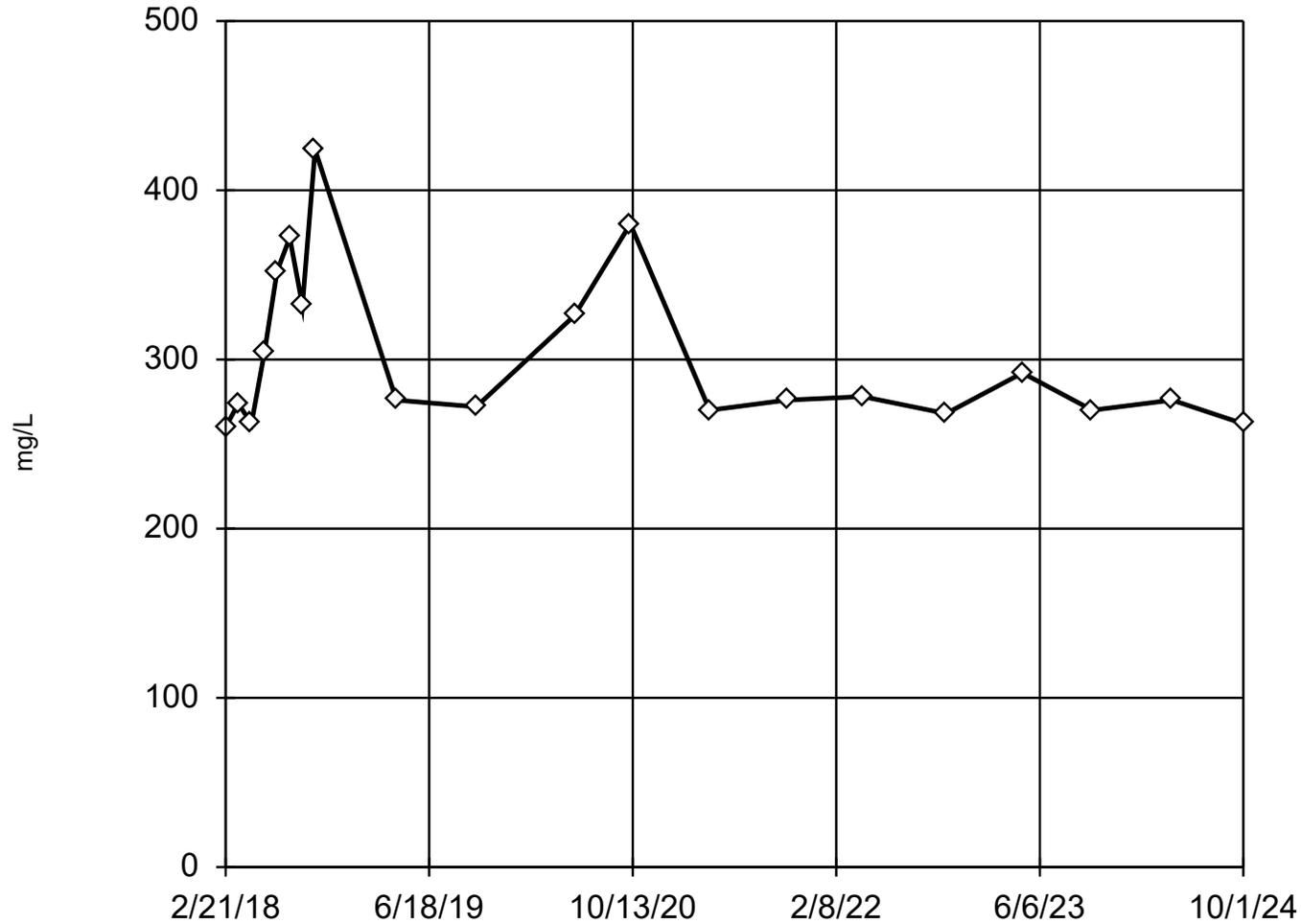
Dixon's Outlier Test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	406
3/23/2018	398
4/23/2018	396
5/24/2018	436
6/23/2018	438
7/23/2018	532
8/22/2018	526
9/21/2018	736
4/2/2019	470
10/8/2019	650
5/29/2020	582
12/11/2020	700 (R)
4/13/2021	654
10/14/2021	498
4/12/2022	416
10/26/2022	750
4/26/2023	654
10/9/2023	554
4/15/2024	686
11/5/2024	1190 (RO)

Tukey's Outlier Screening

MW-311



n = 20

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.01 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 595.1, low cutoff = 149.3, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:29 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

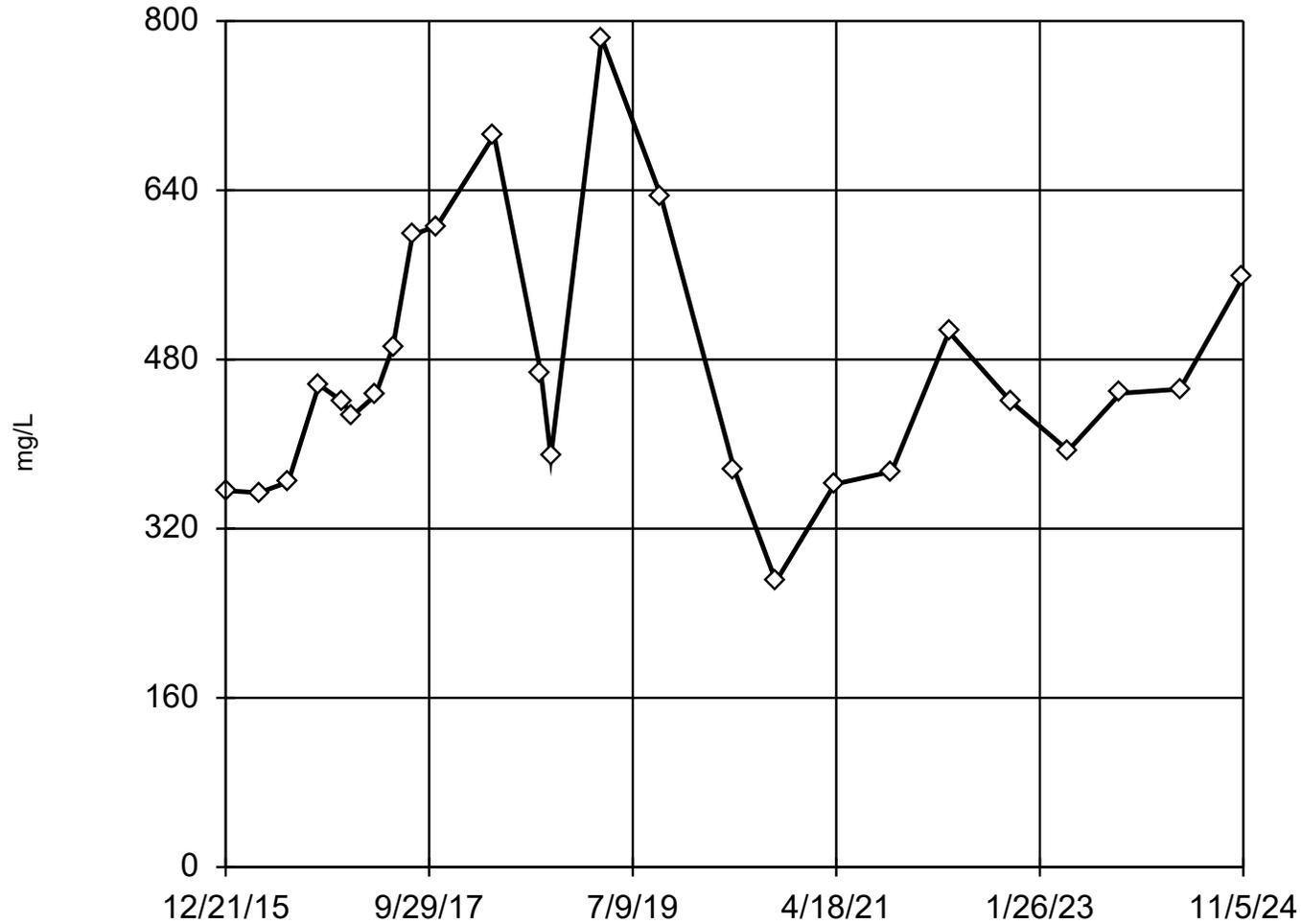
Tukey's Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	260
3/23/2018	274
4/23/2018	262
5/24/2018	304
6/23/2018	352
7/23/2018	372
8/22/2018	332
9/21/2018	424
4/2/2019	276
10/8/2019	272
5/29/2020	326
10/8/2020	380
4/14/2021	270
10/14/2021	276
4/12/2022	278
10/27/2022	268
4/26/2023	292
10/9/2023	270
4/15/2024	276
10/1/2024	262

EPA Screening (suspected outliers for Dixon's Test)

MW-33AR



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 467.3, std. dev. 119.8, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9191
Critical = 0.888
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:30 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

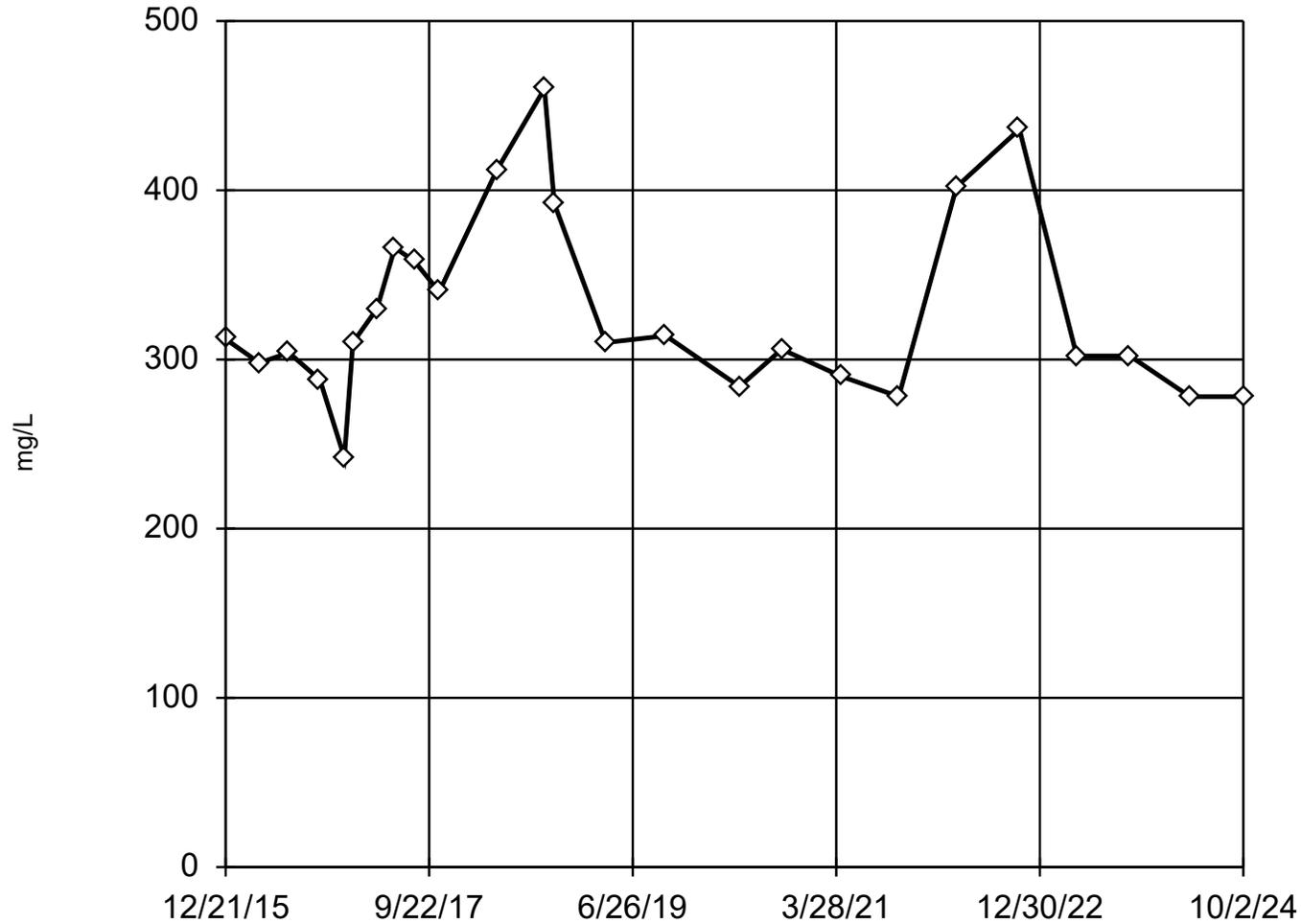
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-33AR
12/21/2015	356
4/5/2016	354
7/7/2016	364
10/13/2016	456
12/29/2016	440
1/25/2017	426
4/11/2017	446
6/6/2017	492
8/7/2017	598
10/24/2017	606
4/24/2018	692
9/21/2018	466
10/22/2018	388
4/2/2019	784
10/8/2019	634
5/28/2020	376
10/8/2020	270
4/13/2021	362
10/12/2021	374
4/12/2022	506
10/27/2022	440
4/27/2023	394
10/11/2023	448
4/17/2024	452
11/5/2024	558 (R)

EPA Screening (suspected outliers for Dixon's Test)

MW-34A



n = 25

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 327.7, std. dev. 54.96, critical Tn 2.663

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8931
Critical = 0.888
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:30 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

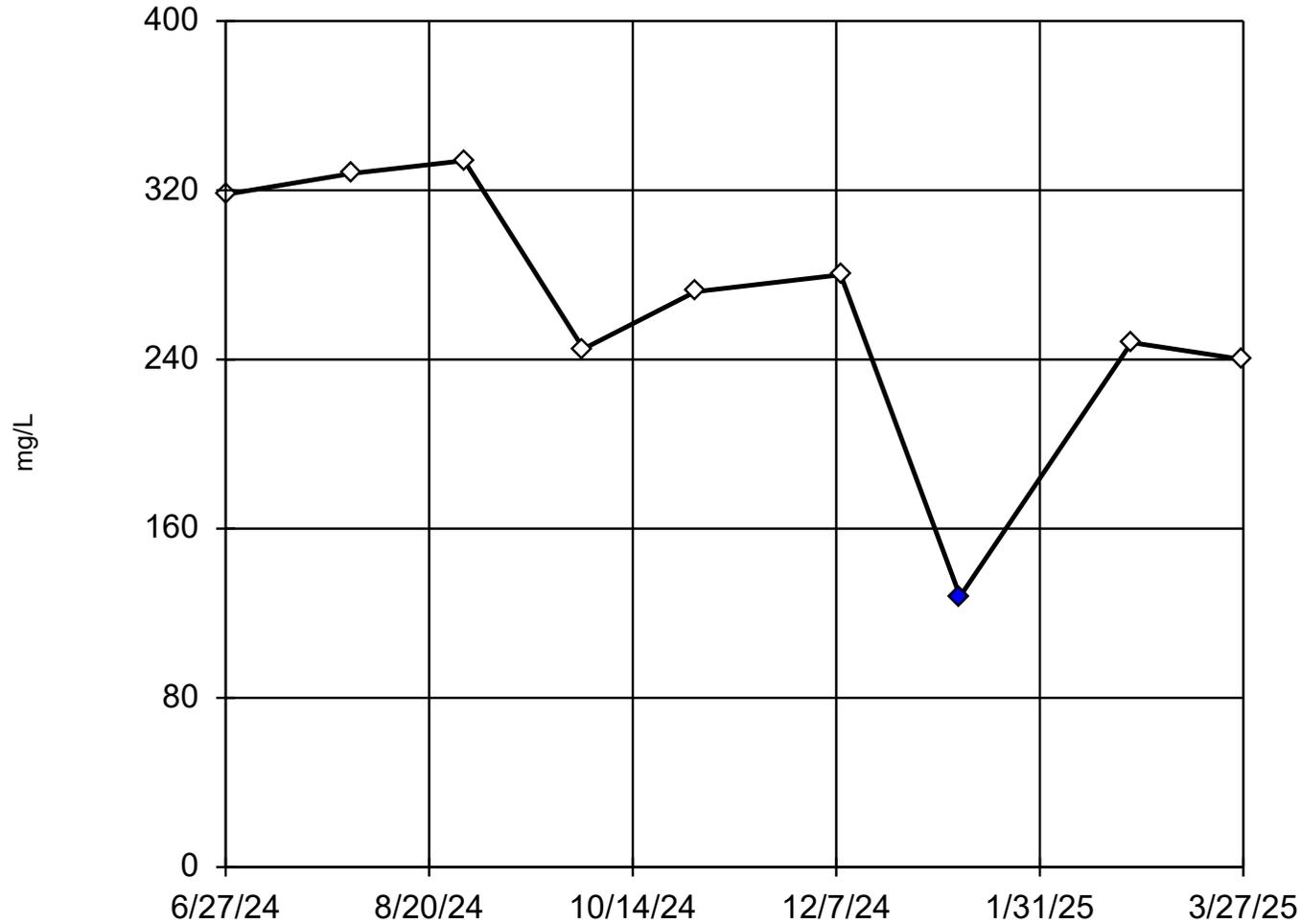
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	312 (D)
4/5/2016	298
7/7/2016	304
10/13/2016	288
12/29/2016	242
1/25/2017	310
4/11/2017	330
6/6/2017	366
8/7/2017	358
10/24/2017	340
4/24/2018	412
9/21/2018	460
10/22/2018	392
4/2/2019	310
10/8/2019	314
5/28/2020	284
10/8/2020	306
4/13/2021	290
10/12/2021	278
4/12/2022	402
10/27/2022	436
4/26/2023	302
10/11/2023	302
4/17/2024	278
10/2/2024	278

Dixon's Outlier Test

MW-317



n = 9

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 265.9.
Std. Dev. = 63.14.
128: c = 0.56
tab1 = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.8742
Critical = 0.749
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:30 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

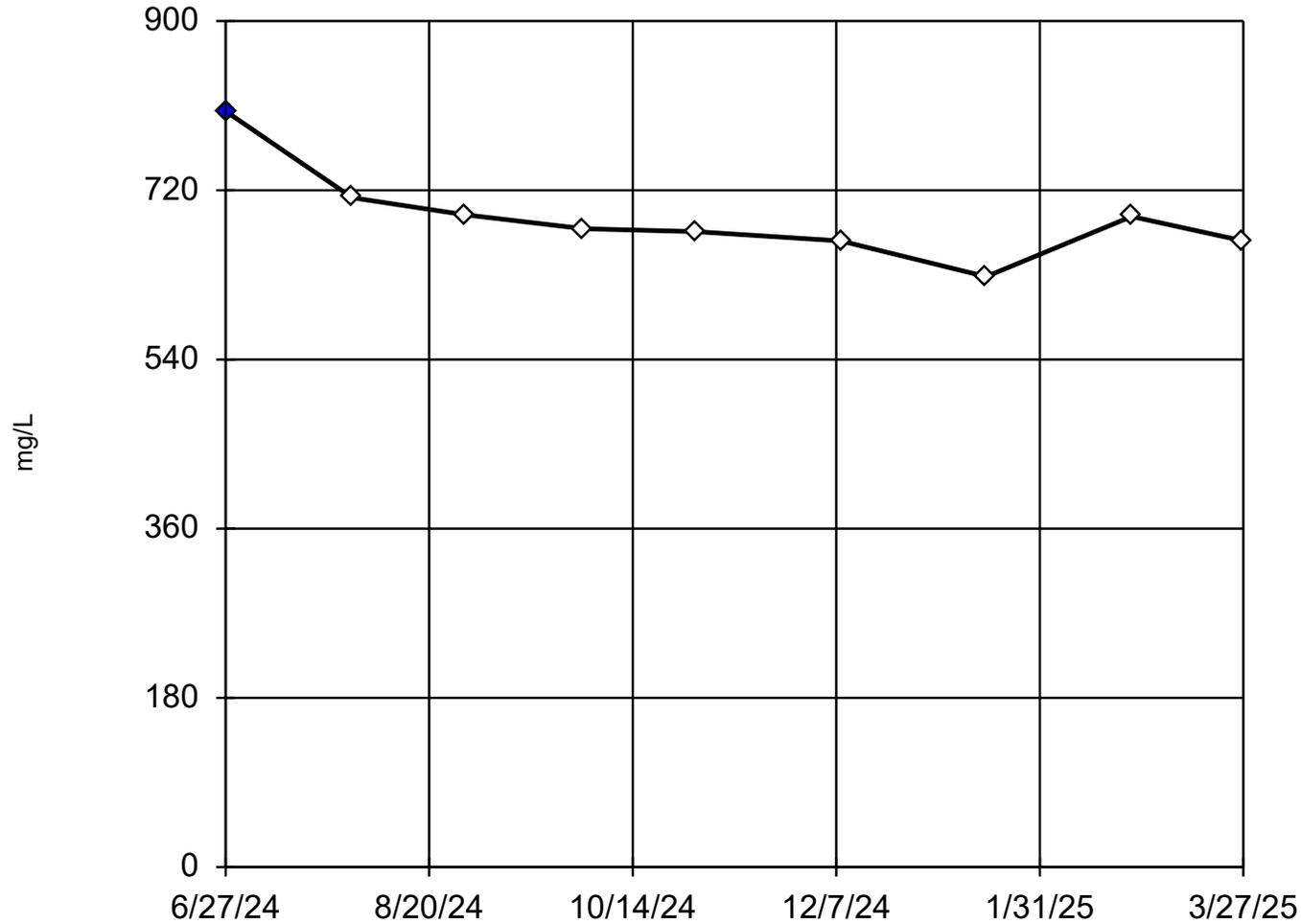
Dixon's Outlier Test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	318
7/31/2024	328
8/30/2024	334
10/1/2024	245 (D)
10/31/2024	272
12/9/2024	280
1/10/2025	128 (O)
2/25/2025	248
3/27/2025	240

Dixon's Outlier Test

MW-318



n = 9

Statistical outlier is drawn as solid.
Testing for 1 high outlier.
Mean = 690.8.
Std. Dev. = 48.49.
804: c = 0.6667
tab1 = 0.512.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.9455
Critical = 0.749
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:30 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

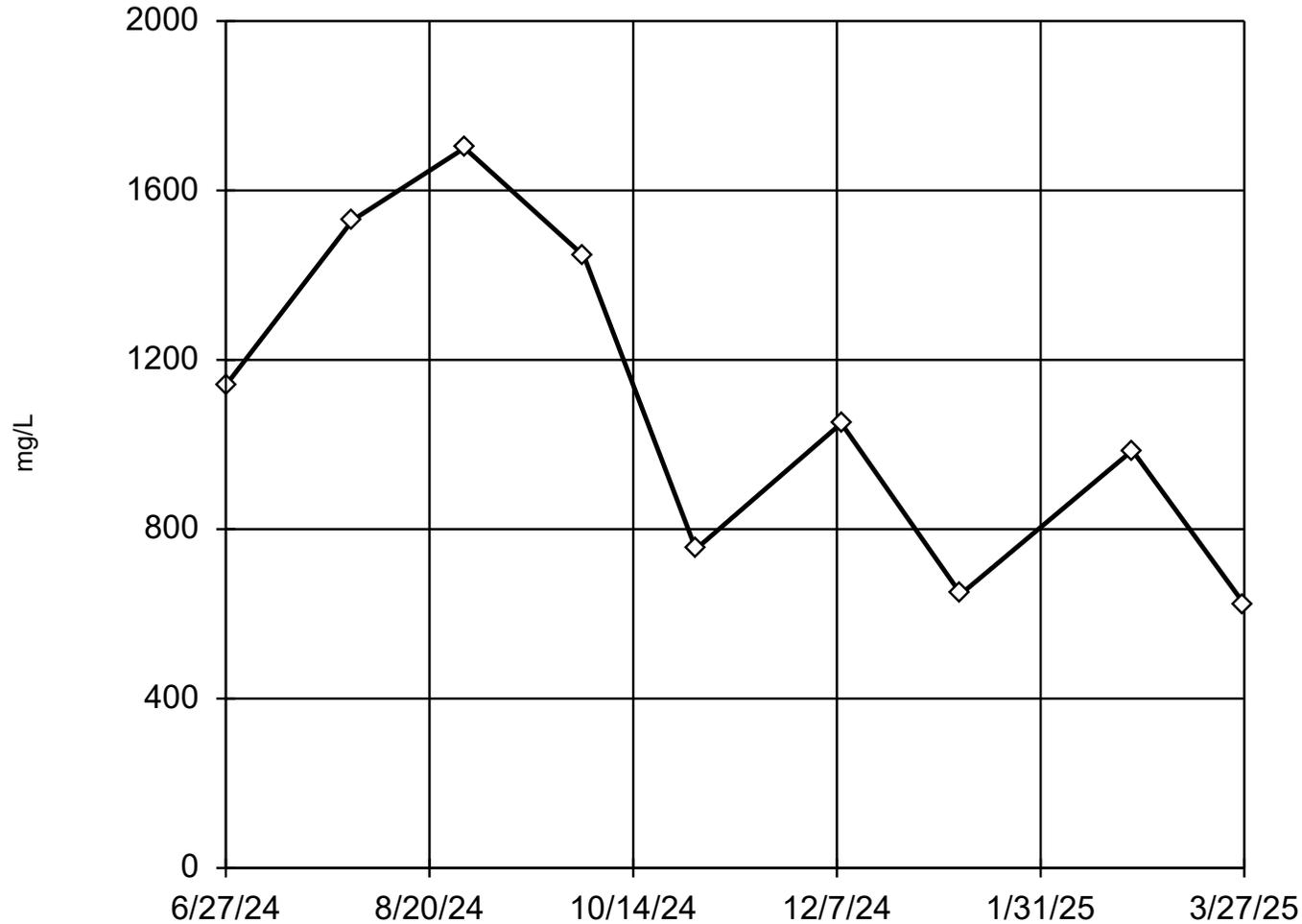
Dixon's Outlier Test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	804 (O)
7/31/2024	712
8/30/2024	694
10/1/2024	679 (D)
10/31/2024	676
12/9/2024	666
1/17/2025	628
2/25/2025	692
3/27/2025	666

EPA Screening (suspected outliers for Dixon's Test)

MW-319



n = 9

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 1097, std. dev. 392.8, critical Tn 2.11

Normality test used:
Shapiro Wilk@alpha = 0.01
Calculated = 0.931
Critical = 0.764
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 5/27/2025 11:30 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 5/27/2025 11:44 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	1140
7/31/2024	1530
8/30/2024	1700
10/1/2024	1445 (D)
10/31/2024	753
12/9/2024	1050
1/10/2025	647
2/25/2025	986
3/27/2025	623

Attachment C
Intrawell Prediction Limit Analysis

Prediction Limit

Note: Wells with 100 percent non-detects for fluoride will be evaluated using the Double Quantification Rule.

Columbia Energy Center Client: SCS Engineers Data: Columbia Printed 8/8/2025, 5:53 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-302	841	n/a	n/a	1 future	n/a	24	n/a	367.3	217.8	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-309	69.4	n/a	n/a	1 future	n/a	25	n/a	42.84	12.28	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-310	85.2	n/a	n/a	1 future	n/a	20	n/a	69.15	7.173	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-311	44.4	n/a	n/a	1 future	n/a	20	n/a	32.7	5.223	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-33AR	927	n/a	n/a	1 future	n/a	25	n/a	648.5	128.9	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-34A	265	n/a	n/a	1 future	n/a	26	n/a	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) ...
Boron (ug/L)	MW-317	63.3	n/a	n/a	1 future	n/a	9	n/a	38.62	8.489	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-318	30	n/a	n/a	1 future	n/a	9	n/a	18.12	4.082	0	None	No	0.0008358	Param Intra 1 of 2
Boron (ug/L)	MW-319	49.9	n/a	n/a	1 future	n/a	9	n/a	3.111	0.2749	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-302	106000	n/a	n/a	1 future	n/a	24	n/a	77692	12910	0	None	No	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-309	164000	n/a	n/a	1 future	n/a	21	n/a	11.09	0.4147	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-310	84000	n/a	n/a	1 future	n/a	22	n/a	10.69	0.2947	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-311	77800	n/a	n/a	1 future	n/a	20	n/a	63915	6216	0	None	No	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-33AR	130000	n/a	n/a	1 future	n/a	24	n/a	11.16	0.2846	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-34A	82500	n/a	n/a	1 future	n/a	24	n/a	64631	8209	0	None	No	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-317	60100	n/a	n/a	1 future	n/a	9	n/a	48628	3955	0	None	No	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-318	131000	n/a	n/a	1 future	n/a	9	n/a	109167	7450	0	None	No	0.0008358	Param Intra 1 of 2
Calcium (ug/L)	MW-319	181000	n/a	n/a	1 future	n/a	9	n/a	97689	28552	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-302	15.0	n/a	n/a	1 future	n/a	25	n/a	n/a	n/a	0	n/a	n/a	0.002832	NP Intra (normality) ...
Chloride (mg/L)	MW-309	887	n/a	n/a	1 future	n/a	20	n/a	370.2	230.6	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-310	373	n/a	n/a	1 future	n/a	21	n/a	138.5	105.2	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-311	3.92	n/a	n/a	1 future	n/a	20	n/a	2.135	0.7982	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-33AR	255	n/a	n/a	1 future	n/a	25	n/a	3.665	0.8688	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-34A	35.5	n/a	n/a	1 future	n/a	25	n/a	1.717	0.8576	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-317	8.7	n/a	n/a	1 future	n/a	9	n/a	4.267	1.526	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-318	98.8	n/a	n/a	1 future	n/a	9	n/a	46.32	18.05	0	None	No	0.0008358	Param Intra 1 of 2
Chloride (mg/L)	MW-319	1090	n/a	n/a	1 future	n/a	9	n/a	475.2	212.2	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-302	8.23	n/a	n/a	1 future	n/a	26	n/a	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) ...
Field pH (Std. Units)	MW-309	8	n/a	n/a	1 future	n/a	28	n/a	7.566	0.2028	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-310	8.06	n/a	n/a	1 future	n/a	24	n/a	7.722	0.1547	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-311	8	n/a	n/a	1 future	n/a	21	n/a	7.609	0.1777	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-33AR	8.62	n/a	n/a	1 future	n/a	26	n/a	n/a	n/a	0	n/a	n/a	0.002667	NP Intra (normality) ...
Field pH (Std. Units)	MW-34A	8.23	n/a	n/a	1 future	n/a	28	n/a	7.707	0.2467	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-317	8.21	n/a	n/a	1 future	n/a	9	n/a	7.652	0.1916	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-318	7.71	n/a	n/a	1 future	n/a	9	n/a	7.381	0.1126	0	None	No	0.0008358	Param Intra 1 of 2
Field pH (Std. Units)	MW-319	7.99	n/a	n/a	1 future	n/a	9	n/a	7.481	0.1754	0	None	No	0.0008358	Param Intra 1 of 2
Fluoride (mg/L)	MW-302	0.200	n/a	n/a	1 future	n/a	24	n/a	n/a	n/a	87.5	n/a	n/a	0.003124	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-309	0.0950	n/a	n/a	1 future	n/a	19	n/a	n/a	n/a	100	n/a	n/a	0.004832	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-310	0.0950	n/a	n/a	1 future	n/a	20	n/a	n/a	n/a	100	n/a	n/a	0.004291	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-311	0.100	n/a	n/a	1 future	n/a	20	n/a	n/a	n/a	95	n/a	n/a	0.004291	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-33AR	0.0950	n/a	n/a	1 future	n/a	24	n/a	n/a	n/a	100	n/a	n/a	0.003124	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-34A	0.0950	n/a	n/a	1 future	n/a	24	n/a	n/a	n/a	100	n/a	n/a	0.003124	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-317	0.394	n/a	n/a	1 future	n/a	9	n/a	0.1757	0.07515	22.22	Kapla...	No	0.0008358	Param Intra 1 of 2
Fluoride (mg/L)	MW-318	0.480	n/a	n/a	1 future	n/a	9	n/a	n/a	n/a	100	n/a	n/a	0.01809	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-319	0.950	n/a	n/a	1 future	n/a	9	n/a	n/a	n/a	100	n/a	n/a	0.01809	NP Intra (NDs) 1 of 2
Sulfate (mg/L)	MW-302	99.7	n/a	n/a	1 future	n/a	25	n/a	47.26	24.29	0	None	No	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-309	145	n/a	n/a	1 future	n/a	21	n/a	3.464	0.6803	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-310	190	n/a	n/a	1 future	n/a	20	n/a	4.015	0.5512	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-311	153	n/a	n/a	1 future	n/a	20	n/a	3.076	0.8732	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-33AR	231	n/a	n/a	1 future	n/a	26	n/a	141.1	41.87	0	None	No	0.0008358	Param Intra 1 of 2

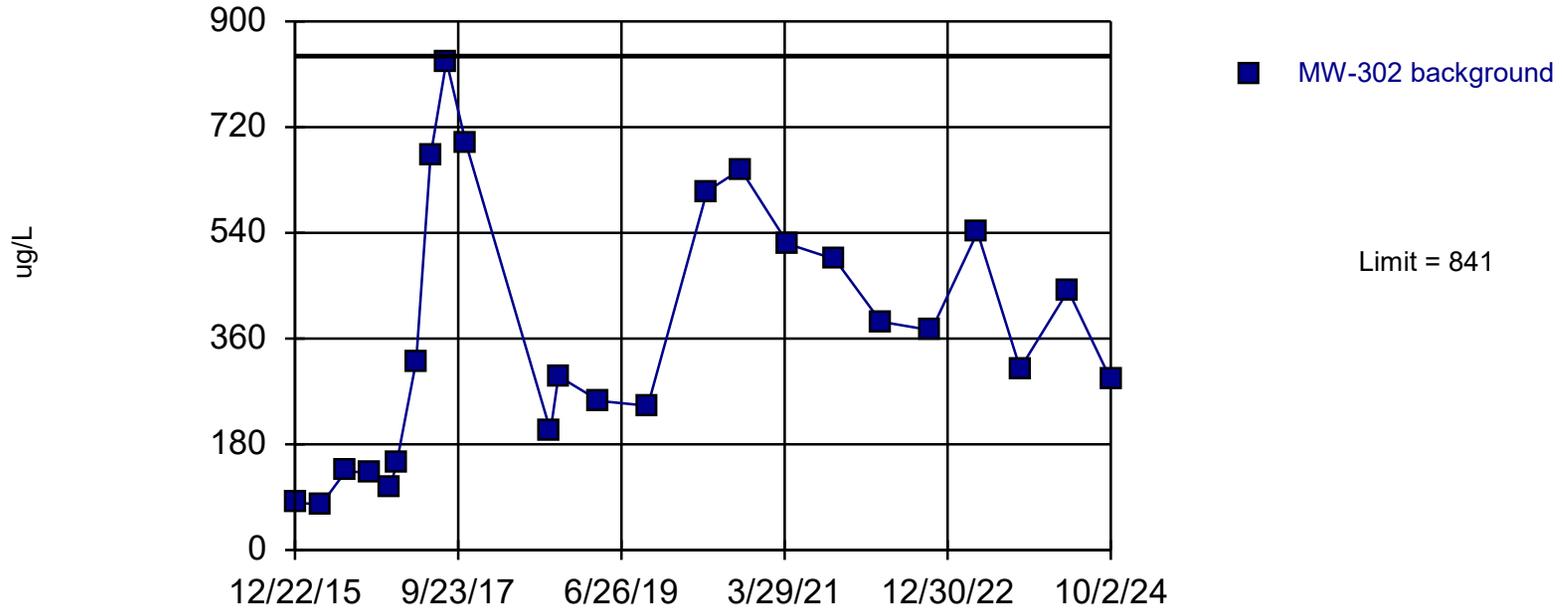
Prediction Limit

Columbia Energy Center Client: SCS Engineers Data: Columbia Printed 8/8/2025, 5:53 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>Bg Wells</u>	<u>Bg Mean</u>	<u>Std. Dev.</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Sulfate (mg/L)	MW-34A	186	n/a	n/a	1 future	n/a	25	n/a	4.315	0.4203	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-317	74.2	n/a	n/a	1 future	n/a	9	n/a	1.995	0.7953	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-318	345	n/a	n/a	1 future	n/a	9	n/a	229.3	39.92	0	None	No	0.0008358	Param Intra 1 of 2
Sulfate (mg/L)	MW-319	87.3	n/a	n/a	1 future	n/a	9	n/a	46.73	13.96	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-302	531	n/a	n/a	1 future	n/a	25	n/a	367.8	75.53	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-309	1810	n/a	n/a	1 future	n/a	20	n/a	925.5	395.4	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-310	1050	n/a	n/a	1 future	n/a	20	n/a	6.329	0.2804	0	None	ln(x)	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-311	424	n/a	n/a	1 future	n/a	20	n/a	n/a	n/a	0	n/a	n/a	0.004291	NP Intra (normality) ...
Total Dissolved Solids (mg/L)	MW-33AR	726	n/a	n/a	1 future	n/a	25	n/a	467.3	119.8	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-34A	446	n/a	n/a	1 future	n/a	25	n/a	327.7	54.96	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-317	449	n/a	n/a	1 future	n/a	9	n/a	265.9	63.14	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-318	832	n/a	n/a	1 future	n/a	9	n/a	690.8	48.49	0	None	No	0.0008358	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-319	2240	n/a	n/a	1 future	n/a	9	n/a	1097	392.8	0	None	No	0.0008358	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-302



Background Data Summary: Mean=367.3, Std. Dev.=217.8, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9451, critical = 0.884. Kappa = 2.176 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

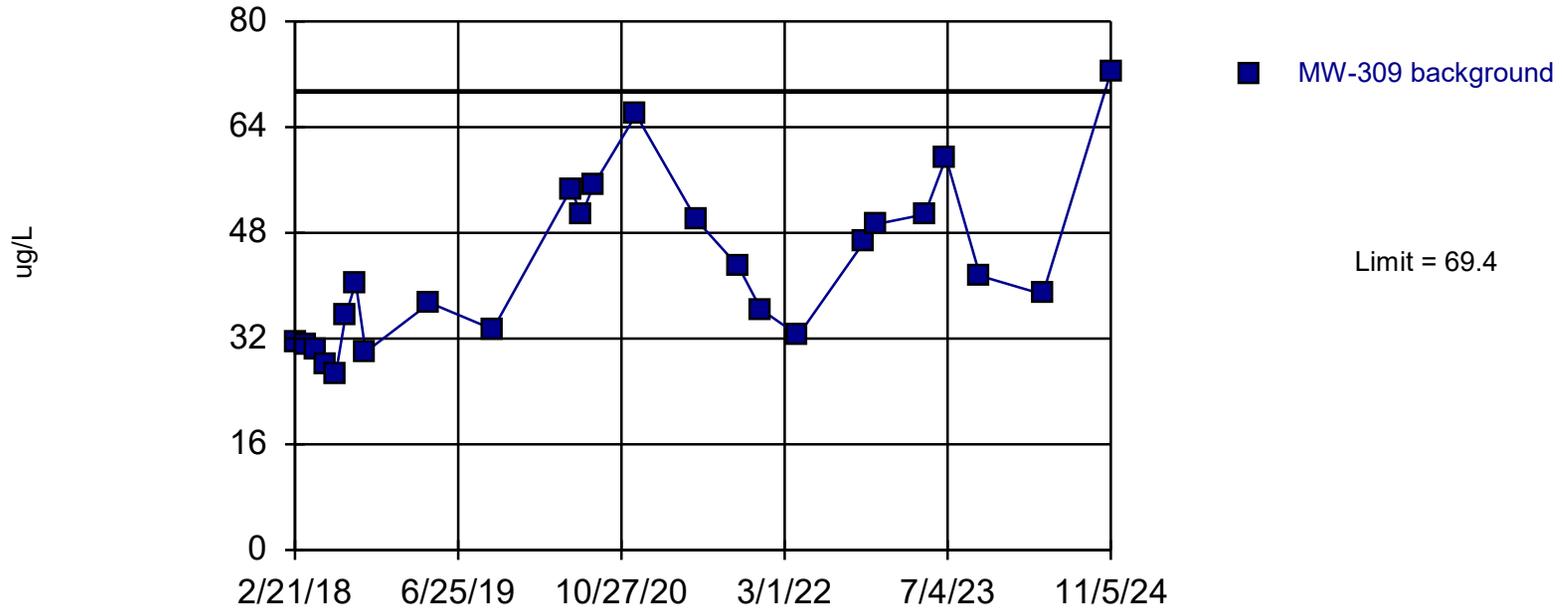
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	80
4/5/2016	78.8
7/7/2016	134
10/13/2016	132
12/29/2016	106
1/25/2017	149
4/11/2017	322
6/6/2017	671
8/8/2017	833
10/24/2017	691
4/24/2018	1950 (X)
9/21/2018	203
10/22/2018	296
4/2/2019	254
10/9/2019	246
5/29/2020	611
10/8/2020	648
4/13/2021	521
10/14/2021	495
4/12/2022	389
10/27/2022	374
4/27/2023	541
10/11/2023	309
4/17/2024	442
10/2/2024	290

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary: Mean=42.84, Std. Dev.=12.28, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9353, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

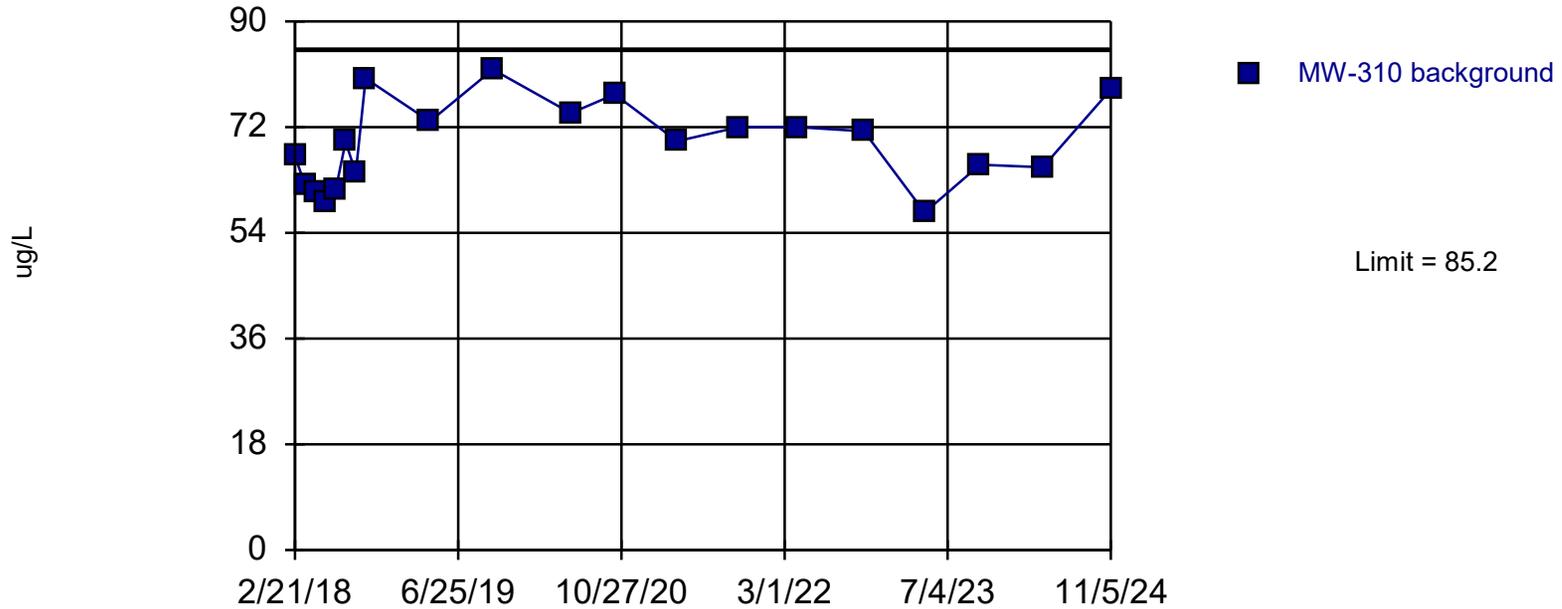
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	31.4
3/23/2018	31
4/23/2018	30.4
5/24/2018	28
6/23/2018	26.6
7/23/2018	35.5
8/22/2018	40.5
9/21/2018	30
4/2/2019	37.4
10/8/2019	33.4
5/29/2020	54.6
6/30/2020	50.7
8/6/2020	55.3
12/11/2020	65.9 (R)
6/11/2021	49.9 (R)
10/14/2021	42.9
12/21/2021	36.4
4/12/2022	32.5
10/26/2022	46.6
11/30/2022	49.3
4/26/2023	50.8
6/29/2023	59.4
10/9/2023	41.5
4/15/2024	38.7
11/5/2024	72.3 (R)

Prediction Limit

Intrawell Parametric, MW-310



Background Data Summary: Mean=69.15, Std. Dev.=7.173, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9682, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

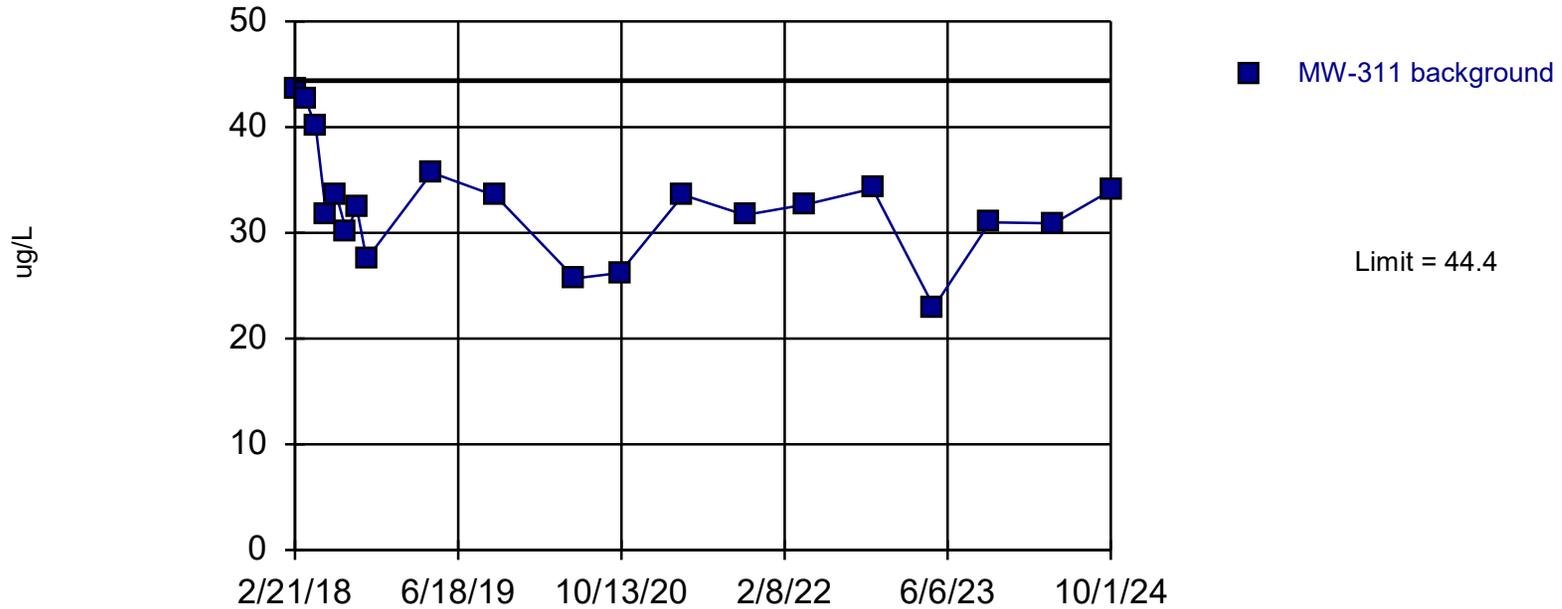
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	67.1
3/23/2018	62.1
4/23/2018	60.7
5/24/2018	59.2
6/23/2018	61.4
7/23/2018	69.5
8/22/2018	64.2
9/21/2018	80.3
4/2/2019	73
10/8/2019	81.8
5/29/2020	74.4
10/8/2020	77.6
4/13/2021	69.6
10/14/2021	72
4/12/2022	72
10/26/2022	71.3
4/26/2023	57.5
10/9/2023	65.6
4/15/2024	65.2
11/5/2024	78.4 (R)

Prediction Limit

Intrawell Parametric, MW-311



Background Data Summary: Mean=32.7, Std. Dev.=5.223, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9437, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

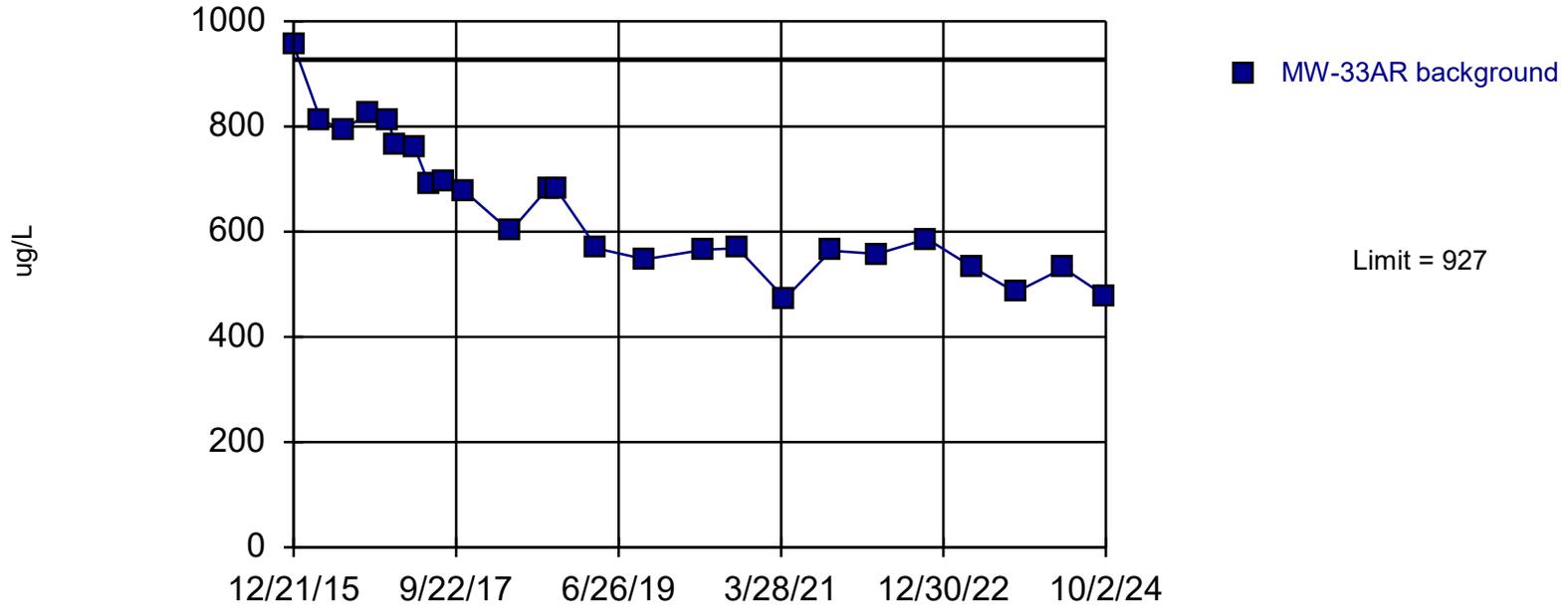
Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-311

2/21/2018	43.7
3/23/2018	42.7
4/23/2018	40.1
5/24/2018	31.7
6/23/2018	33.6
7/23/2018	30.1
8/22/2018	32.4
9/21/2018	27.5
4/2/2019	35.7
10/8/2019	33.5
5/29/2020	25.7
10/8/2020	26.2
4/14/2021	33.6
10/14/2021	31.7
4/12/2022	32.7
10/27/2022	34.2
4/26/2023	23
10/9/2023	31
4/15/2024	30.9
10/1/2024	34

Prediction Limit

Intrawell Parametric, MW-33AR



Background Data Summary: Mean=648.5, Std. Dev.=128.9, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9324, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

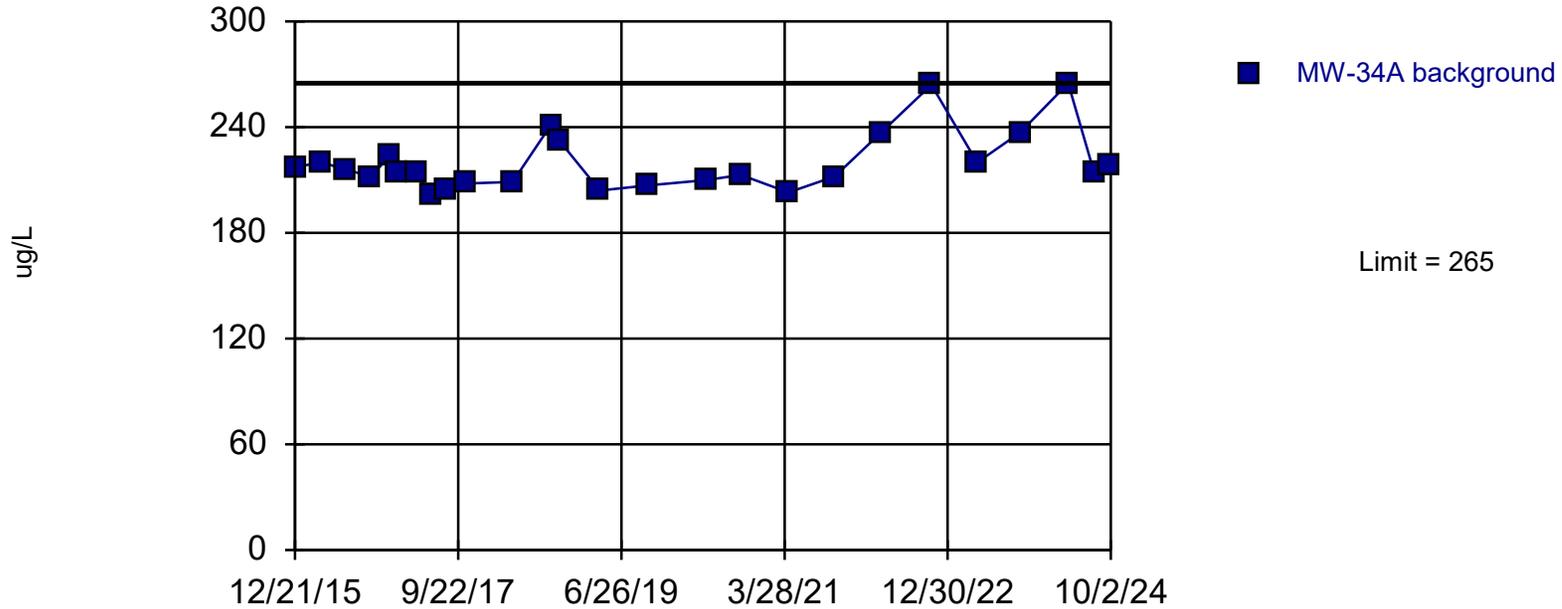
Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	954
4/5/2016	813
7/7/2016	794
10/13/2016	827
12/29/2016	812
1/25/2017	763
4/11/2017	760
6/6/2017	692
8/7/2017	697
10/24/2017	678
4/24/2018	601
9/21/2018	683
10/22/2018	682
4/2/2019	568
10/8/2019	548
5/28/2020	566
10/8/2020	569
4/13/2021	473
10/12/2021	564
4/12/2022	558
10/27/2022	586
4/27/2023	532
10/11/2023	485
4/17/2024	531
10/2/2024	477

Prediction Limit

Intrawell Non-parametric, MW-34A



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 26 background values. Well-constituent pair annual alpha = 0.005327. Individual comparison alpha = 0.002667 (1 of 2). Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

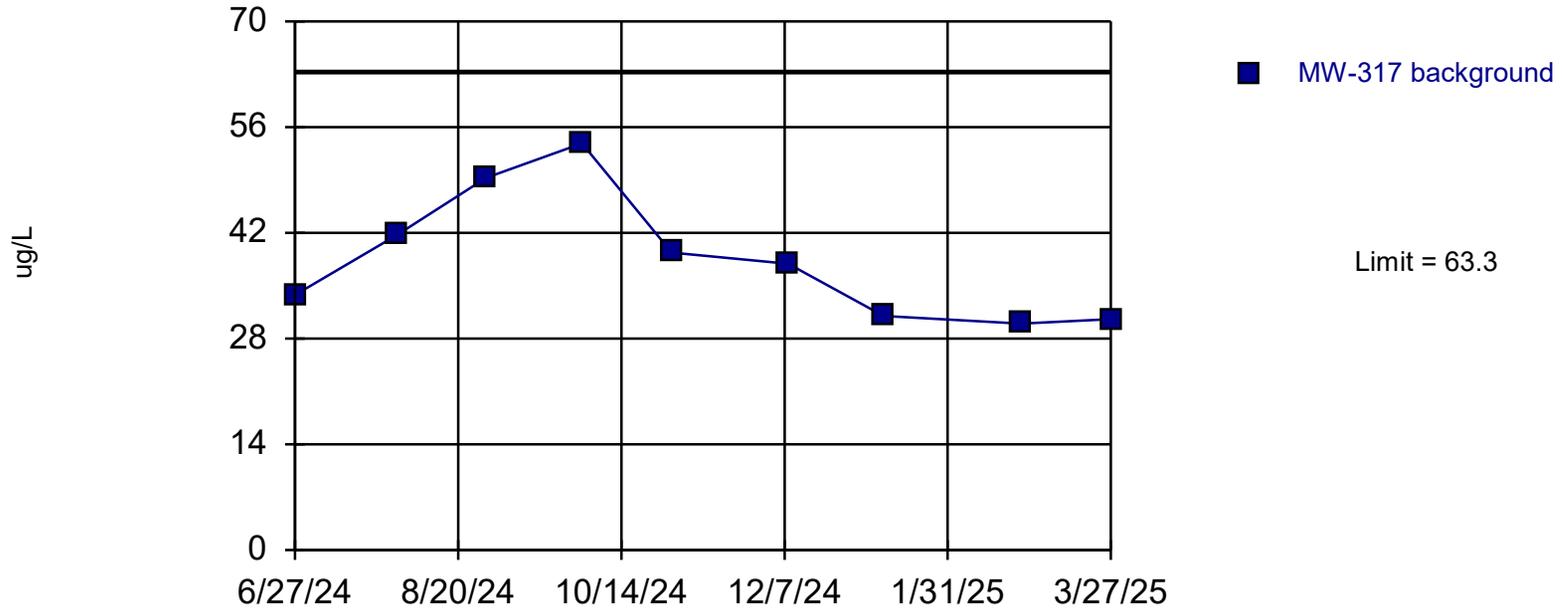
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	217.5 (D)
4/5/2016	220
7/7/2016	216
10/13/2016	212
12/29/2016	224
1/25/2017	214
4/11/2017	214
6/6/2017	201
8/7/2017	205
10/24/2017	208
4/24/2018	209
9/21/2018	241
10/22/2018	233
4/2/2019	204
10/8/2019	207
5/28/2020	210
10/8/2020	213
4/13/2021	203
10/12/2021	212
4/12/2022	237
10/27/2022	264
4/26/2023	220
10/11/2023	237
4/17/2024	265
7/29/2024	214
10/2/2024	219

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary: Mean=38.62, Std. Dev.=8.489, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.898, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

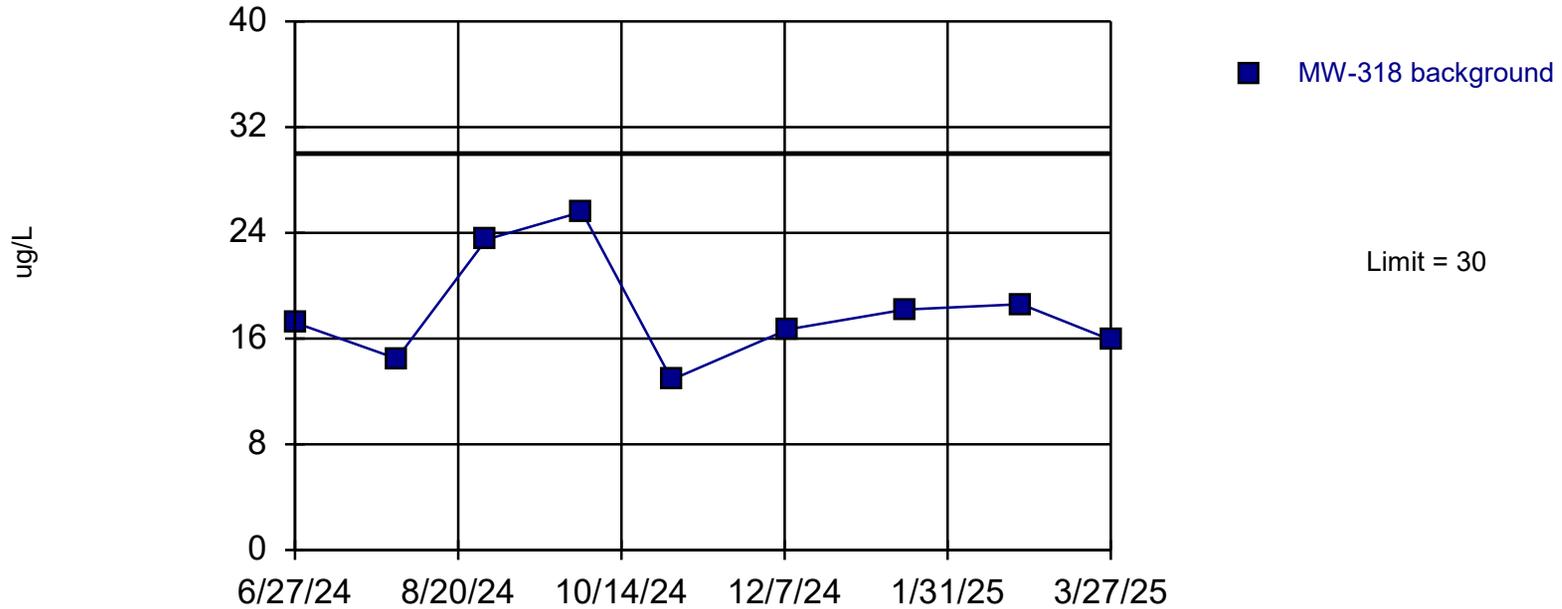
Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	33.8
7/31/2024	41.7
8/30/2024	49.3
10/1/2024	53.85 (D)
10/31/2024	39.4
12/9/2024	37.9
1/10/2025	31
2/25/2025	30
3/27/2025	30.6

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=18.12, Std. Dev.=4.082, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.92, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

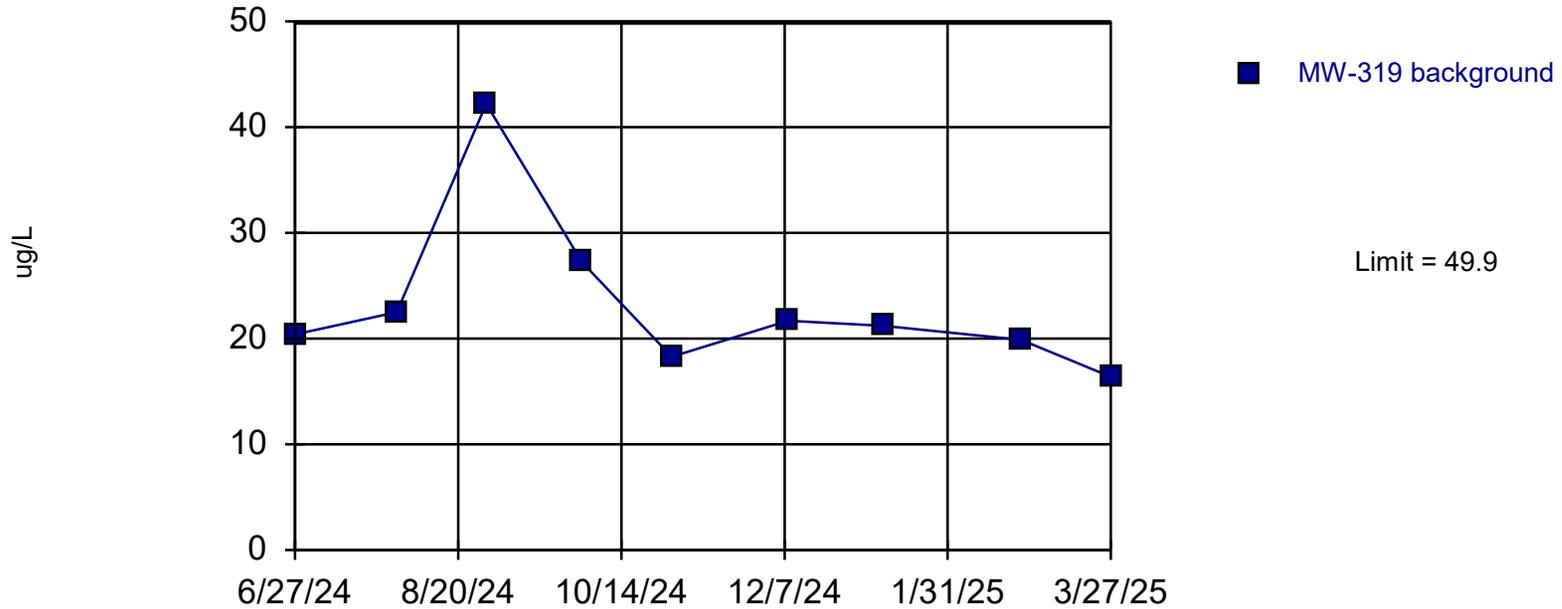
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	17.2
7/31/2024	14.5
8/30/2024	23.5
10/1/2024	25.6 (D)
10/31/2024	12.9
12/9/2024	16.7
1/17/2025	18.2
2/25/2025	18.6
3/27/2025	15.9

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary (based on natural log transformation): Mean=3.111, Std. Dev.=0.2749, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8477, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Boron Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

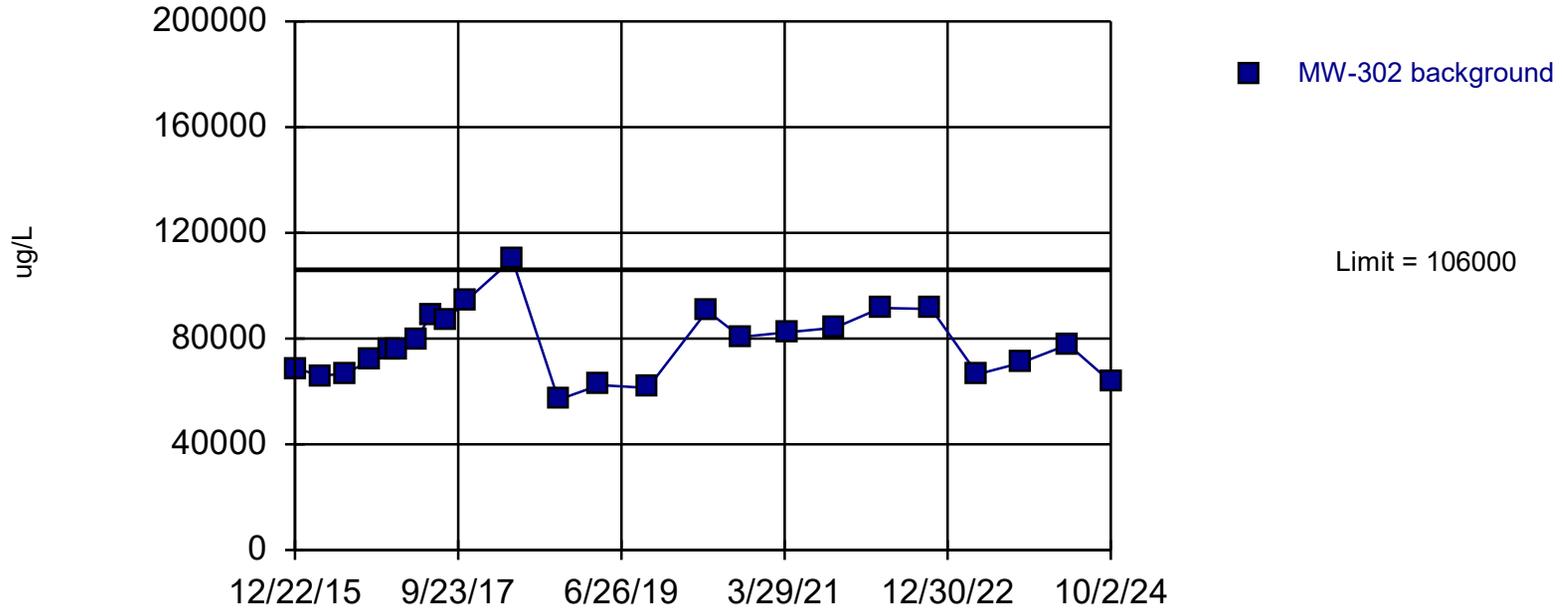
Prediction Limit

Constituent: Boron (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	20.4
7/31/2024	22.5
8/30/2024	42.2
10/1/2024	27.25 (D)
10/31/2024	18.3
12/9/2024	21.7
1/10/2025	21.2
2/25/2025	19.9
3/27/2025	16.4

Prediction Limit

Intrawell Parametric, MW-302



Background Data Summary: Mean=77692, Std. Dev.=12910, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9659, critical = 0.884. Kappa = 2.176 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

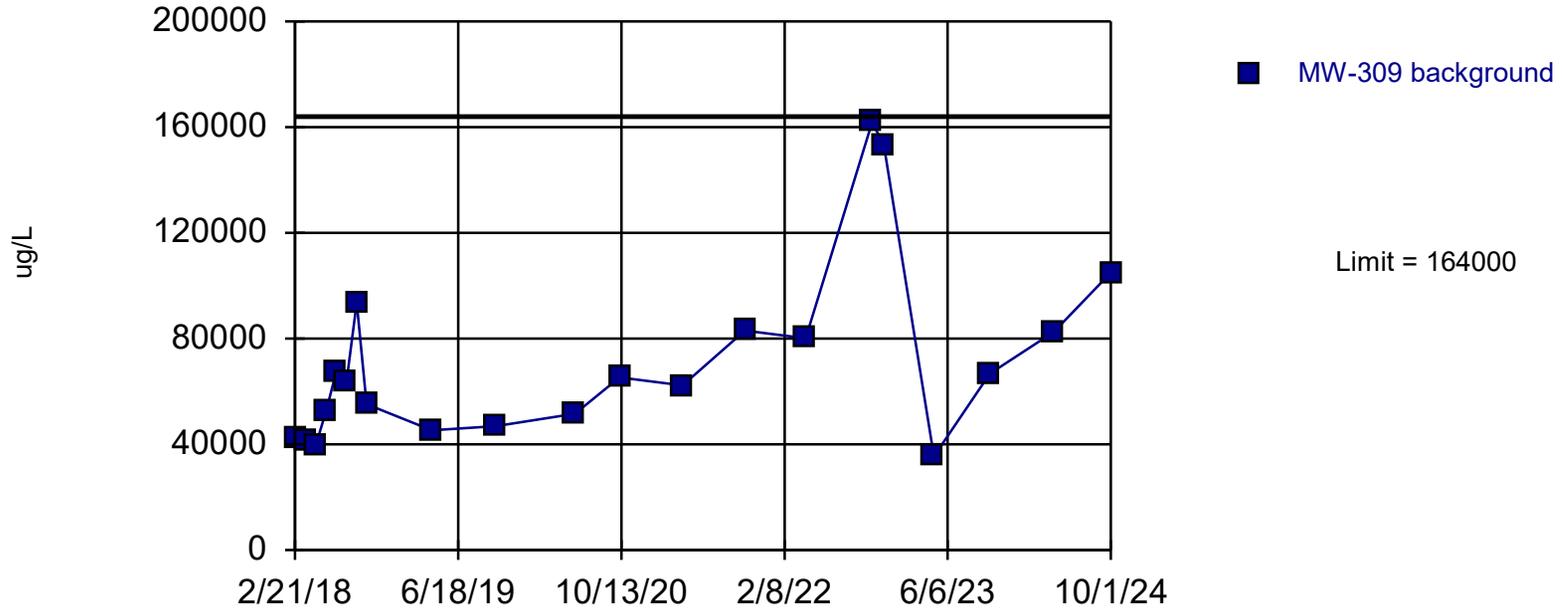
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	68800
4/5/2016	65900
7/7/2016	66900
10/13/2016	71700
12/29/2016	76100
1/25/2017	75400
4/11/2017	79600
6/6/2017	88900
8/8/2017	87100
10/24/2017	94400
4/24/2018	110000
10/22/2018	56900
4/2/2019	62400
10/9/2019	61400
5/29/2020	90500
10/8/2020	80600
4/13/2021	82400
10/14/2021	84100
4/12/2022	91600
10/27/2022	91200
4/27/2023	66500
10/11/2023	70800
4/17/2024	77800
10/2/2024	63600

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary (based on natural log transformation): Mean=11.09, Std. Dev.=0.4147, n=21. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9452, critical = 0.873. Kappa = 2.224 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

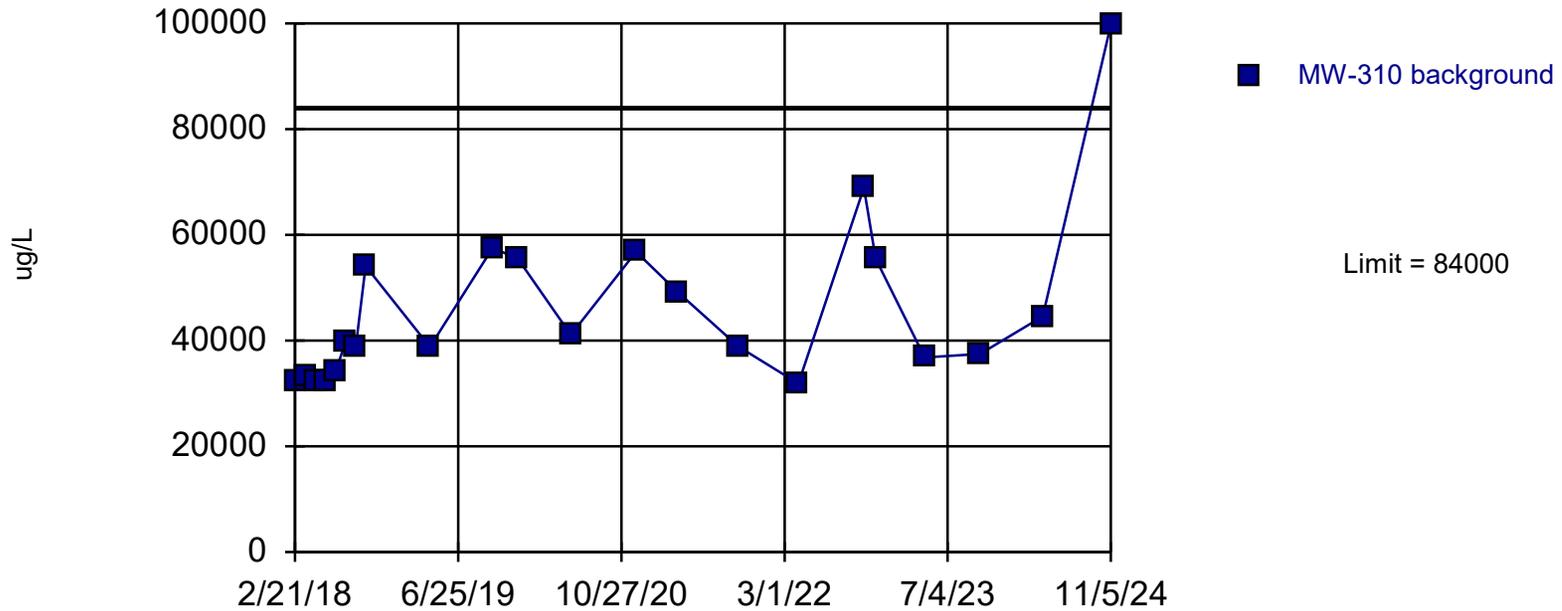
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	42700
3/23/2018	41800
4/23/2018	39600
5/24/2018	52700
6/23/2018	67600
7/23/2018	63800
8/22/2018	93600
9/21/2018	55200
4/2/2019	45300
10/8/2019	46900
5/29/2020	51600
10/8/2020	65300
4/13/2021	62300
10/14/2021	83100
4/12/2022	80200
10/26/2022	162000
11/30/2022	153000
4/26/2023	35500
10/9/2023	66800
4/15/2024	82600
10/1/2024	105000

Prediction Limit

Intrawell Parametric, MW-310



Background Data Summary (based on natural log transformation): Mean=10.69, Std. Dev.=0.2947, n=22. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8873, critical = 0.878. Kappa = 2.208 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

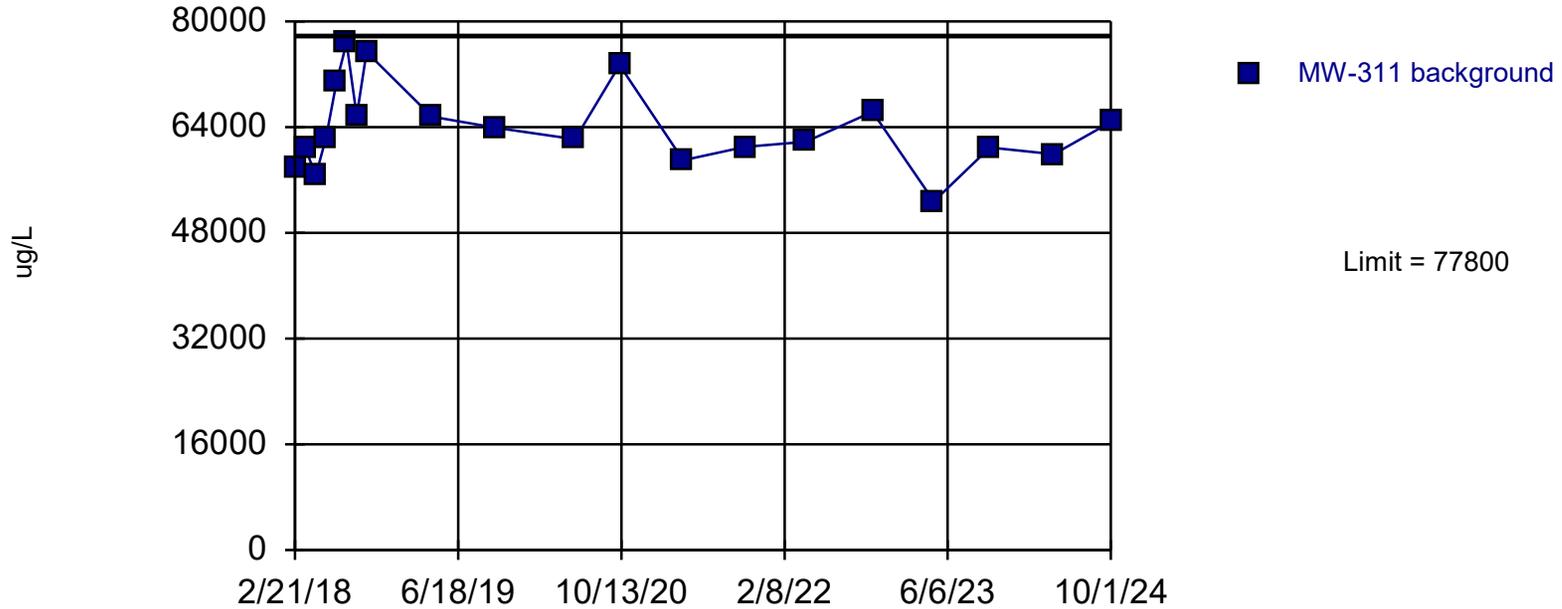
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	32400
3/23/2018	33400
4/23/2018	32100
5/24/2018	32100
6/23/2018	34300
7/23/2018	39700
8/22/2018	38800
9/21/2018	54100
4/2/2019	38800
10/8/2019	57600
12/23/2019	55400
5/29/2020	41100
12/11/2020	56800 (R)
4/13/2021	49300
10/14/2021	38900
4/12/2022	31900
10/26/2022	68900
11/30/2022	55500
4/26/2023	36800
10/9/2023	37500
4/15/2024	44600
11/5/2024	99700 (R)

Prediction Limit

Intrawell Parametric, MW-311



Background Data Summary: Mean=63915, Std. Dev.=6216, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9446, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

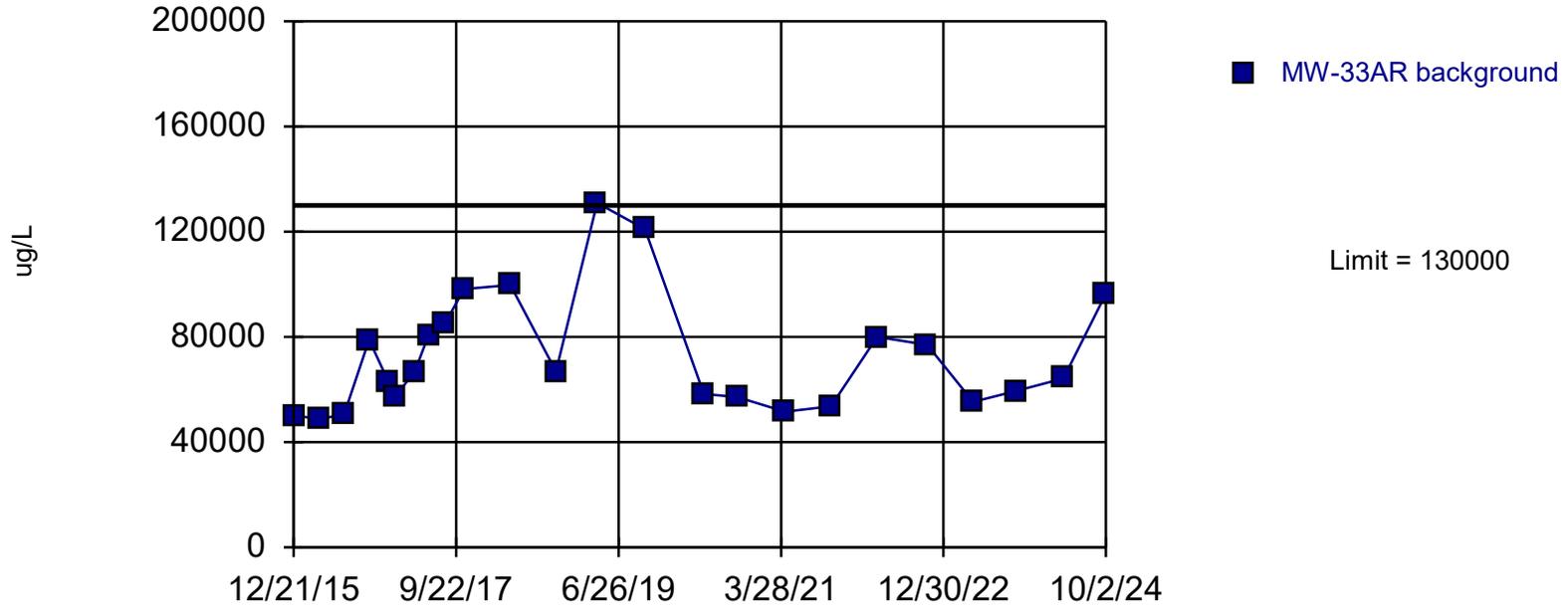
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	58000
3/23/2018	61000
4/23/2018	56600
5/24/2018	62500
6/23/2018	70700
7/23/2018	76800
8/22/2018	65700
9/21/2018	75400
4/2/2019	65600
10/8/2019	63900
5/29/2020	62200
10/8/2020	73400
4/14/2021	59000
10/14/2021	61000
4/12/2022	61800
10/27/2022	66300
4/26/2023	52800
10/9/2023	60900
4/15/2024	59900
10/1/2024	64800

Prediction Limit

Intrawell Parametric, MW-33AR



Background Data Summary (based on natural log transformation): Mean=11.16, Std. Dev.=0.2846, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.927, critical = 0.884. Kappa = 2.176 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

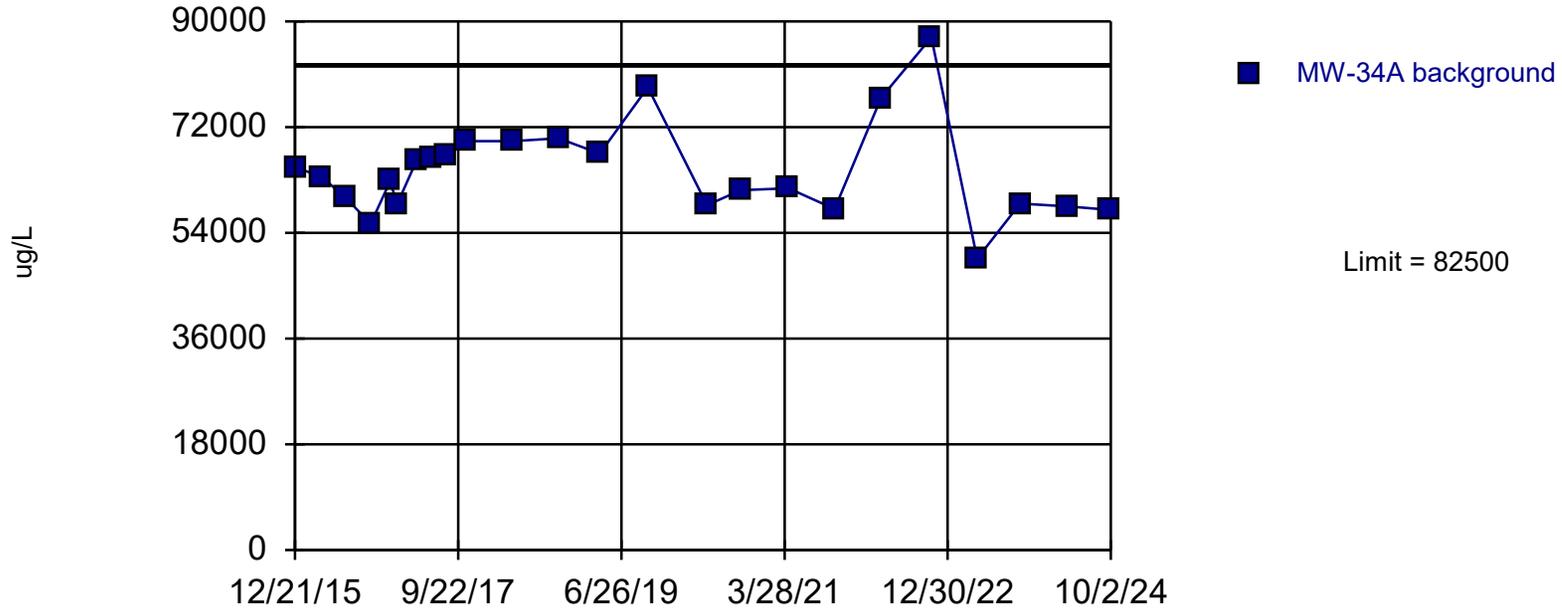
Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	50000
4/5/2016	48900
7/7/2016	50500
10/13/2016	79000
12/29/2016	63100
1/25/2017	57500
4/11/2017	66800
6/6/2017	80700
8/7/2017	84800
10/24/2017	98200
4/24/2018	99800
10/22/2018	66900
4/2/2019	131000
10/8/2019	121000
5/28/2020	58400
10/8/2020	57100
4/13/2021	51600
10/12/2021	53700
4/12/2022	80000
10/27/2022	77000
4/27/2023	55300
10/11/2023	59400
4/17/2024	64200
10/2/2024	96400

Prediction Limit

Intrawell Parametric, MW-34A



Background Data Summary: Mean=64631, Std. Dev.=8209, n=24. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9343, critical = 0.884. Kappa = 2.176 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

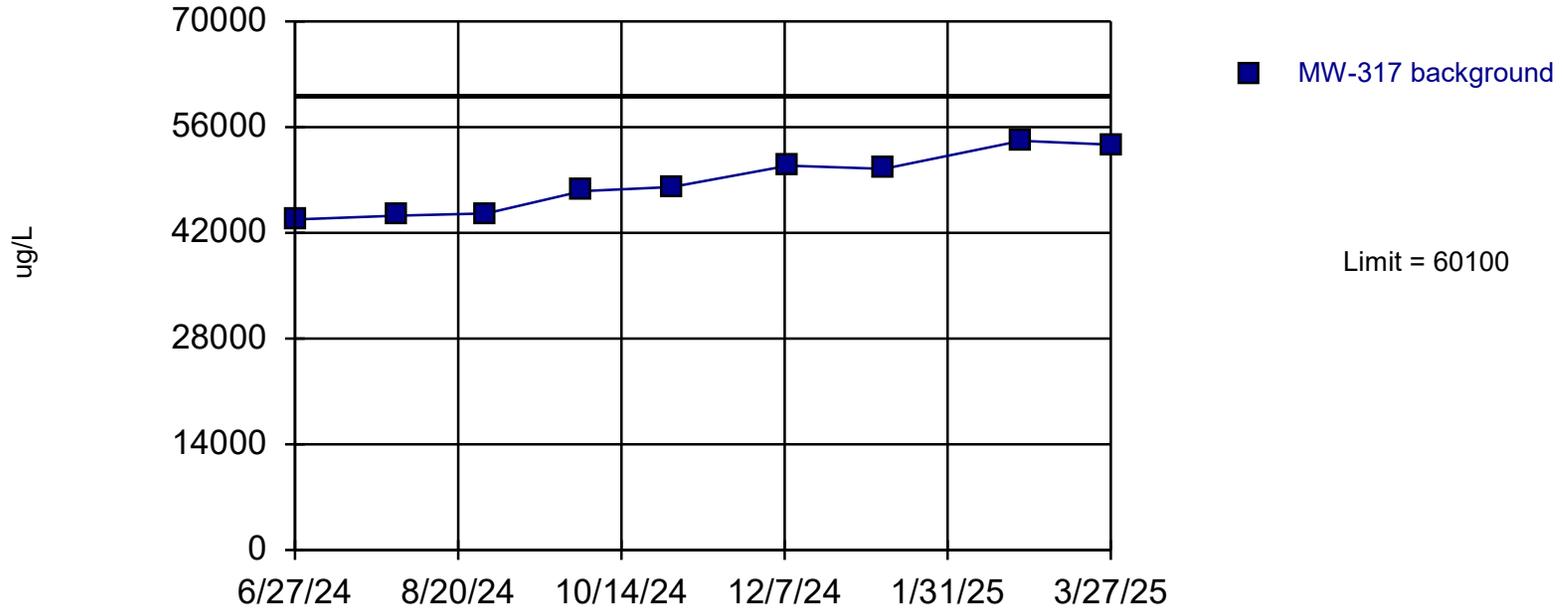
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	65250 (D)
4/5/2016	63500
7/7/2016	60000
10/13/2016	55600
12/29/2016	62800
1/25/2017	58900
4/11/2017	66300
6/6/2017	66900
8/7/2017	67300
10/24/2017	69600
4/24/2018	69600
10/22/2018	70100
4/2/2019	67500
10/8/2019	78800
5/28/2020	58700
10/8/2020	61300
4/13/2021	61600
10/12/2021	58100
4/12/2022	77000
10/27/2022	87300
4/26/2023	49600
10/11/2023	59000
4/17/2024	58500
10/2/2024	57900

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary: Mean=48628, Std. Dev.=3955, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9144, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

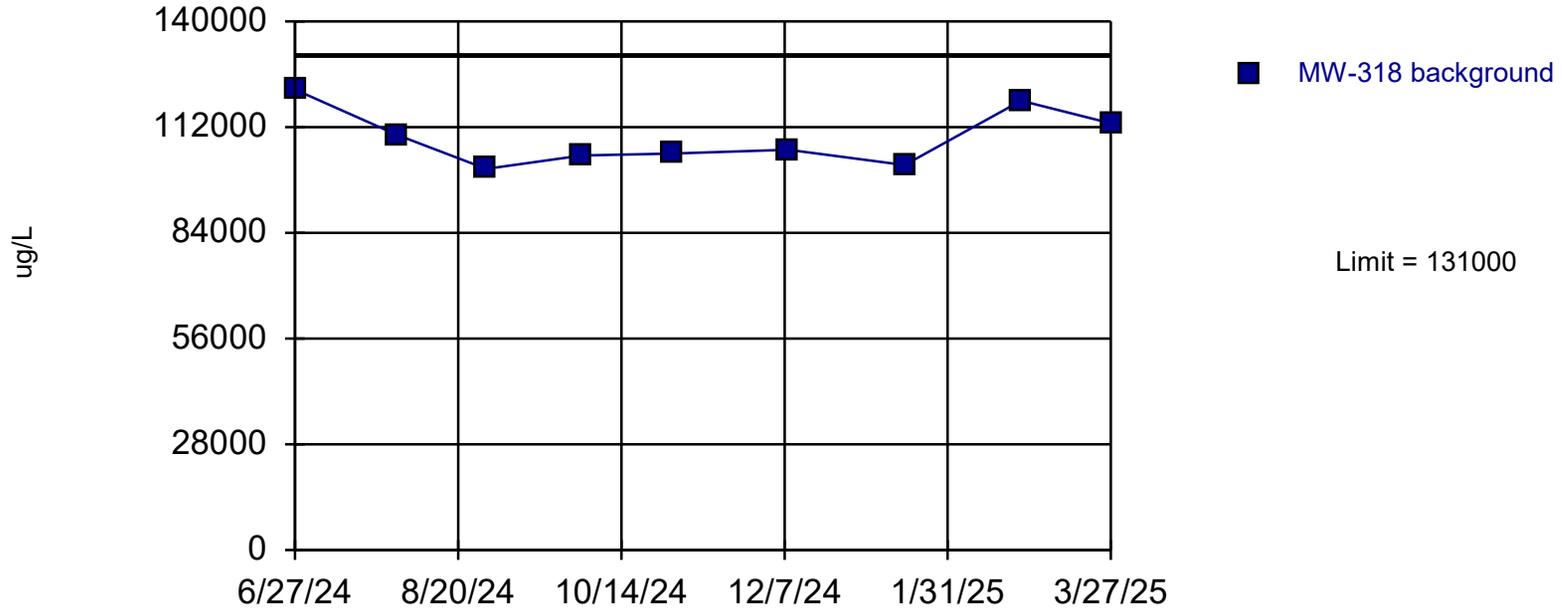
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	43800
7/31/2024	44300
8/30/2024	44600
10/1/2024	47550 (D)
10/31/2024	48100
12/9/2024	50900
1/10/2025	50500
2/25/2025	54200
3/27/2025	53700

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=109167, Std. Dev.=7450, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9038, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:41 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

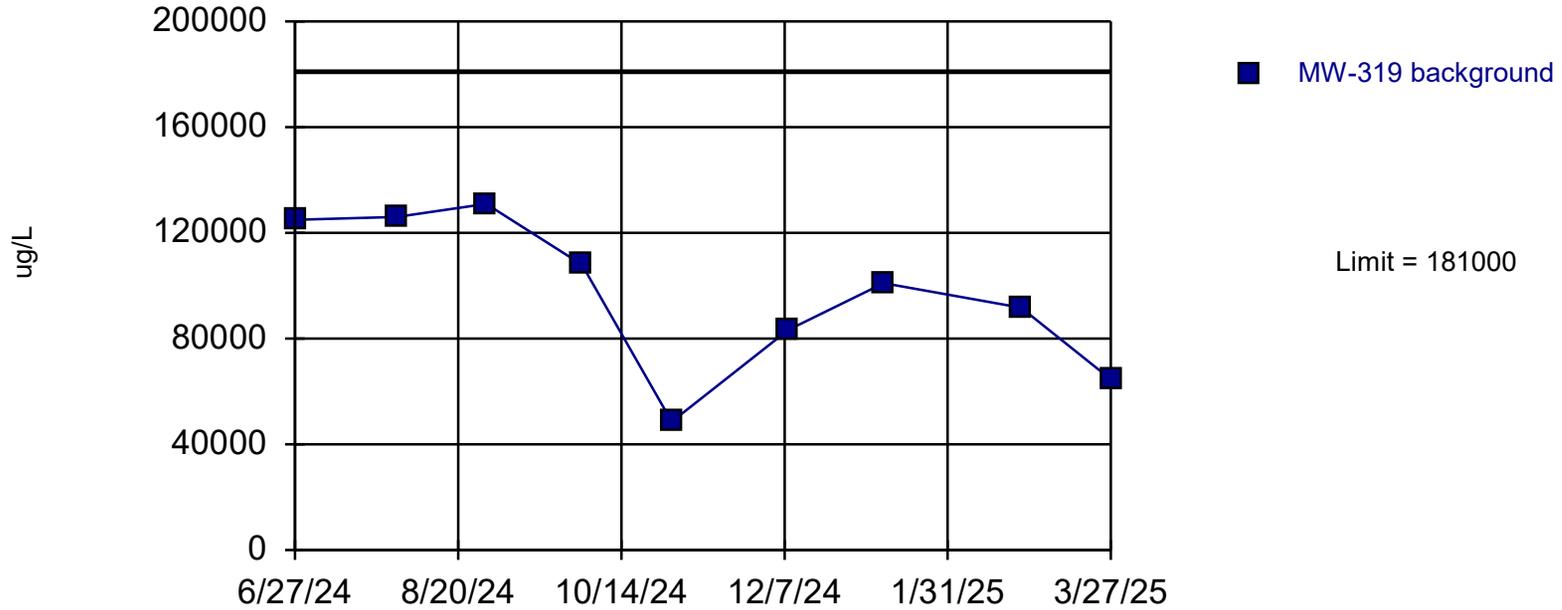
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	122000
7/31/2024	110000
8/30/2024	101000
10/1/2024	104500 (D)
10/31/2024	105000
12/9/2024	106000
1/17/2025	102000
2/25/2025	119000
3/27/2025	113000

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary: Mean=97689, Std. Dev.=28552, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9381, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Calcium Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

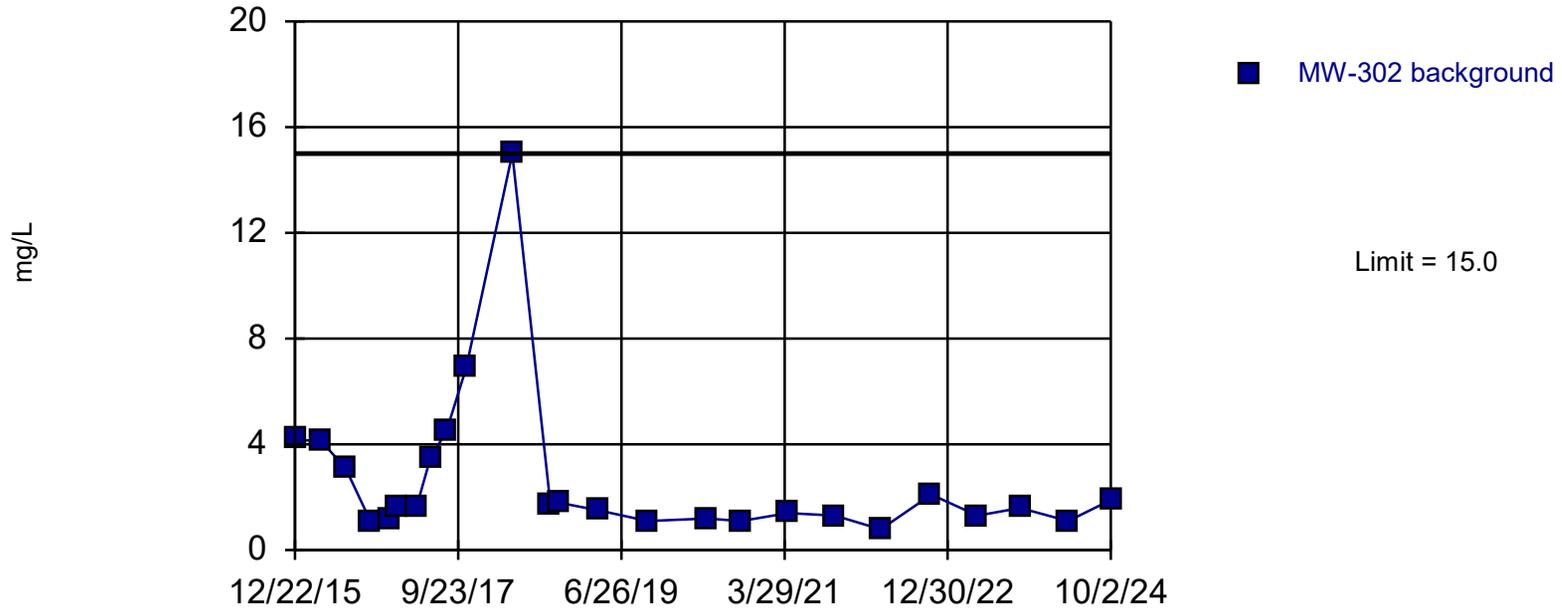
Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	125000
7/31/2024	126000
8/30/2024	131000
10/1/2024	108000 (D)
10/31/2024	48600
12/9/2024	83300
1/10/2025	101000
2/25/2025	91700
3/27/2025	64600

Prediction Limit

Intrawell Non-parametric, MW-302



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 25 background values. Well-constituent pair annual alpha = 0.005656. Individual comparison alpha = 0.002832 (1 of 2). Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

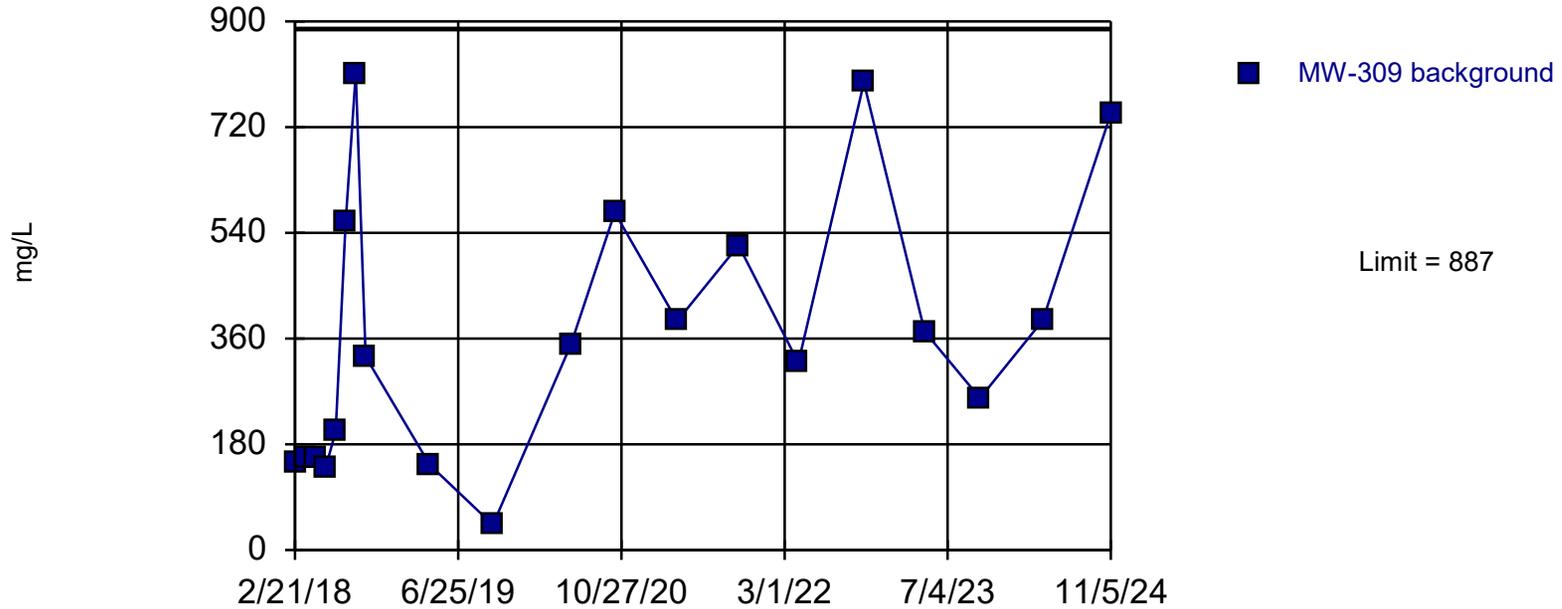
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	4.2
4/5/2016	4.1
7/7/2016	3.1 (J)
10/13/2016	1.1 (J)
12/29/2016	1.2 (J)
1/25/2017	1.6 (J)
4/11/2017	1.6 (J)
6/6/2017	3.5
8/8/2017	4.5
10/24/2017	6.9
4/24/2018	15
9/21/2018	1.7 (J)
10/22/2018	1.8 (J)
4/2/2019	1.5 (J)
10/9/2019	1.1 (J)
5/29/2020	1.2 (J)
10/8/2020	1.1 (J)
4/13/2021	1.4 (J)
10/14/2021	1.3 (J)
4/12/2022	0.79 (J)
10/27/2022	2.1
4/27/2023	1.3 (J)
10/11/2023	1.6 (J)
4/17/2024	1.1 (J)
10/2/2024	1.9 (J)

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary: Mean=370.2, Std. Dev.=230.6, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.918, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

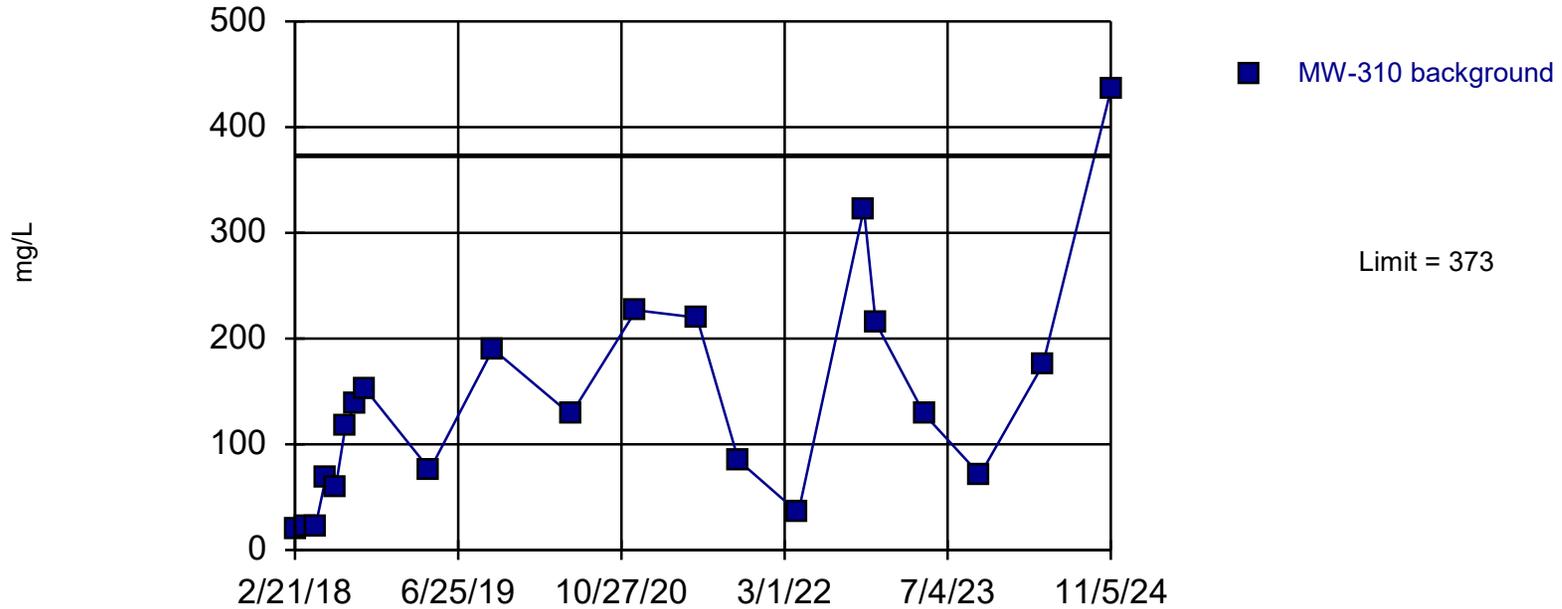
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	147
3/23/2018	157
4/23/2018	157
5/24/2018	141
6/23/2018	203
7/23/2018	557
8/22/2018	811
9/21/2018	329
4/2/2019	145
10/8/2019	43.2
5/29/2020	350
10/8/2020	575
4/13/2021	390
10/14/2021	519
4/12/2022	319
10/26/2022	796
4/26/2023	372
10/9/2023	259
4/15/2024	391
11/5/2024	743 (R)

Prediction Limit

Intrawell Parametric, MW-310



Background Data Summary: Mean=138.5, Std. Dev.=105.2, n=21. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8952, critical = 0.873. Kappa = 2.224 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

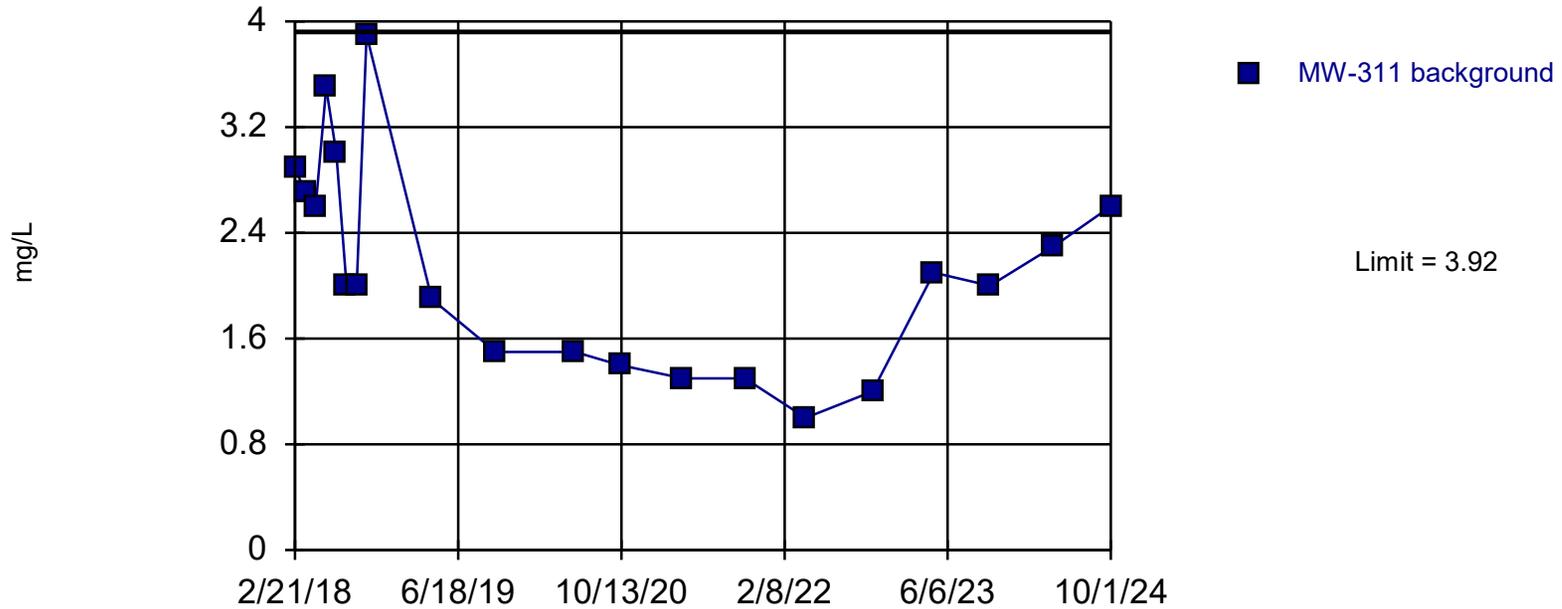
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	19.8
3/23/2018	21.7
4/23/2018	22.1
5/24/2018	68.6
6/23/2018	59.8
7/23/2018	118
8/22/2018	139
9/21/2018	152
4/2/2019	76
10/8/2019	190
5/29/2020	128
12/11/2020	227 (R)
6/11/2021	220 (R)
10/14/2021	84.6
4/12/2022	35.2
10/26/2022	323
11/30/2022	215
4/26/2023	128
10/9/2023	71.3
4/15/2024	175
11/5/2024	435 (R)

Prediction Limit

Intrawell Parametric, MW-311



Background Data Summary: Mean=2.135, Std. Dev.=0.7982, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9499, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

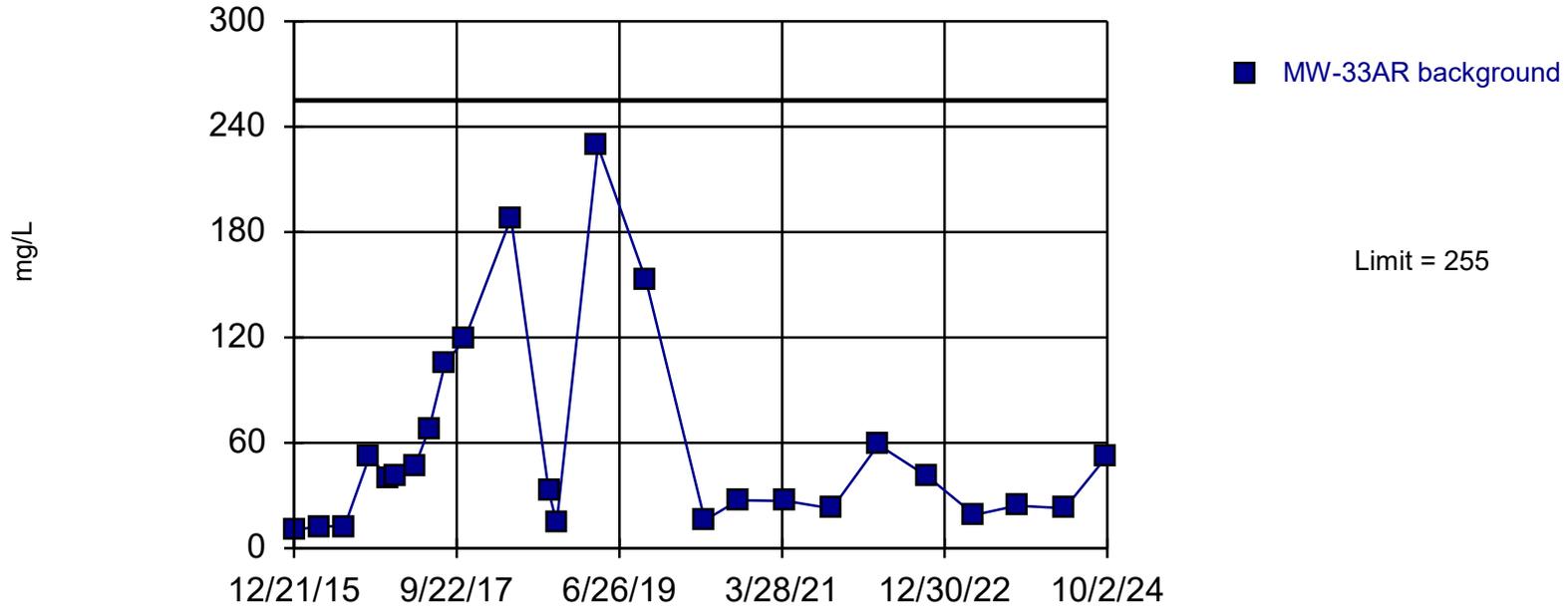
Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-311

2/21/2018	2.9
3/23/2018	2.7
4/23/2018	2.6
5/24/2018	3.5
6/23/2018	3
7/23/2018	2 (J)
8/22/2018	2 (J)
9/21/2018	3.9
4/2/2019	1.9 (J)
10/8/2019	1.5 (J)
5/29/2020	1.5 (J)
10/8/2020	1.4 (J)
4/14/2021	1.3 (J)
10/14/2021	1.3 (J)
4/12/2022	1 (J)
10/27/2022	1.2 (J)
4/26/2023	2.1
10/9/2023	2 (J)
4/15/2024	2.3
10/1/2024	2.6

Prediction Limit

Intrawell Parametric, MW-33AR



Prediction Limit

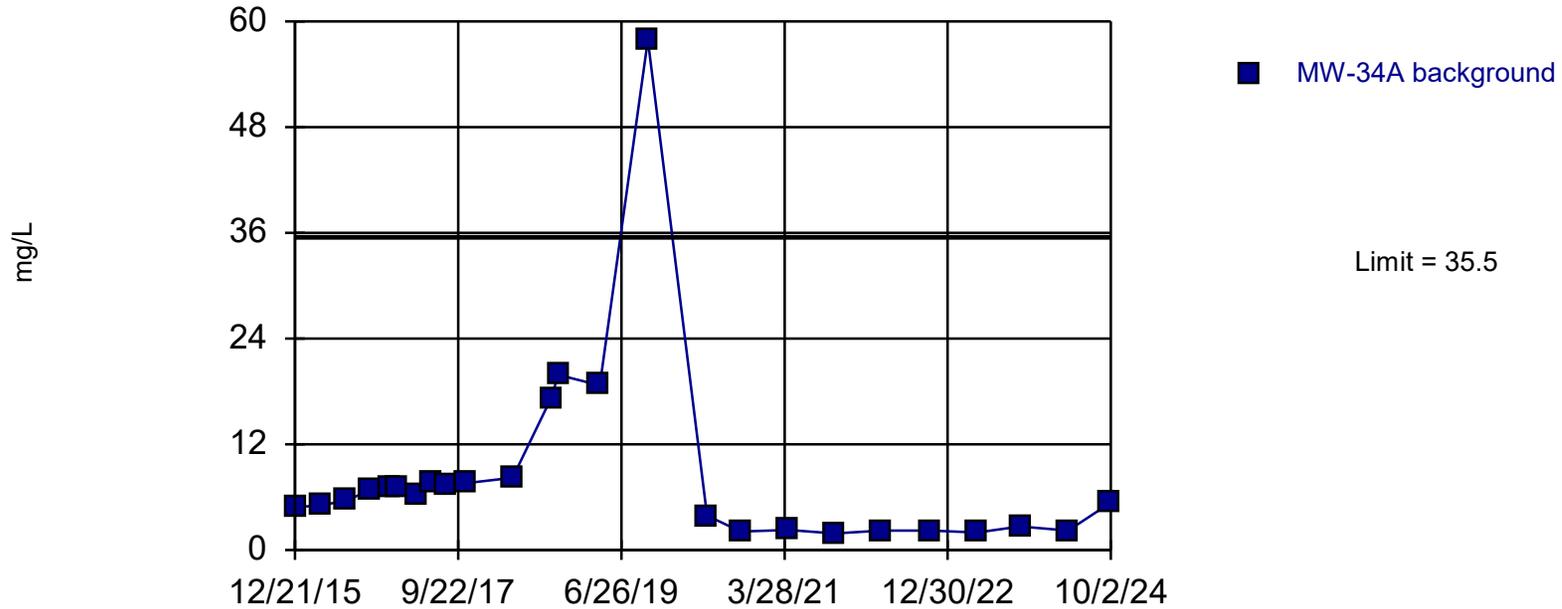
Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	10.6
4/5/2016	12.5
7/7/2016	12.5
10/13/2016	52.5
12/29/2016	39.6
1/25/2017	41.4
4/11/2017	47.1
6/6/2017	68.1
8/7/2017	105
10/24/2017	119
4/24/2018	188
9/21/2018	32.6
10/22/2018	14.4
4/2/2019	229
10/8/2019	153
5/28/2020	15.9
10/8/2020	27.3
4/13/2021	26.9
10/12/2021	22.6
4/12/2022	59
10/27/2022	40.5
4/27/2023	19
10/11/2023	24.2
4/17/2024	22.8
10/2/2024	52.7

Prediction Limit

Intrawell Parametric, MW-34A



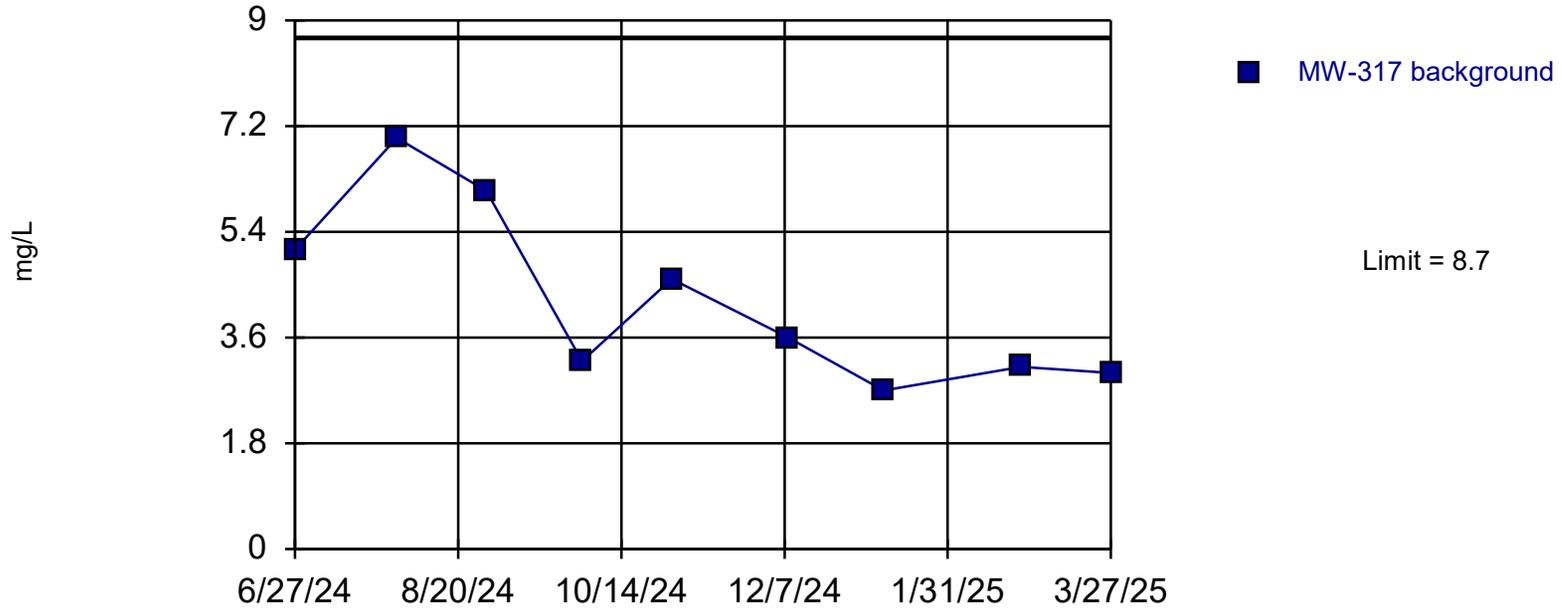
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	4.85 (D)
4/5/2016	5.1
7/7/2016	5.6
10/13/2016	6.8
12/29/2016	7.1
1/25/2017	7.2
4/11/2017	6.2
6/6/2017	7.8
8/7/2017	7.4
10/24/2017	7.6
4/24/2018	8.2
9/21/2018	17.1
10/22/2018	19.9
4/2/2019	18.7
10/8/2019	57.9
5/28/2020	3.9
10/8/2020	2.1
4/13/2021	2.3
10/12/2021	1.9 (J)
4/12/2022	2.2
10/27/2022	2.2
4/26/2023	2
10/11/2023	2.7
4/17/2024	2.2
10/2/2024	5.4

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary: Mean=4.267, Std. Dev.=1.526, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8866, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

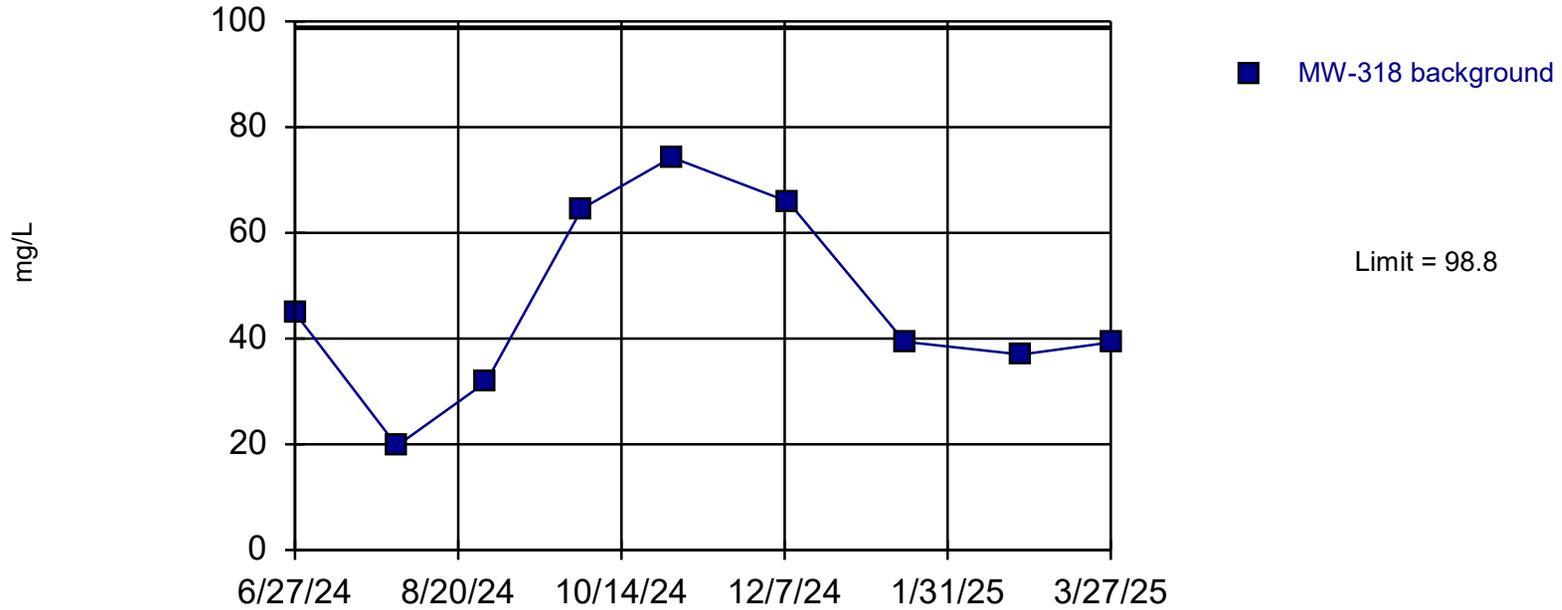
Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	5.1
7/31/2024	7
8/30/2024	6.1
10/1/2024	3.2 (D)
10/31/2024	4.6
12/9/2024	3.6
1/10/2025	2.7
2/25/2025	3.1
3/27/2025	3

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=46.32, Std. Dev.=18.05, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9287, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

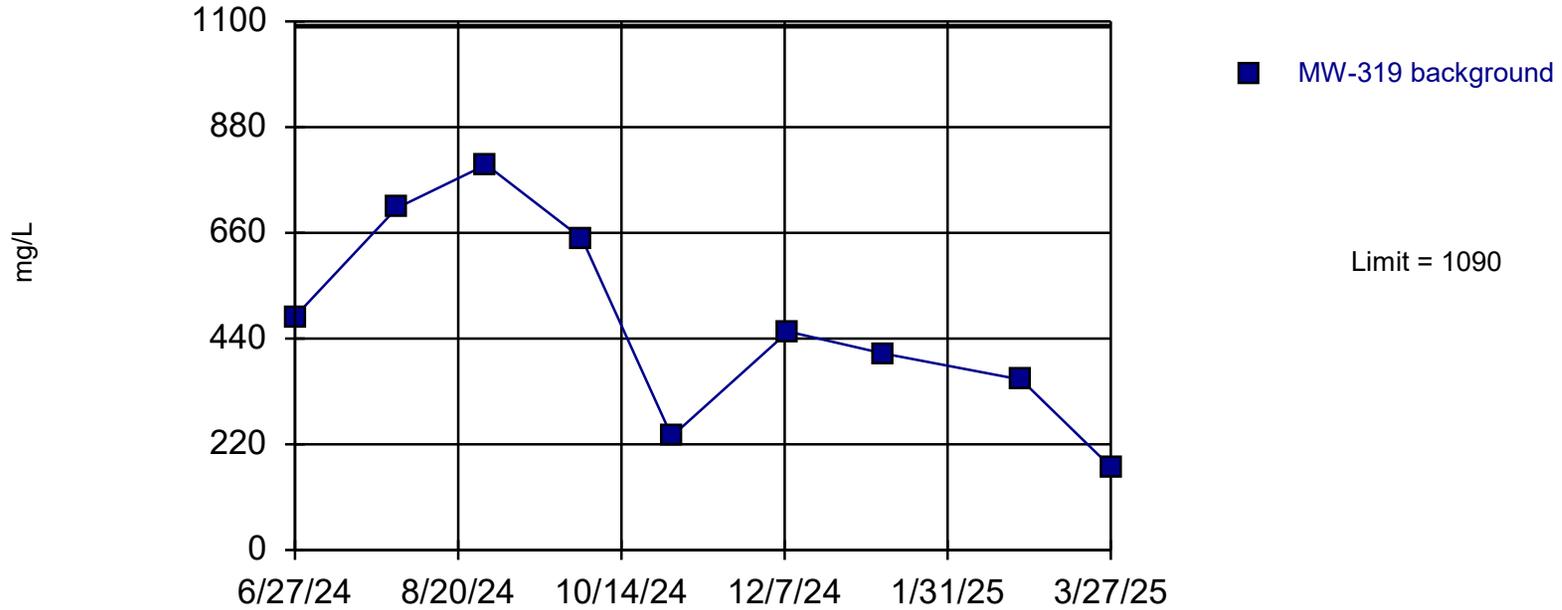
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	44.9
7/31/2024	19.7
8/30/2024	31.8
10/1/2024	64.6 (D)
10/31/2024	74.3
12/9/2024	65.9
1/17/2025	39.4
2/25/2025	37
3/27/2025	39.3

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary: Mean=475.2, Std. Dev.=212.2, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9653, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Chloride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

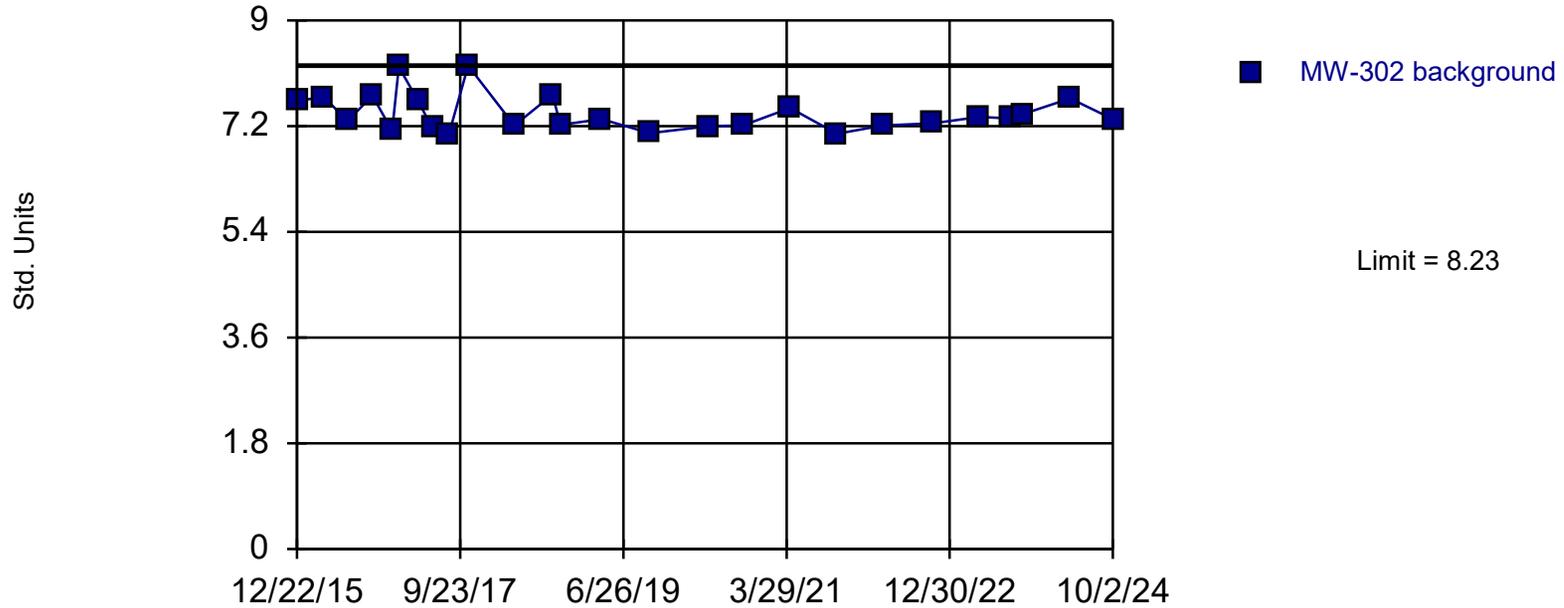
Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	486
7/31/2024	712
8/30/2024	802
10/1/2024	648 (D)
10/31/2024	237
12/9/2024	455
1/10/2025	409
2/25/2025	355
3/27/2025	173

Prediction Limit

Intrawell Non-parametric, MW-302



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 26 background values. Well-constituent pair annual alpha = 0.005327. Individual comparison alpha = 0.002667 (1 of 2). Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

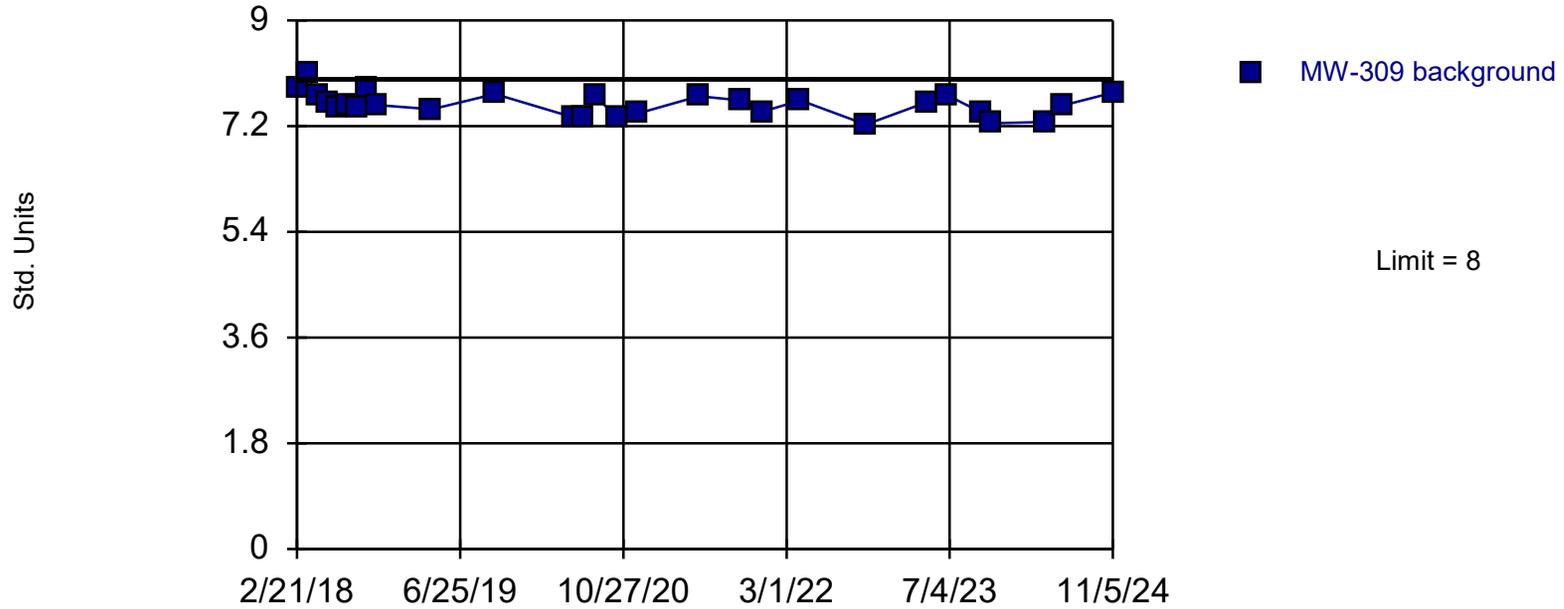
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-302

12/22/2015	7.63
4/5/2016	7.7
7/7/2016	7.29
10/13/2016	7.72
12/29/2016	7.12
1/25/2017	8.21
4/11/2017	7.63
6/6/2017	7.16
8/8/2017	7.04
10/24/2017	8.23
4/24/2018	7.21
9/21/2018	7.74
10/22/2018	7.22
4/2/2019	7.32
10/9/2019	7.08
5/29/2020	7.2
10/8/2020	7.21
4/13/2021	7.51
10/14/2021	7.07
4/12/2022	7.21
10/27/2022	7.25
4/27/2023	7.36
8/31/2023	7.33
10/11/2023	7.4
4/17/2024	7.67
10/2/2024	7.32

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary: Mean=7.566, Std. Dev.=0.2028, n=28. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9743, critical = 0.896. Kappa = 2.129 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

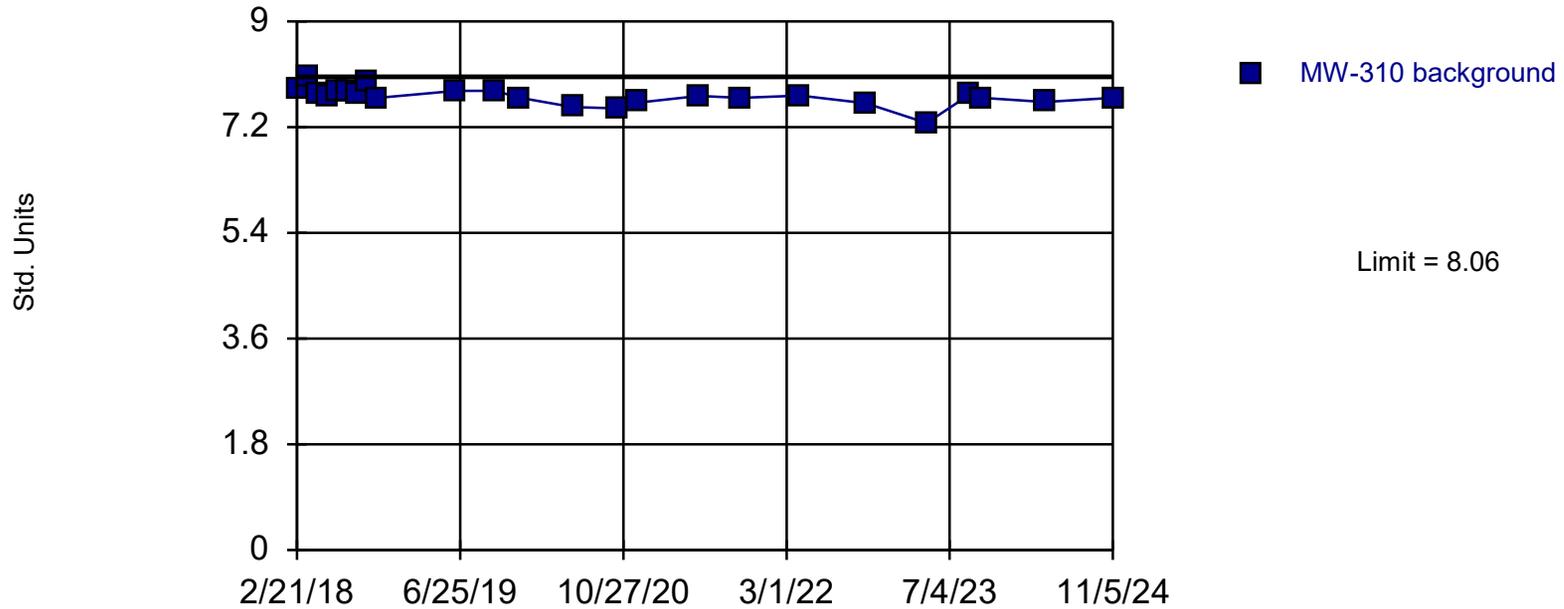
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-309

2/21/2018	7.84
3/23/2018	8.08
4/23/2018	7.71
5/24/2018	7.59
6/23/2018	7.5
7/23/2018	7.55
8/22/2018	7.53
9/21/2018	7.83
10/22/2018	7.56
4/2/2019	7.49
10/8/2019	7.75
5/29/2020	7.35
6/30/2020	7.33
8/6/2020	7.72
10/8/2020	7.33
12/11/2020	7.42
6/11/2021	7.71 (R)
10/14/2021	7.64
12/21/2021	7.45
4/12/2022	7.64
10/26/2022	7.23
4/26/2023	7.61
6/29/2023	7.72
10/9/2023	7.43
11/9/2023	7.25
4/15/2024	7.27
6/4/2024	7.55
11/5/2024	7.77 (R)

Prediction Limit

Intrawell Parametric, MW-310



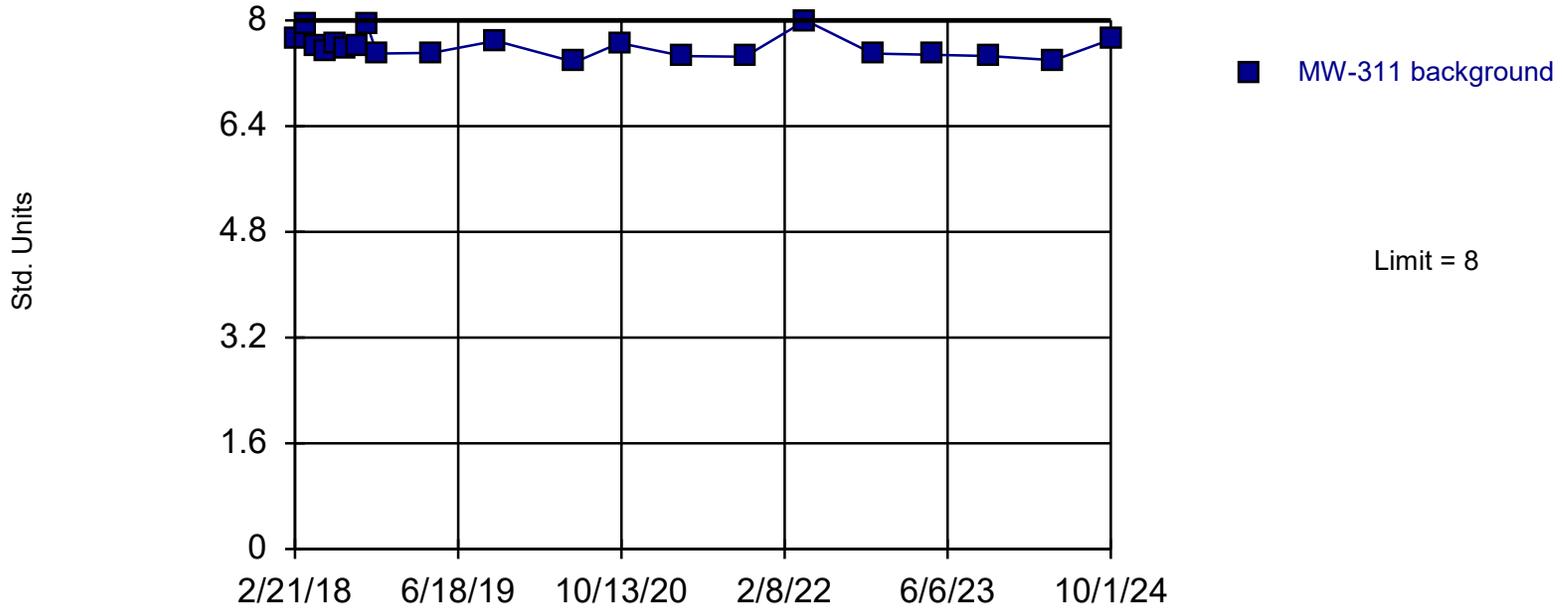
Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	7.85
3/23/2018	8.06
4/23/2018	7.75
5/24/2018	7.74
6/23/2018	7.82
7/23/2018	7.81
8/22/2018	7.77
9/21/2018	7.98
10/22/2018	7.7
4/2/2019	9.79 (X)
6/12/2019	7.82
10/8/2019	7.82
12/23/2019	7.7
5/29/2020	7.54
10/8/2020	7.52
12/11/2020	7.62
6/11/2021	7.73 (R)
10/14/2021	7.7
4/12/2022	7.74
10/26/2022	7.61
4/26/2023	7.27
8/31/2023	7.75
10/9/2023	7.7
4/15/2024	7.63
11/5/2024	7.7 (R)

Prediction Limit

Intrawell Parametric, MW-311



Background Data Summary: Mean=7.609, Std. Dev.=0.1777, n=21. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9055, critical = 0.873. Kappa = 2.224 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

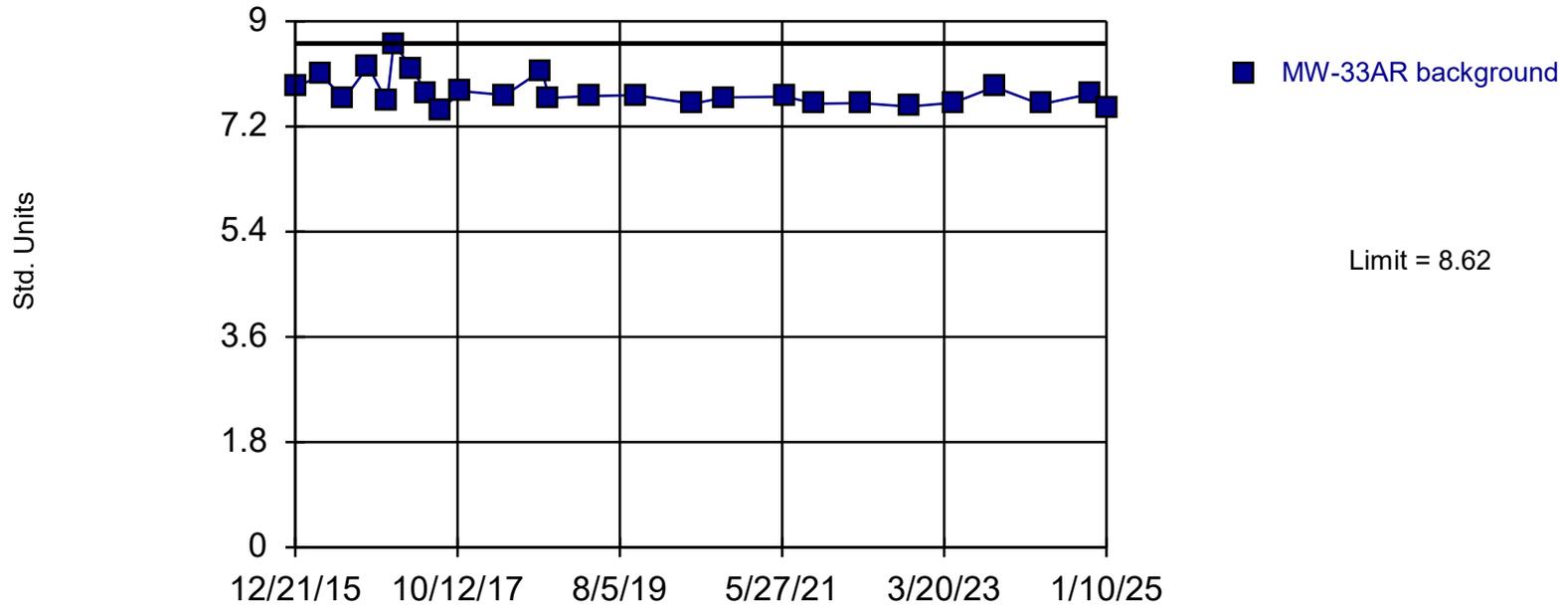
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-311

2/21/2018	7.72
3/23/2018	7.93
4/23/2018	7.62
5/24/2018	7.54
6/23/2018	7.65
7/23/2018	7.59
8/22/2018	7.6
9/21/2018	7.95
10/22/2018	7.5
4/2/2019	7.51
10/8/2019	7.69
5/29/2020	7.37
10/8/2020	7.66
4/14/2021	7.46
10/14/2021	7.45
4/12/2022	8
10/27/2022	7.5
4/26/2023	7.48
10/9/2023	7.46
4/15/2024	7.4
10/1/2024	7.71

Prediction Limit

Intrawell Non-parametric, MW-33AR



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 26 background values. Well-constituent pair annual alpha = 0.005327. Individual comparison alpha = 0.002667 (1 of 2). Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

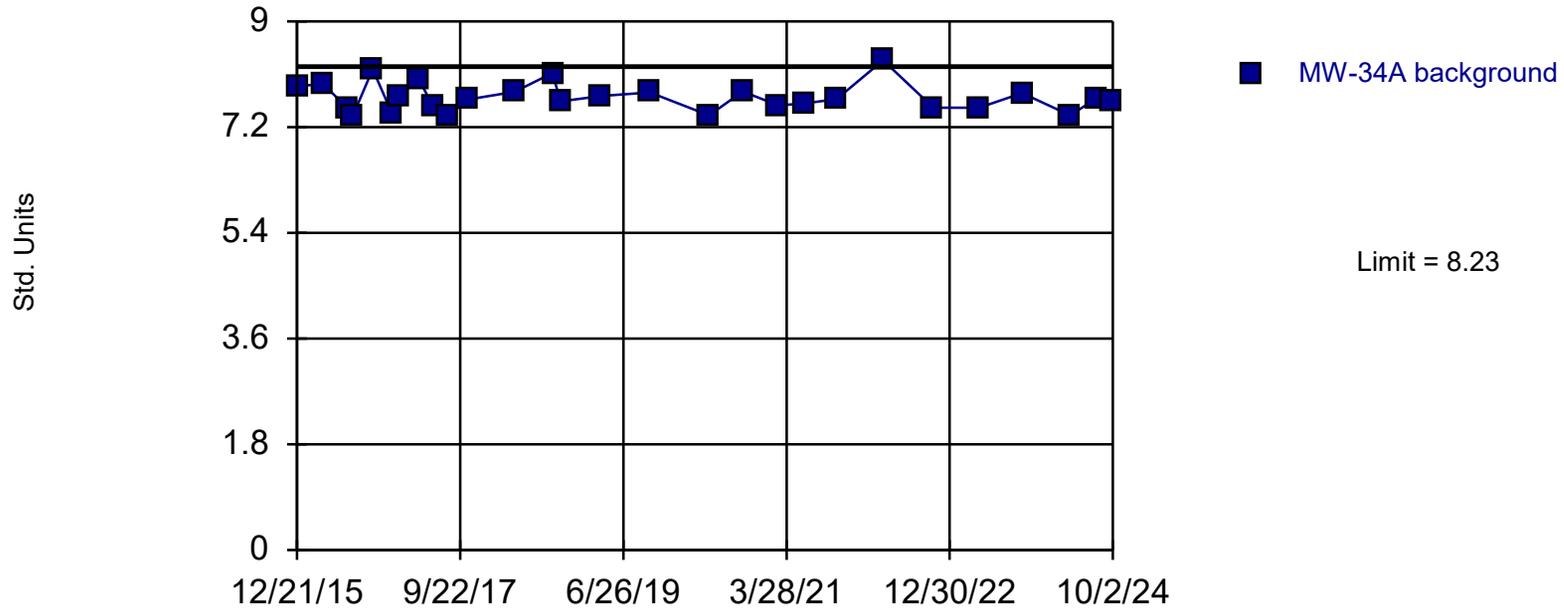
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	7.87
4/5/2016	8.08
7/7/2016	7.68
10/13/2016	8.23
12/29/2016	7.63
1/25/2017	8.62
4/11/2017	8.19
6/6/2017	7.78
8/7/2017	7.47
10/24/2017	7.81
4/24/2018	7.74
9/21/2018	8.16
10/22/2018	7.69
4/2/2019	7.72
10/8/2019	7.74
5/28/2020	7.59
10/8/2020	7.7
6/11/2021	7.71 (R)
10/12/2021	7.59
4/12/2022	7.6
10/27/2022	7.54
4/27/2023	7.61
10/11/2023	7.88
4/17/2024	7.58
11/5/2024	7.76 (R)
1/10/2025	7.51

Prediction Limit

Intrawell Parametric, MW-34A



Background Data Summary: Mean=7.707, Std. Dev.=0.2467, n=28. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.896. Kappa = 2.129 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

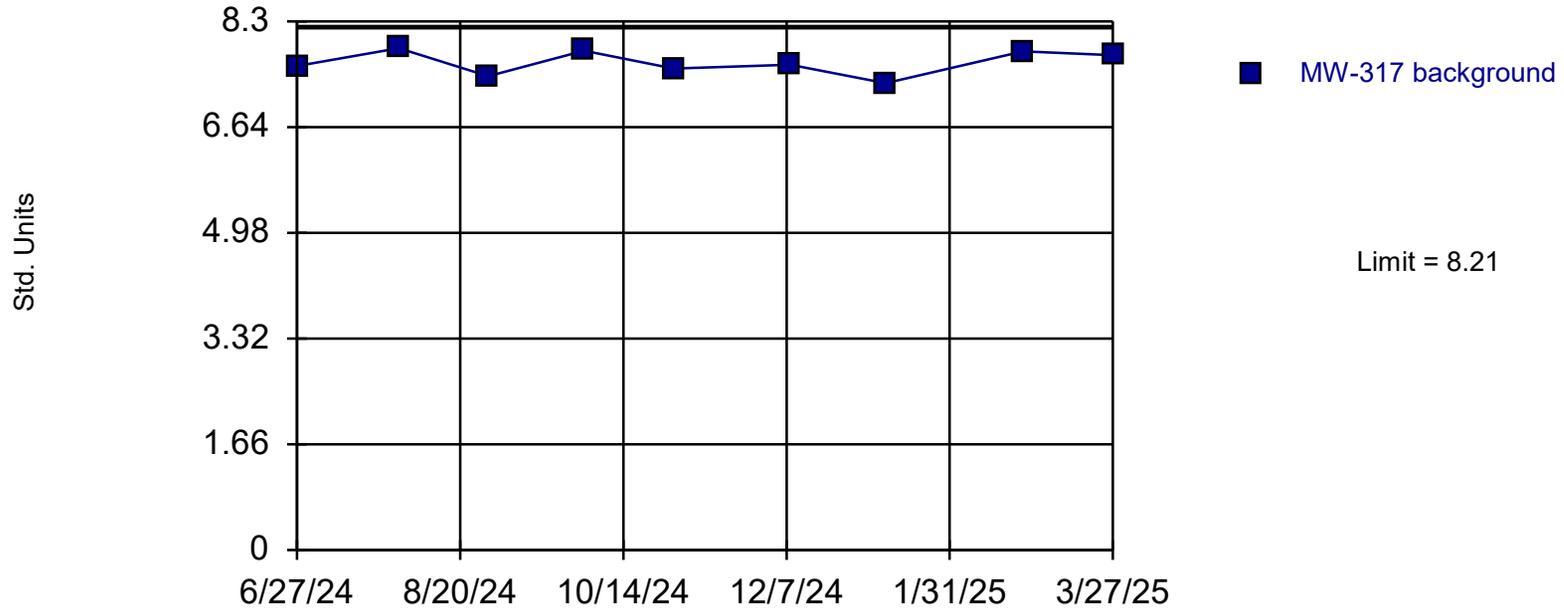
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-34A

12/21/2015	7.91
4/5/2016	7.92
7/7/2016	7.52
7/28/2016	7.4
10/13/2016	8.19
12/29/2016	7.43
1/25/2017	7.71
4/11/2017	8.03
6/6/2017	7.57
8/7/2017	7.39
10/24/2017	7.67
4/24/2018	7.8
9/21/2018	8.12
10/22/2018	7.64
4/2/2019	7.73
10/8/2019	7.79
5/28/2020	7.4
10/8/2020	7.81
2/25/2021	7.57
6/11/2021	7.61 (R)
10/12/2021	7.68
4/12/2022	8.34
10/27/2022	7.53
4/26/2023	7.53
10/11/2023	7.78
4/17/2024	7.4
7/29/2024	7.69
10/2/2024	7.64

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary: Mean=7.652, Std. Dev.=0.1916, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9313, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

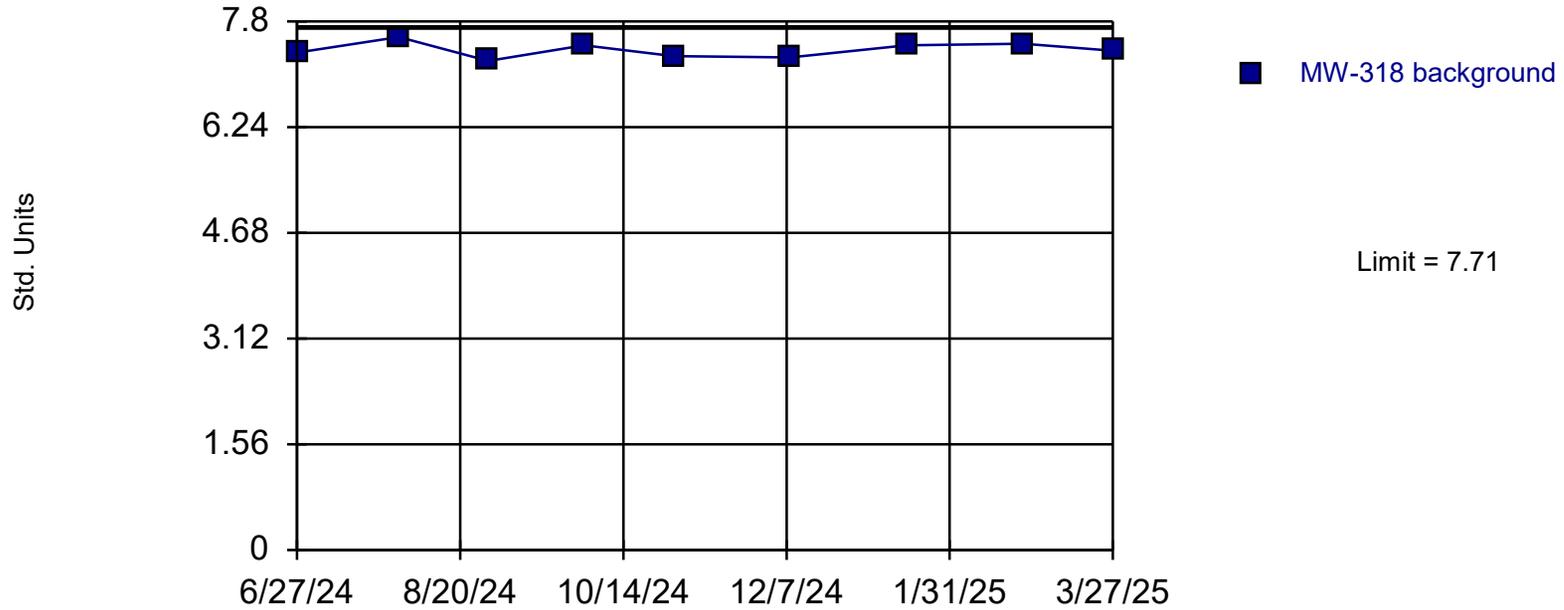
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	7.6
7/31/2024	7.88
8/30/2024	7.44
10/1/2024	7.84 (D)
10/31/2024	7.56
12/9/2024	7.62
1/10/2025	7.33
2/25/2025	7.83
3/27/2025	7.77

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=7.381, Std. Dev.=0.1126, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9653, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

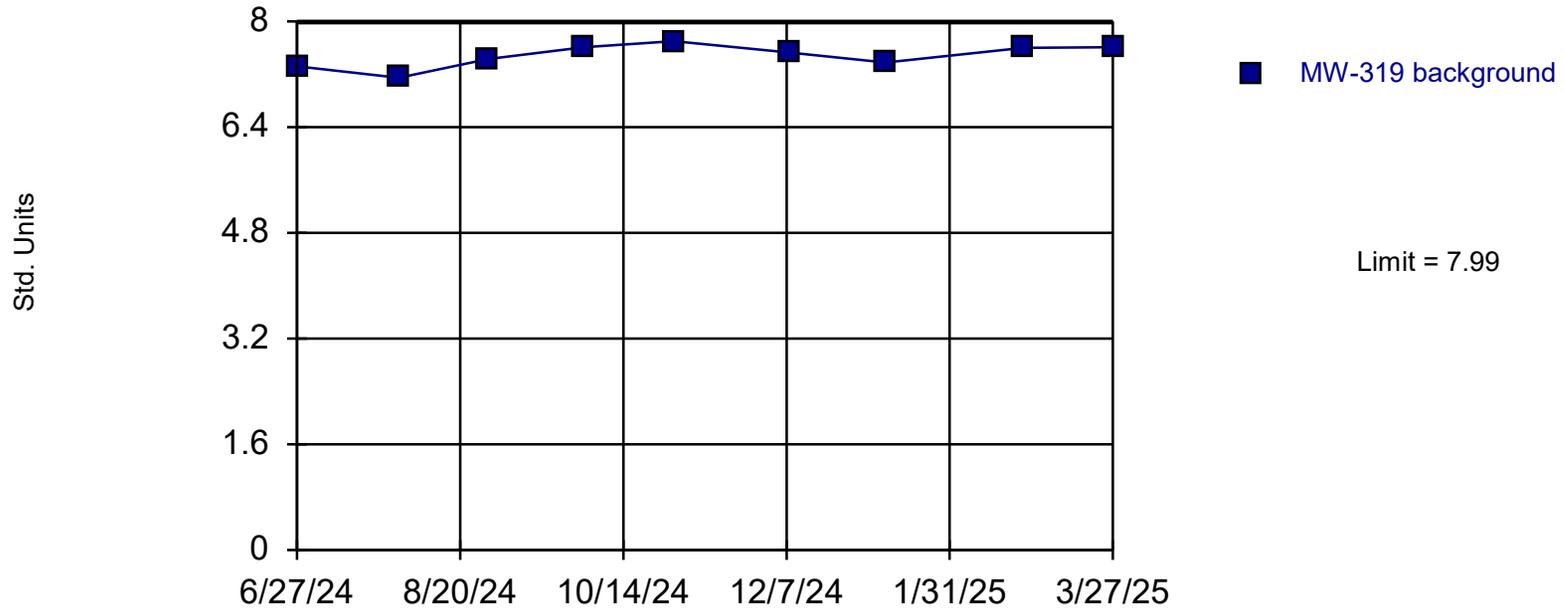
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-318

6/27/2024	7.34
7/31/2024	7.57
8/30/2024	7.22
10/1/2024	7.45 (D)
10/31/2024	7.29
12/9/2024	7.27
1/17/2025	7.45
2/25/2025	7.47
3/27/2025	7.37

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary: Mean=7.481, Std. Dev.=0.1754, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9342, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Field pH Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

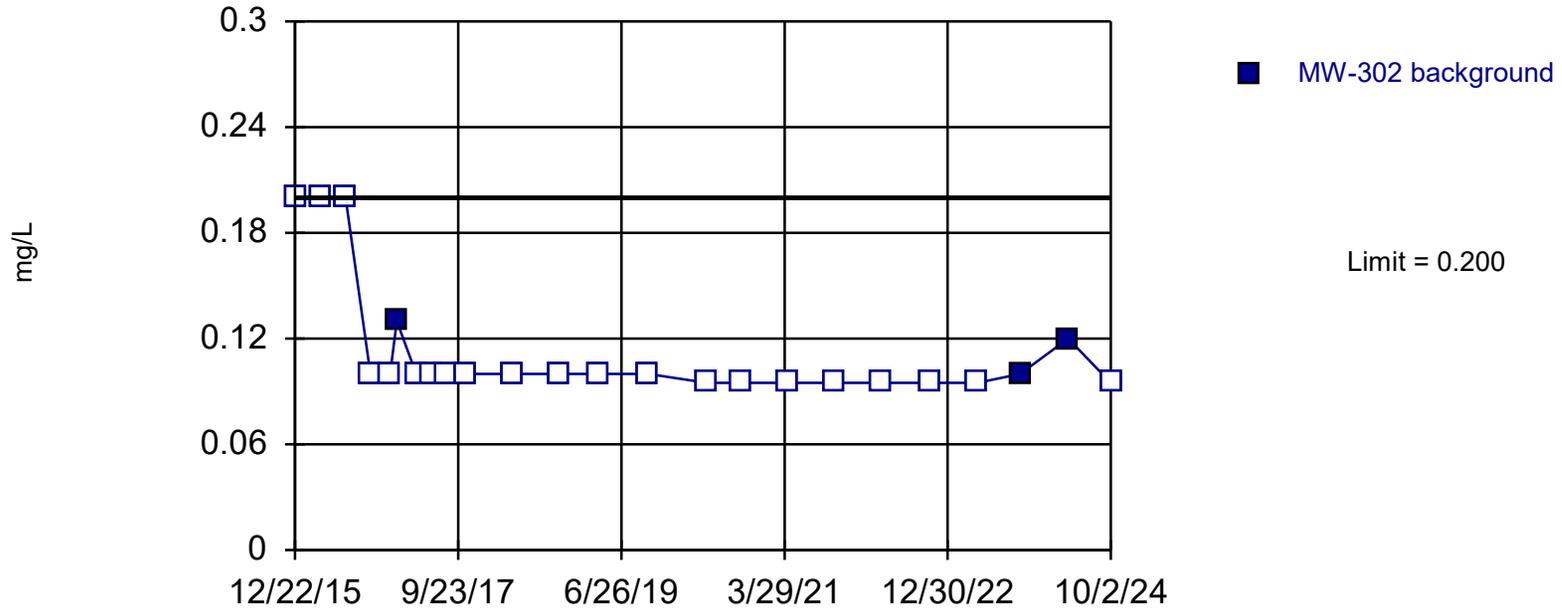
Constituent: Field pH (Std. Units) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-319

6/27/2024	7.32
7/31/2024	7.15
8/30/2024	7.43
10/1/2024	7.61 (D)
10/31/2024	7.7
12/9/2024	7.53
1/10/2025	7.38
2/25/2025	7.6
3/27/2025	7.61

Prediction Limit

Intrawell Non-parametric, MW-302



Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	<0.2 (U)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.1 (U)
12/29/2016	<0.1 (U)
1/25/2017	0.13 (J)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/8/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/9/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/27/2023	<0.095 (U)
10/11/2023	0.1 (J)
4/17/2024	0.12 (J)
10/2/2024	<0.095

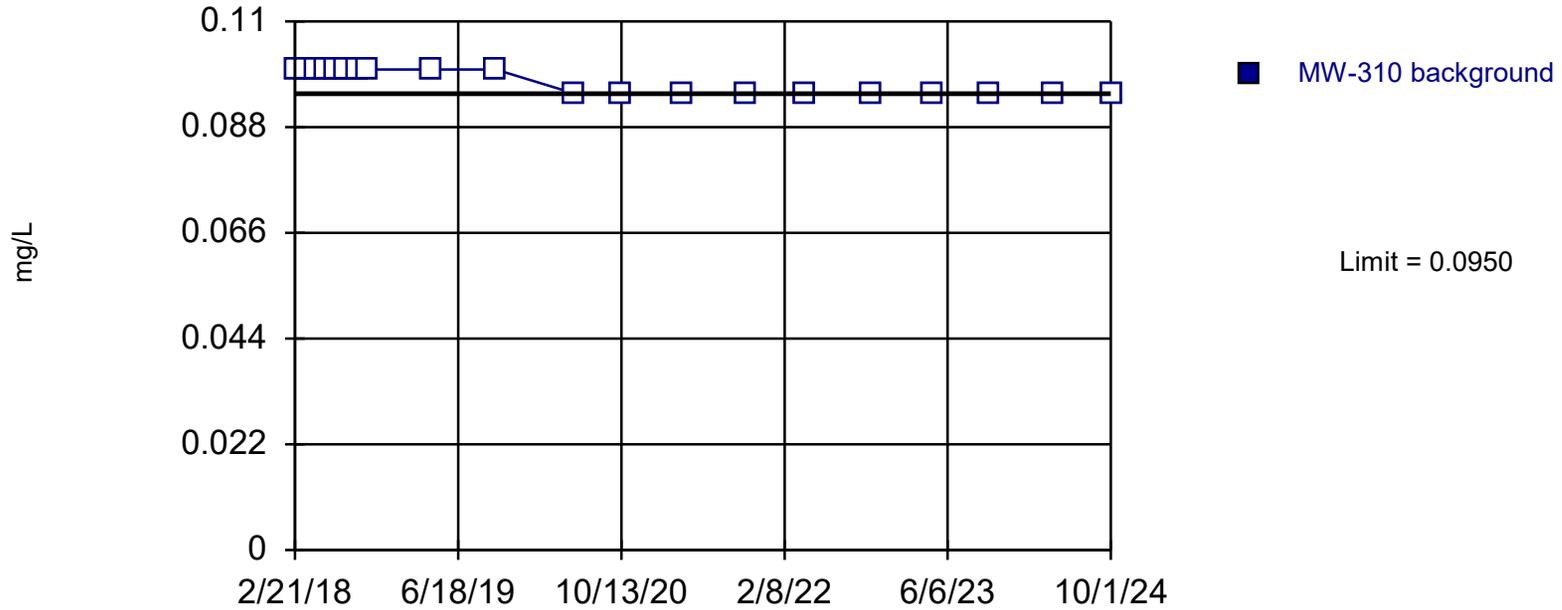
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095 (U)
10/1/2024	<4.8 (UX)

Prediction Limit

Intrawell Non-parametric, MW-310



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 20) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.008564. Individual comparison alpha = 0.004291 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<0.1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095
10/1/2024	<0.095

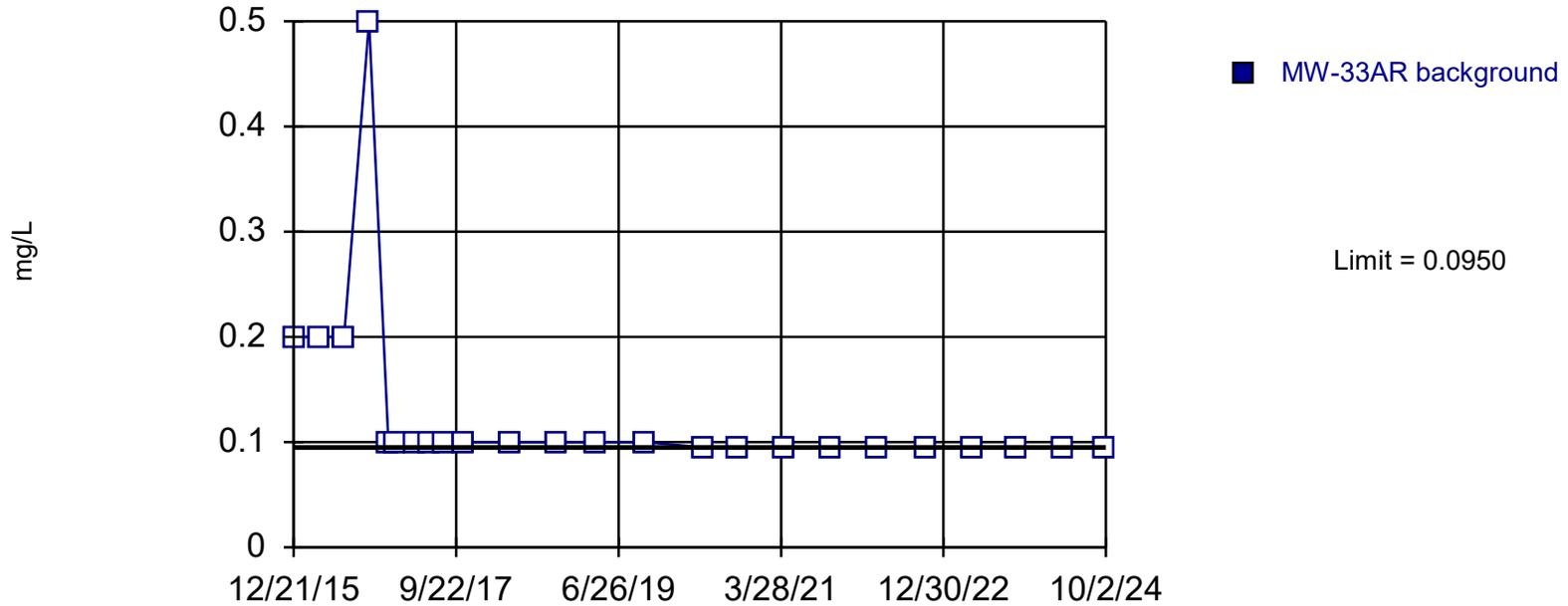
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-311
2/21/2018	<0.1 (U)
3/23/2018	<0.1 (U)
4/23/2018	<0.1 (U)
5/24/2018	<0.1 (U)
6/23/2018	<0.1 (U)
7/23/2018	<0.1 (U)
8/22/2018	<0.1 (U)
9/21/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/14/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095
10/1/2024	0.1 (J)

Prediction Limit

Intrawell Non-parametric, MW-33AR



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 24) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.006238. Individual comparison alpha = 0.003124 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

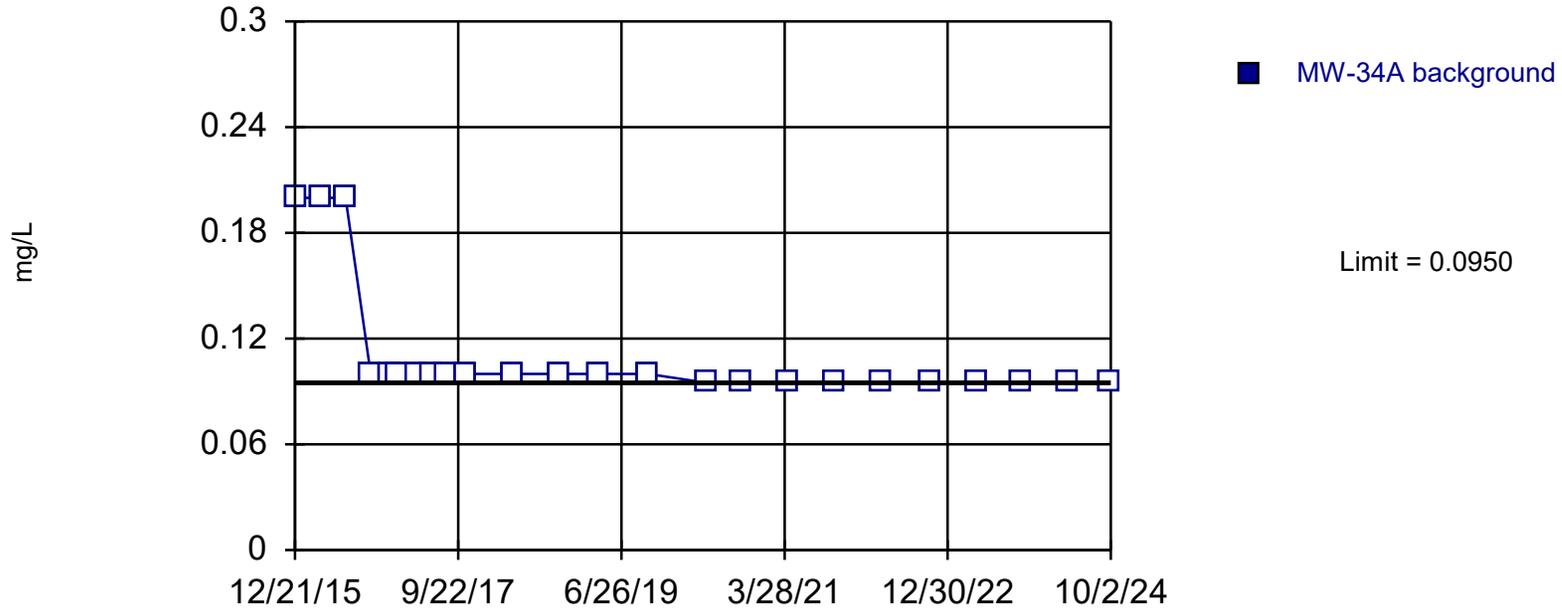
Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	<0.2 (U)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.5 (U)
12/29/2016	<0.1 (U)
1/25/2017	<0.1 (U)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/7/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/28/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/12/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/27/2023	<0.095 (U)
10/11/2023	<0.095 (U)
4/17/2024	<0.095
10/2/2024	<0.095

Prediction Limit

Intrawell Non-parametric, MW-34A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 24) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.006238. Individual comparison alpha = 0.003124 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

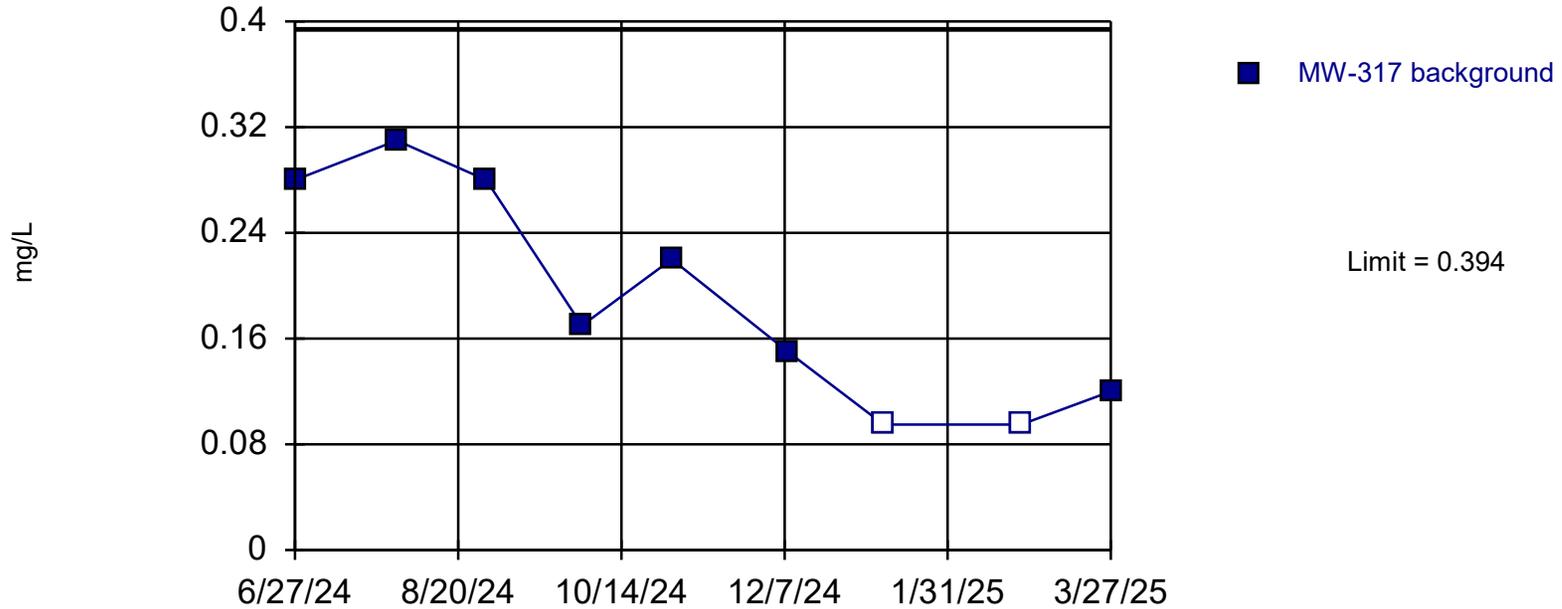
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	<0.2 (UD)
4/5/2016	<0.2 (U)
7/7/2016	<0.2 (U)
10/13/2016	<0.1 (U)
12/29/2016	<0.1 (U)
1/25/2017	<0.1 (U)
4/11/2017	<0.1 (U)
6/6/2017	<0.1 (U)
8/7/2017	<0.1 (U)
10/24/2017	<0.1 (U)
4/24/2018	<0.1 (U)
10/22/2018	<0.1 (U)
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/28/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/12/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/27/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/11/2023	<0.095 (U)
4/17/2024	<0.095
10/2/2024	<0.095

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.1757, Std. Dev.=0.07515, n=9, 22.22% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8958, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

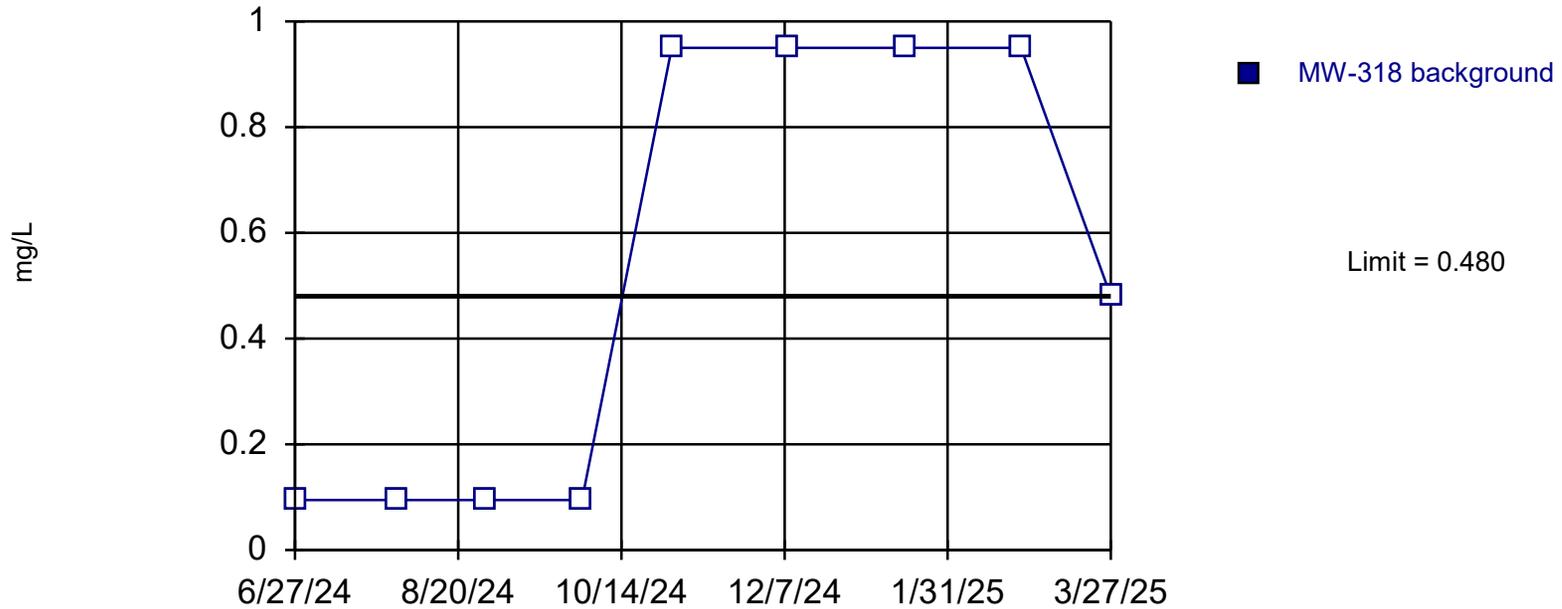
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-317
6/27/2024	0.28 (J)
7/31/2024	0.31 (J)
8/30/2024	0.28 (J)
10/1/2024	0.17 (JD)
10/31/2024	0.22 (J)
12/9/2024	0.15 (J)
1/10/2025	<0.095
2/25/2025	<0.095
3/27/2025	0.12 (J)

Prediction Limit

Intrawell Non-parametric, MW-318



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 9) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.03586. Individual comparison alpha = 0.01809 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

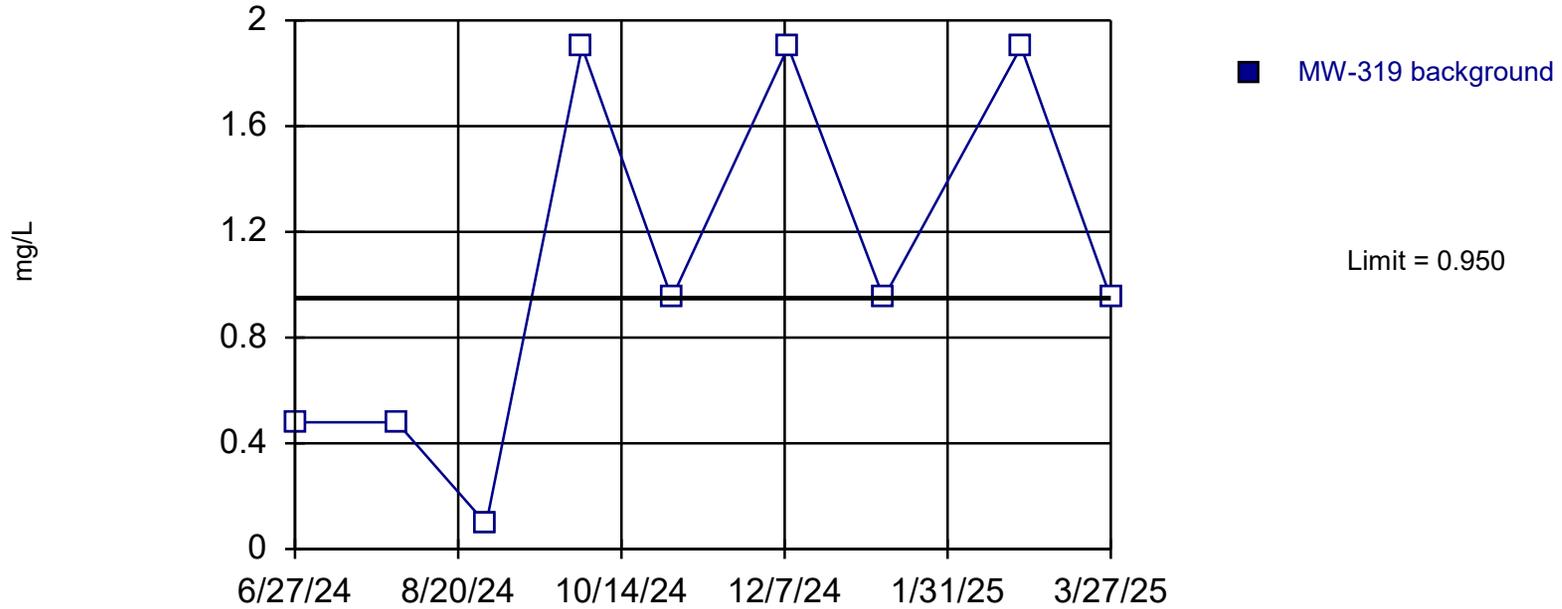
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	<0.095
7/31/2024	<0.095
8/30/2024	<0.095
10/1/2024	<0.095 (D)
10/31/2024	<0.95
12/9/2024	<0.95
1/17/2025	<0.95
2/25/2025	<0.95
3/27/2025	<0.48 (U)

Prediction Limit

Intrawell Non-parametric, MW-319



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 9) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.03586. Individual comparison alpha = 0.01809 (1 of 2). Assumes 1 future value.

Constituent: Fluoride Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

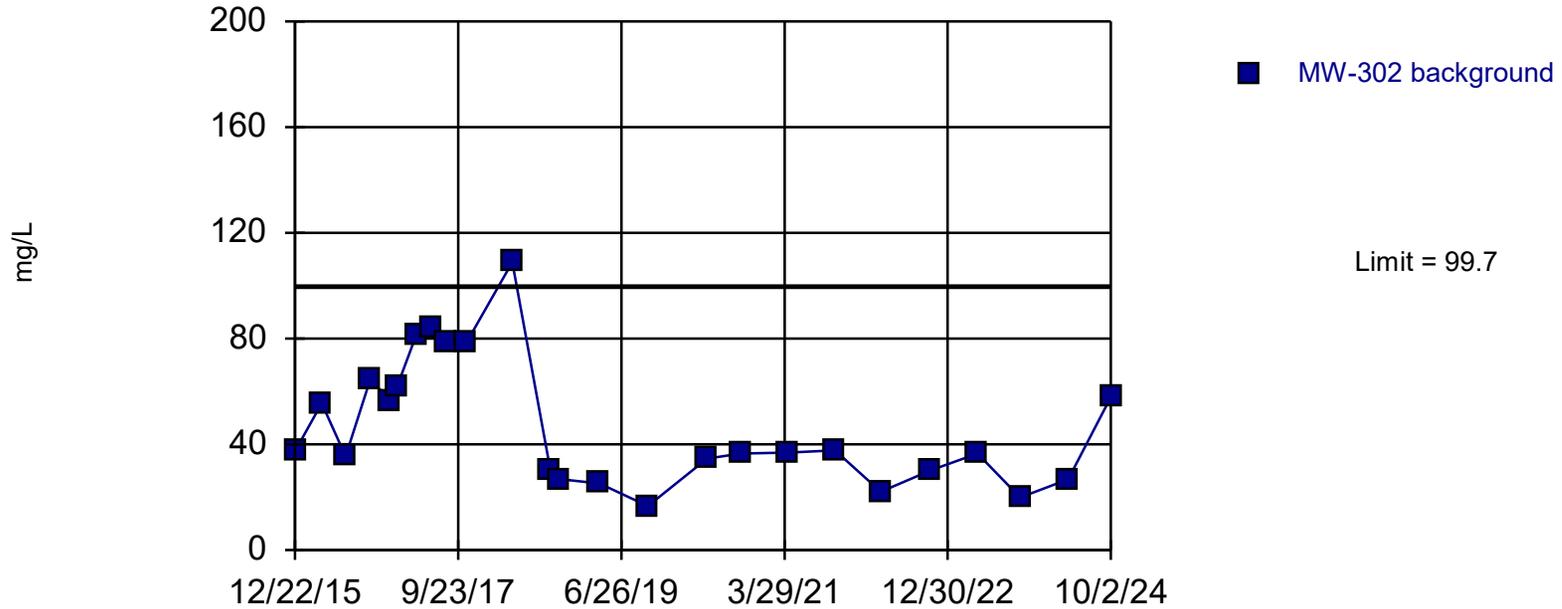
Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	<0.48
7/31/2024	<0.48
8/30/2024	<0.095
10/1/2024	<1.9 (D)
10/31/2024	<0.95
12/9/2024	<1.9
1/10/2025	<0.95
2/25/2025	<1.9
3/27/2025	<0.95 (U)

Prediction Limit

Intrawell Parametric, MW-302



Background Data Summary: Mean=47.26, Std. Dev.=24.29, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8983, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

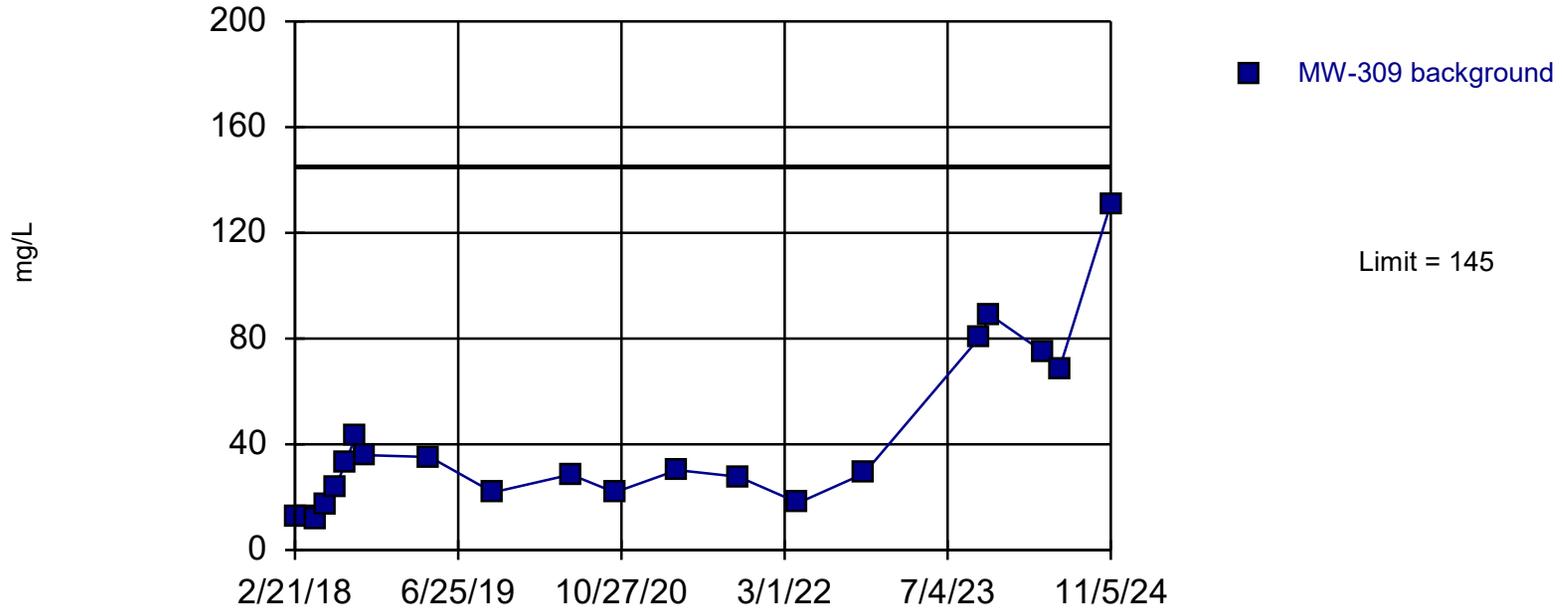
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-302
12/22/2015	37.4
4/5/2016	55.6
7/7/2016	35.4
10/13/2016	64.7
12/29/2016	56.4
1/25/2017	61.6
4/11/2017	81.3
6/6/2017	84.6
8/8/2017	79
10/24/2017	78.4
4/24/2018	109
9/21/2018	30
10/22/2018	26.9
4/2/2019	25.2
10/9/2019	16.7
5/29/2020	34.6
10/8/2020	36.5
4/13/2021	36.9
10/14/2021	37.8
4/12/2022	22.1
10/27/2022	30.3
4/27/2023	36.6
10/11/2023	19.9
4/17/2024	26.8
10/2/2024	57.9

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary (based on natural log transformation): Mean=3.464, Std. Dev.=0.6803, n=21. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9486, critical = 0.873. Kappa = 2.224 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

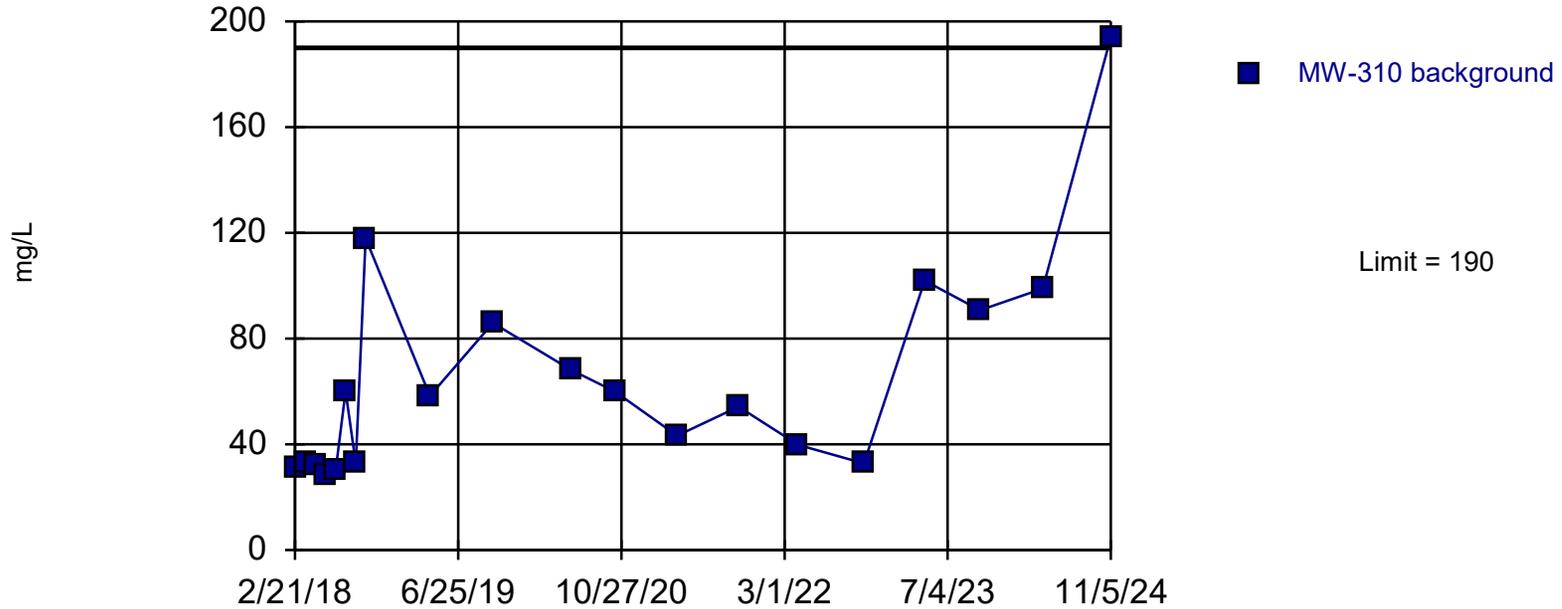
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	12.2
3/23/2018	12.2
4/23/2018	12
5/24/2018	17.5
6/23/2018	24.1
7/23/2018	33.1
8/22/2018	43.3
9/21/2018	35.9
4/2/2019	35.2
10/8/2019	21.9
5/29/2020	28.6
10/8/2020	21.8
4/13/2021	30.3
10/14/2021	27.7
4/12/2022	17.9
10/26/2022	28.9
4/26/2023	143 (X)
6/29/2023	147 (X)
10/9/2023	80.6
11/9/2023	89
4/15/2024	75.1
6/4/2024	68.8
11/5/2024	131 (R)

Prediction Limit

Intrawell Parametric, MW-310



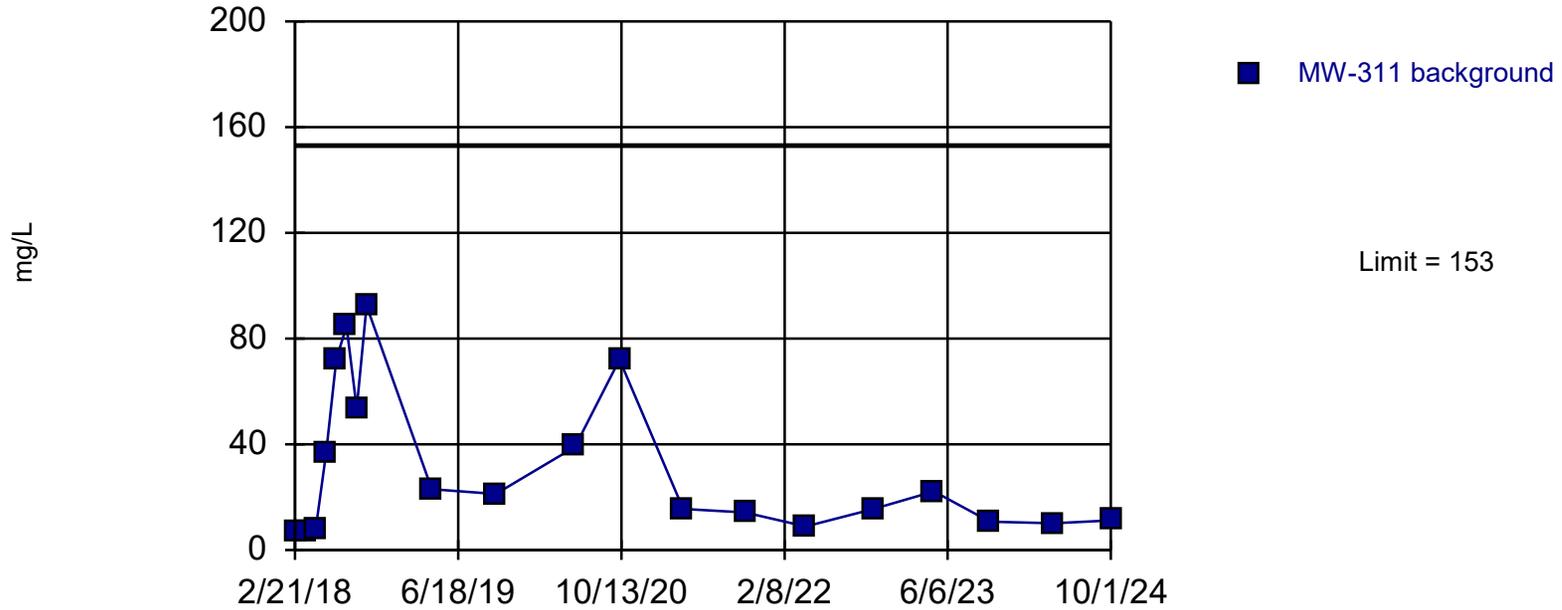
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	31.6
3/23/2018	33.1
4/23/2018	32
5/24/2018	28
6/23/2018	30.4
7/23/2018	60.2
8/22/2018	32.8
9/21/2018	118
4/2/2019	58.4
10/8/2019	85.9
5/29/2020	68.2
10/8/2020	60
4/13/2021	43.3
10/14/2021	54.3
4/12/2022	39.8
10/26/2022	32.8
4/26/2023	102
10/9/2023	90.7
4/15/2024	98.9
11/5/2024	194 (R)

Prediction Limit

Intrawell Parametric, MW-311



Background Data Summary (based on natural log transformation): Mean=3.076, Std. Dev.=0.8732, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9137, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

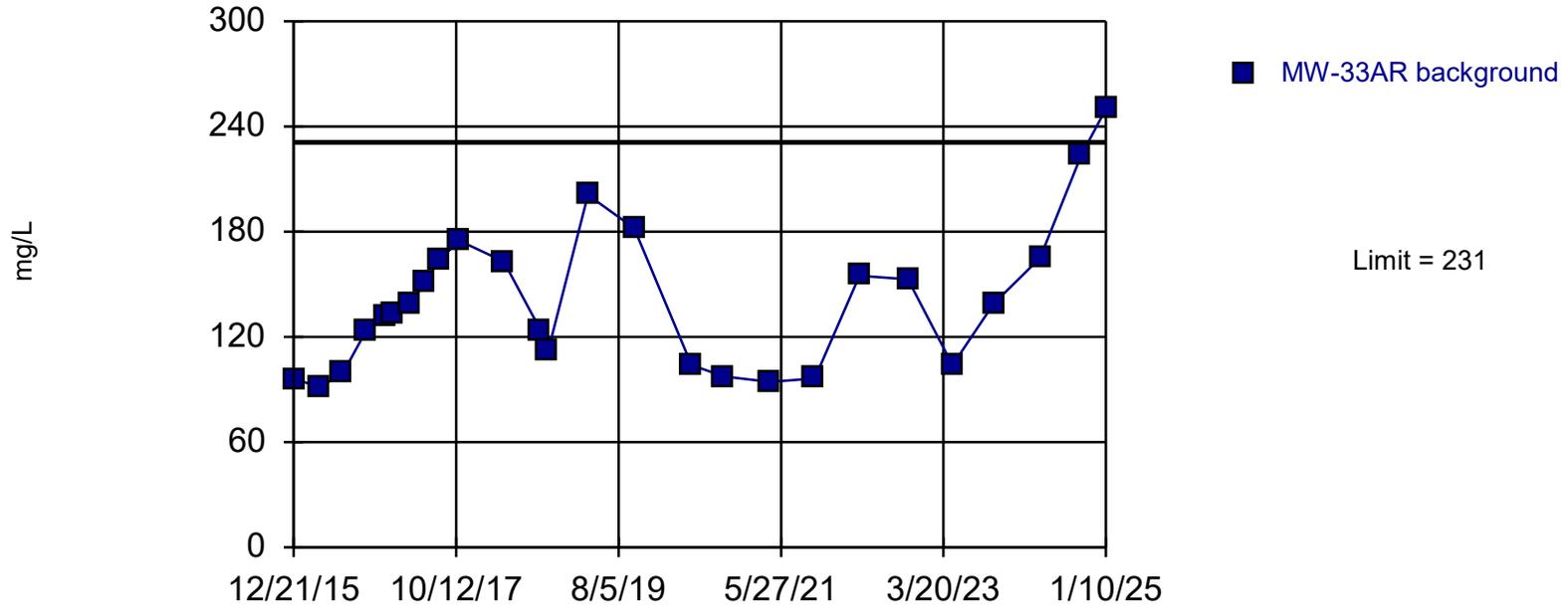
Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-311

2/21/2018	7.1
3/23/2018	7.2
4/23/2018	7.9
5/24/2018	36.9
6/23/2018	72.3
7/23/2018	84.7
8/22/2018	53.6
9/21/2018	92.4
4/2/2019	23.1
10/8/2019	21.2
5/29/2020	39.1
10/8/2020	72.1
4/14/2021	15.6
10/14/2021	14.2
4/12/2022	8.9
10/27/2022	15.5
4/26/2023	22.2
10/9/2023	10.8
4/15/2024	10.1
10/1/2024	11.2

Prediction Limit

Intrawell Parametric, MW-33AR



Background Data Summary: Mean=141.1, Std. Dev.=41.87, n=26. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9163, critical = 0.891. Kappa = 2.15 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

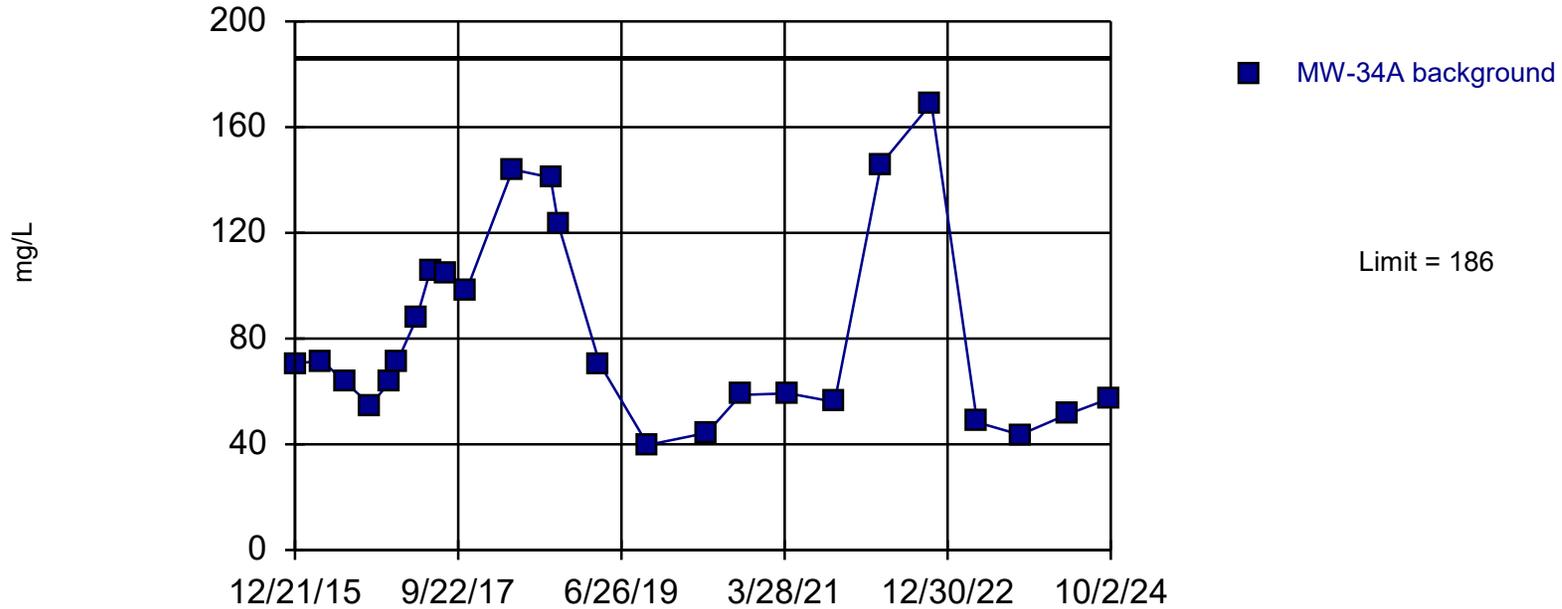
Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	96.2
4/5/2016	91.5
7/7/2016	99.2
10/13/2016	124
12/29/2016	132
1/25/2017	133
4/11/2017	139
6/6/2017	151
8/7/2017	164
10/24/2017	175
4/24/2018	163
9/21/2018	124
10/22/2018	112
4/2/2019	201
10/8/2019	182
5/28/2020	104
10/8/2020	97.4
4/13/2021	94.3
10/12/2021	96.4
4/12/2022	155
10/27/2022	153
4/27/2023	104
10/11/2023	139
4/17/2024	165
10/2/2024	224
1/10/2025	250

Prediction Limit

Intrawell Parametric, MW-34A



Background Data Summary (based on natural log transformation): Mean=4.315, Std. Dev.=0.4203, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9348, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

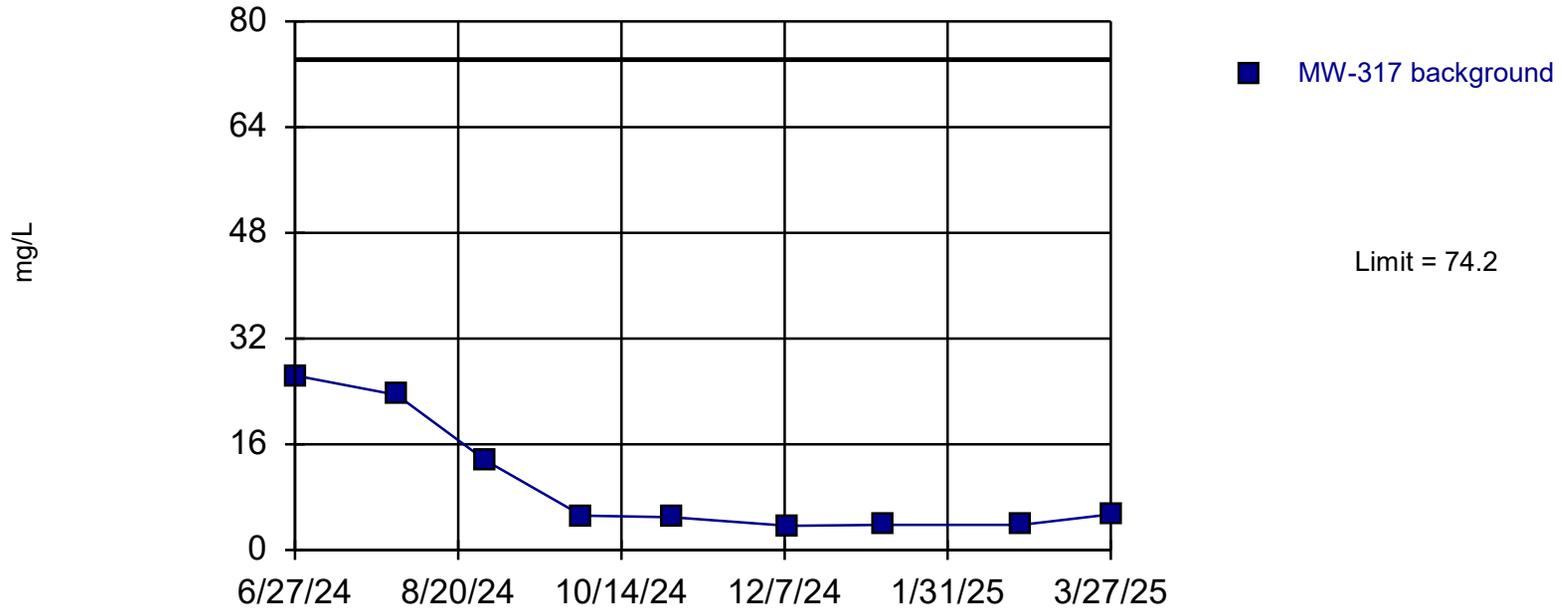
Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	70.6 (D)
4/5/2016	71.6
7/7/2016	63.4
10/13/2016	54.8
12/29/2016	63.9
1/25/2017	71.2
4/11/2017	87.6
6/6/2017	106
8/7/2017	105
10/24/2017	98
4/24/2018	144
9/21/2018	141
10/22/2018	123
4/2/2019	70.4
10/8/2019	39.8
5/28/2020	44.4
10/8/2020	58.7
4/13/2021	59.3
10/12/2021	56.1
4/12/2022	146
10/27/2022	169
4/26/2023	48.4
10/11/2023	43.6
4/17/2024	51.5
10/2/2024	57.5

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary (based on natural log transformation): Mean=1.995, Std. Dev.=0.7953, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7951, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

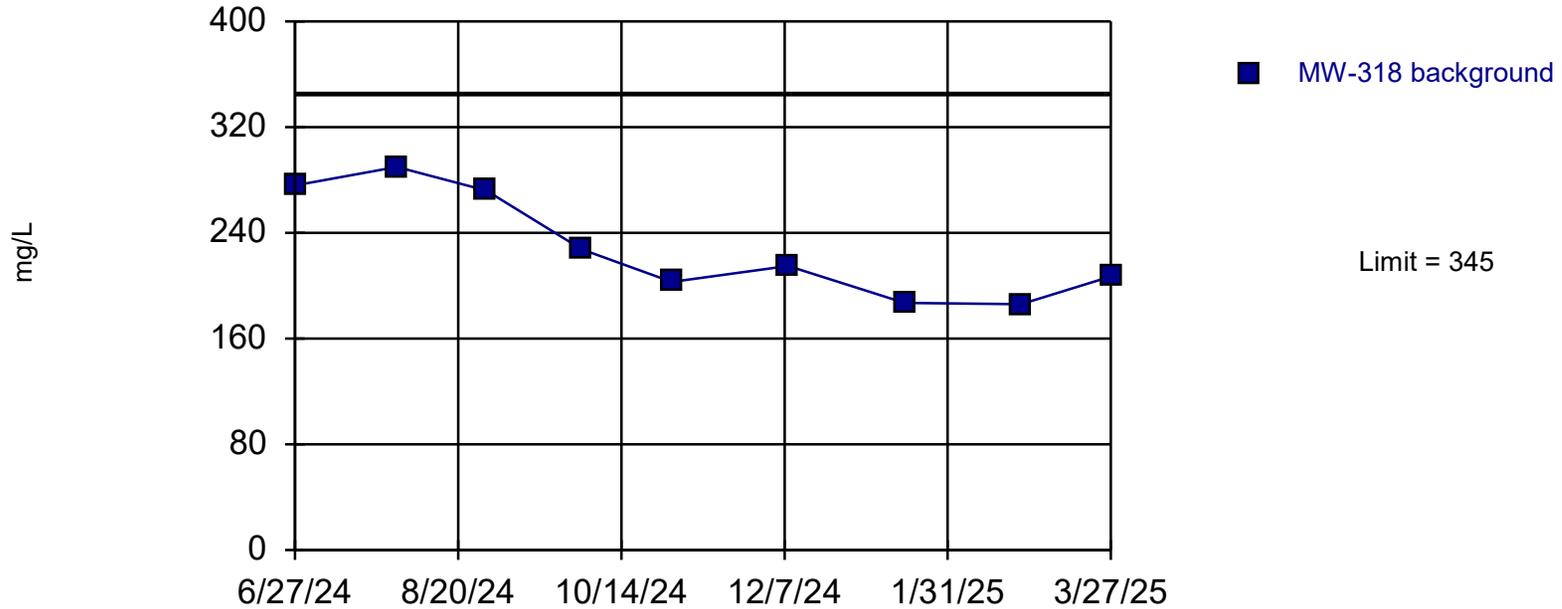
Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	26.4
7/31/2024	23.5
8/30/2024	13.5
10/1/2024	5.2 (D)
10/31/2024	5
12/9/2024	3.7
1/10/2025	3.8
2/25/2025	3.8
3/27/2025	5.4

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=229.3, Std. Dev.=39.92, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.876, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:42 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

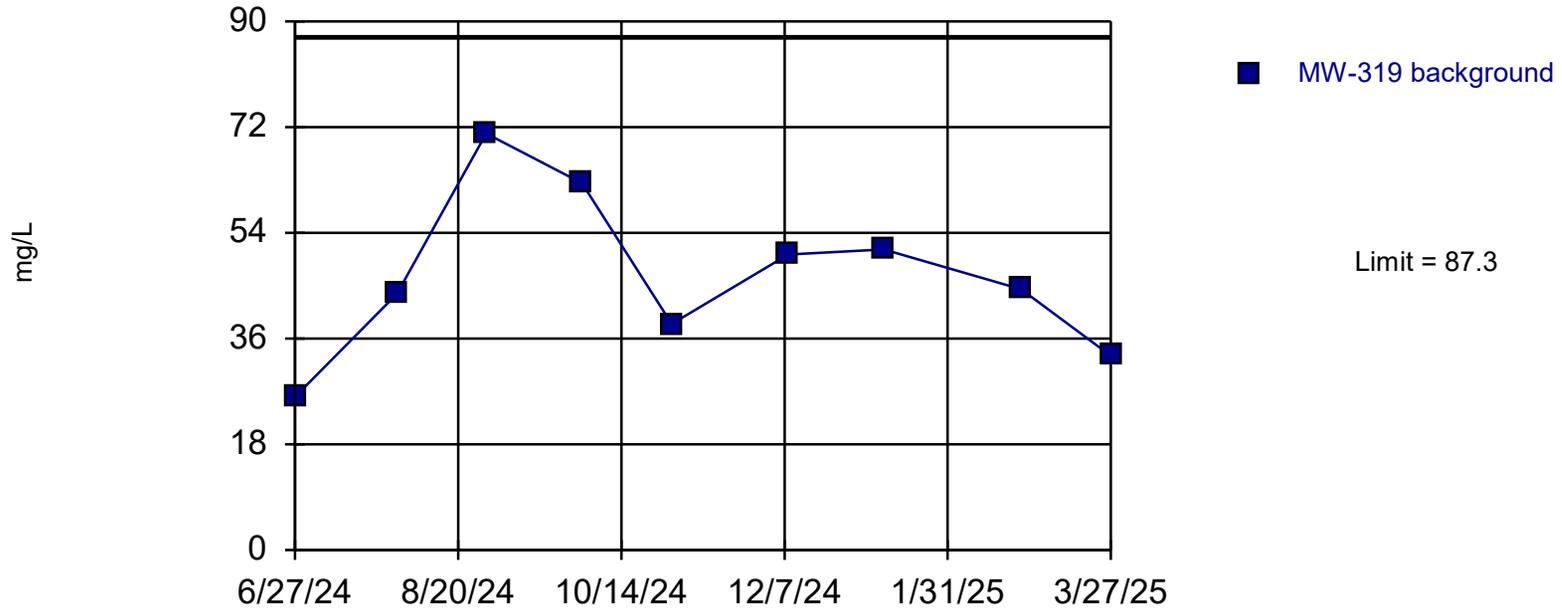
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	276
7/31/2024	290
8/30/2024	272
10/1/2024	227.5 (D)
10/31/2024	203
12/9/2024	215
1/17/2025	187
2/25/2025	186
3/27/2025	207

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary: Mean=46.73, Std. Dev.=13.96, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9782, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Sulfate Analysis Run 8/8/2025 5:43 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

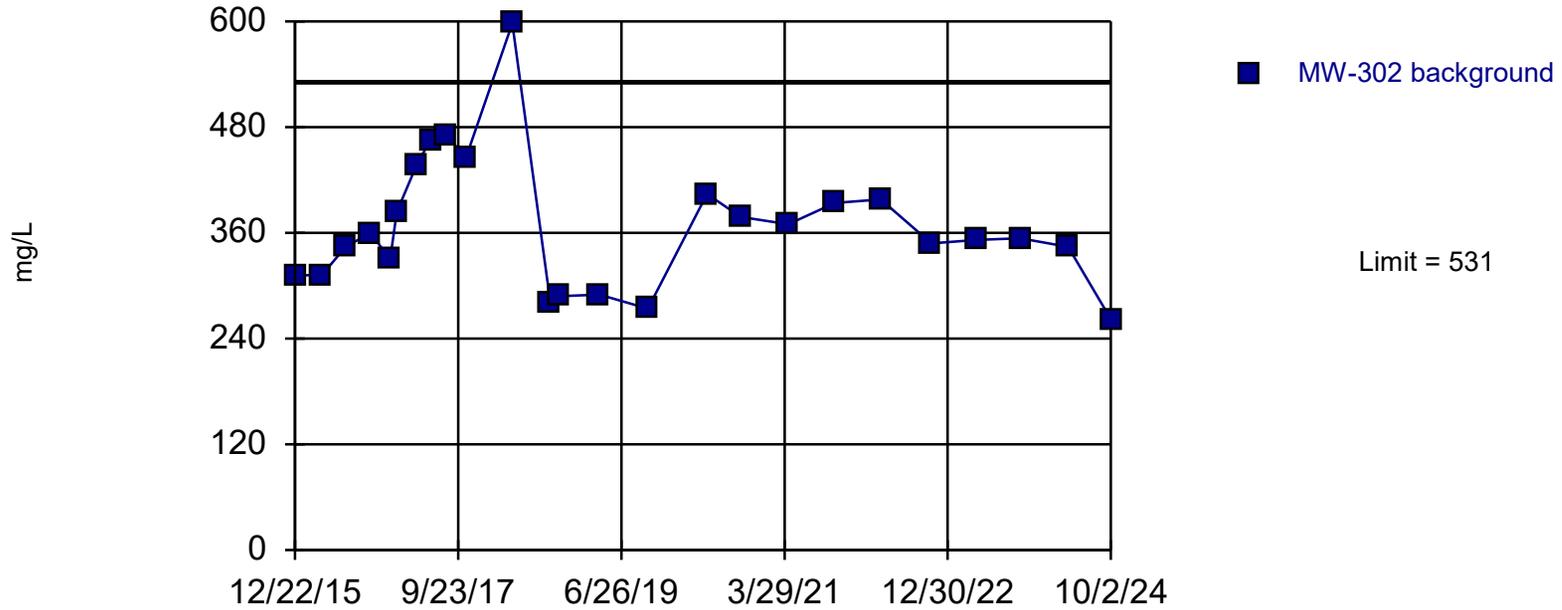
Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	26.1
7/31/2024	43.6
8/30/2024	70.9 (J)
10/1/2024	62.45 (D)
10/31/2024	38.5
12/9/2024	50.3
1/10/2025	51.2
2/25/2025	44.4
3/27/2025	33.1

Prediction Limit

Intrawell Parametric, MW-302



Background Data Summary: Mean=367.8, Std. Dev.=75.53, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9246, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

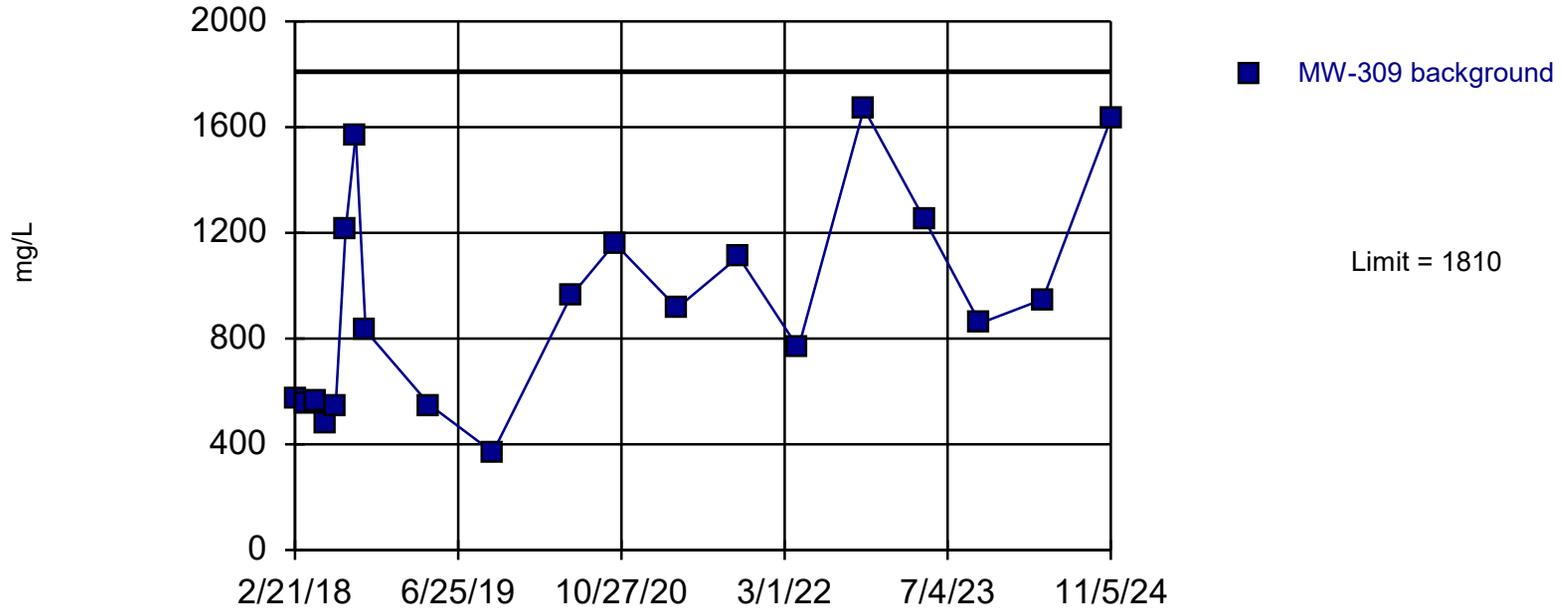
Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-302

12/22/2015	312
4/5/2016	312
7/7/2016	344
10/13/2016	360
12/29/2016	330
1/25/2017	384
4/11/2017	436
6/6/2017	466
8/8/2017	470
10/24/2017	446
4/24/2018	598
9/21/2018	280
10/22/2018	288
4/2/2019	290
10/9/2019	274
5/29/2020	404
10/8/2020	378
4/13/2021	370
10/14/2021	394
4/12/2022	398
10/27/2022	348
4/27/2023	352
10/11/2023	354
4/17/2024	344
10/2/2024	262

Prediction Limit

Intrawell Parametric, MW-309



Background Data Summary: Mean=925.5, Std. Dev.=395.4, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9259, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

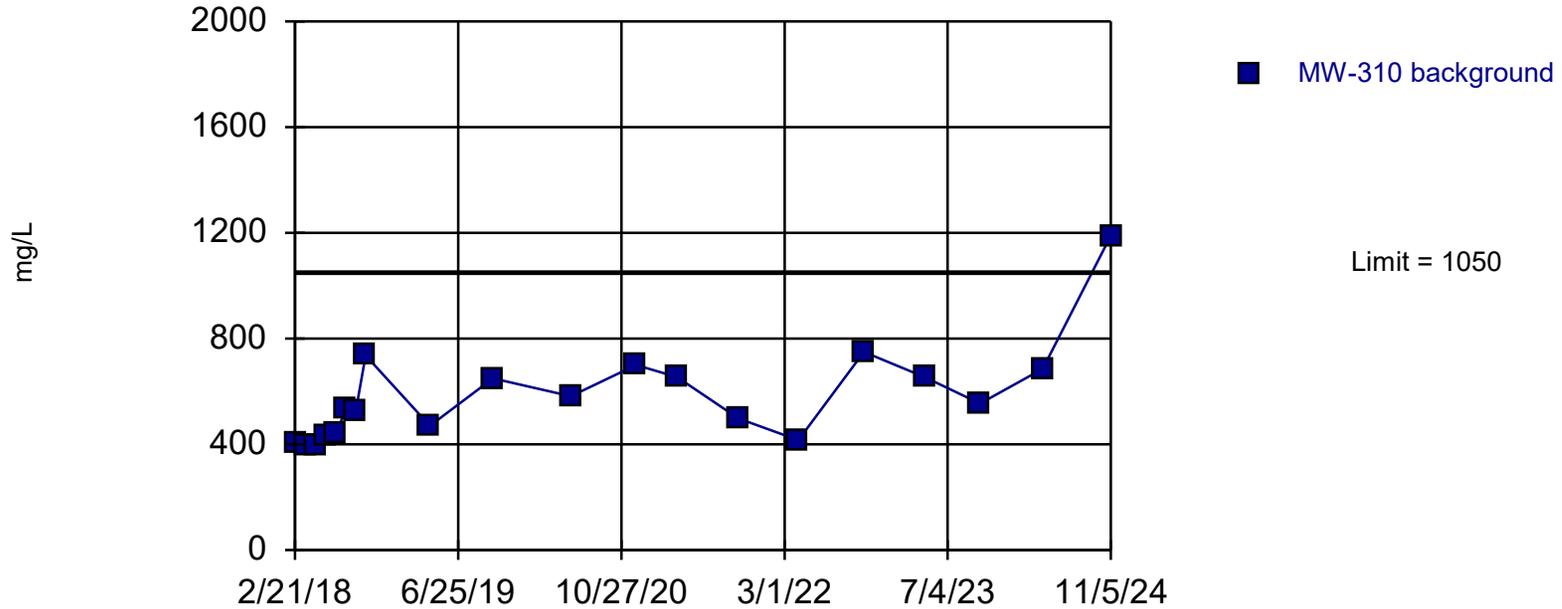
Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
2/21/2018	576
3/23/2018	552
4/23/2018	562
5/24/2018	478
6/23/2018	548
7/23/2018	1210
8/22/2018	1570
9/21/2018	830
4/2/2019	548
10/8/2019	370
5/29/2020	960
10/8/2020	1160
4/13/2021	916
10/14/2021	1110
4/12/2022	764
10/26/2022	1670
4/26/2023	1250
10/9/2023	858
4/15/2024	948
11/5/2024	1630 (R)

Prediction Limit

Intrawell Parametric, MW-310



Background Data Summary (based on natural log transformation): Mean=6.329, Std. Dev.=0.2804, n=20. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9205, critical = 0.868. Kappa = 2.241 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

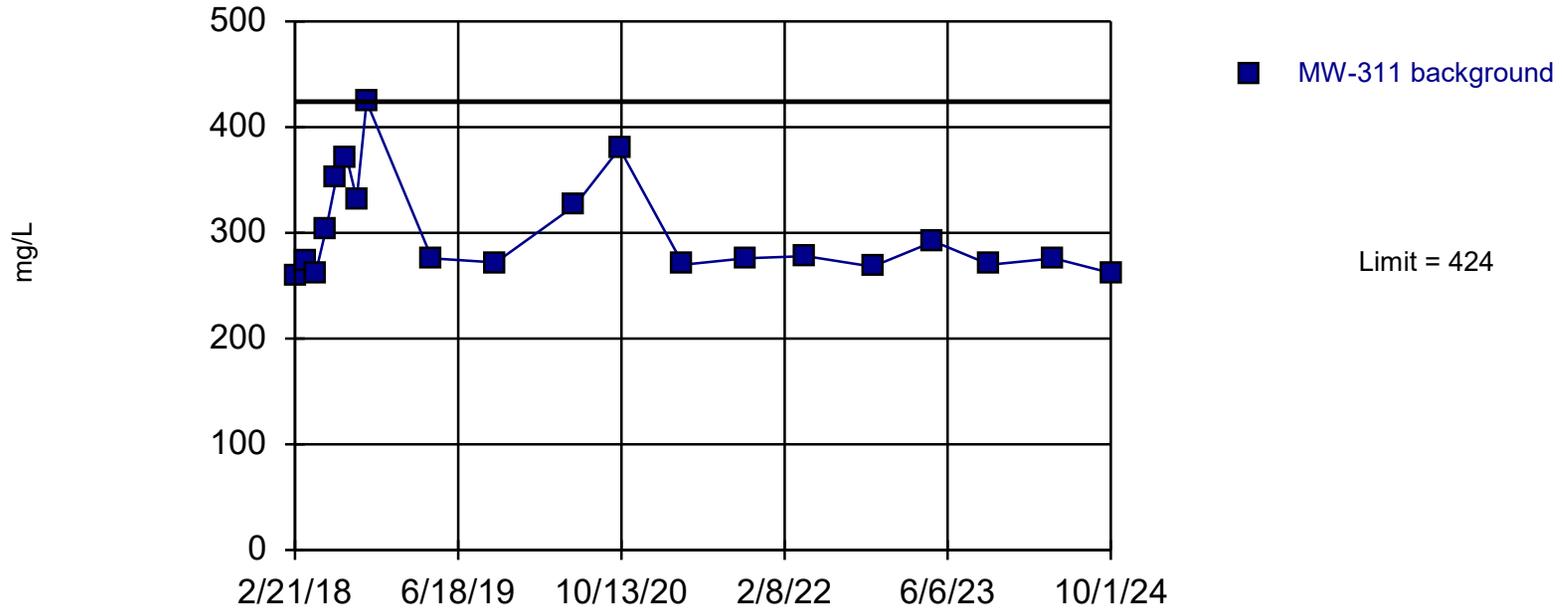
Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
2/21/2018	406
3/23/2018	398
4/23/2018	396
5/24/2018	436
6/23/2018	438
7/23/2018	532
8/22/2018	526
9/21/2018	736
4/2/2019	470
10/8/2019	650
5/29/2020	582
12/11/2020	700 (R)
4/13/2021	654
10/14/2021	498
4/12/2022	416
10/26/2022	750
4/26/2023	654
10/9/2023	554
4/15/2024	686
11/5/2024	1190 (R)

Prediction Limit

Intrawell Non-parametric, MW-311



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 20 background values. Well-constituent pair annual alpha = 0.008564. Individual comparison alpha = 0.004291 (1 of 2). Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

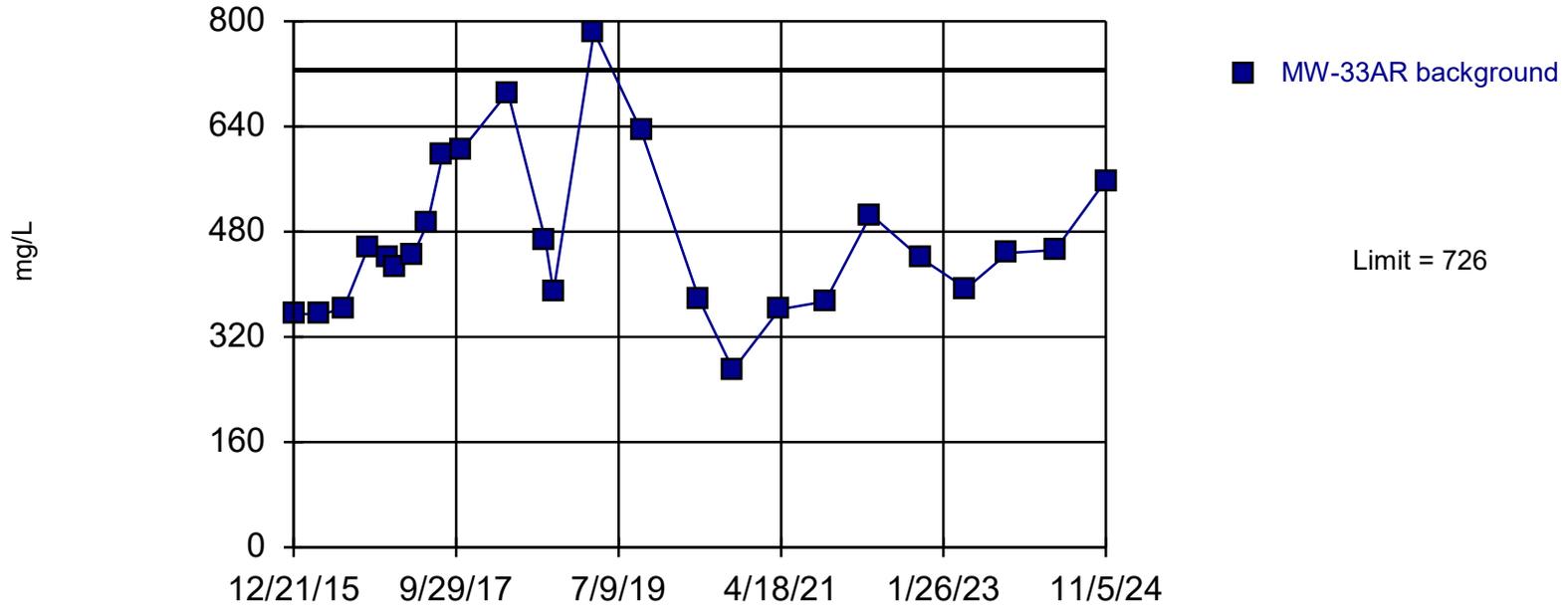
Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-311

2/21/2018	260
3/23/2018	274
4/23/2018	262
5/24/2018	304
6/23/2018	352
7/23/2018	372
8/22/2018	332
9/21/2018	424
4/2/2019	276
10/8/2019	272
5/29/2020	326
10/8/2020	380
4/14/2021	270
10/14/2021	276
4/12/2022	278
10/27/2022	268
4/26/2023	292
10/9/2023	270
4/15/2024	276
10/1/2024	262

Prediction Limit

Intrawell Parametric, MW-33AR



Background Data Summary: Mean=467.3, Std. Dev.=119.8, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9191, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

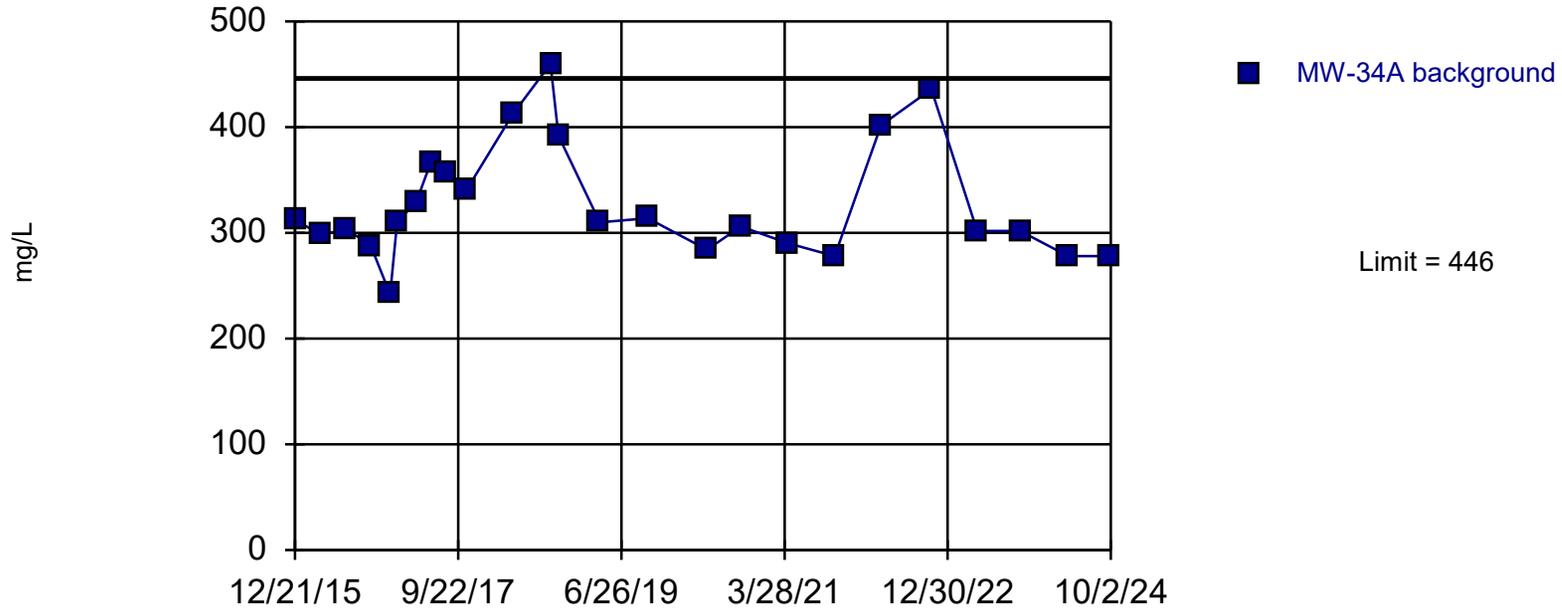
Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-33AR

12/21/2015	356
4/5/2016	354
7/7/2016	364
10/13/2016	456
12/29/2016	440
1/25/2017	426
4/11/2017	446
6/6/2017	492
8/7/2017	598
10/24/2017	606
4/24/2018	692
9/21/2018	466
10/22/2018	388
4/2/2019	784
10/8/2019	634
5/28/2020	376
10/8/2020	270
4/13/2021	362
10/12/2021	374
4/12/2022	506
10/27/2022	440
4/27/2023	394
10/11/2023	448
4/17/2024	452
11/5/2024	558 (R)

Prediction Limit

Intrawell Parametric, MW-34A



Background Data Summary: Mean=327.7, Std. Dev.=54.96, n=25. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8931, critical = 0.888. Kappa = 2.16 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

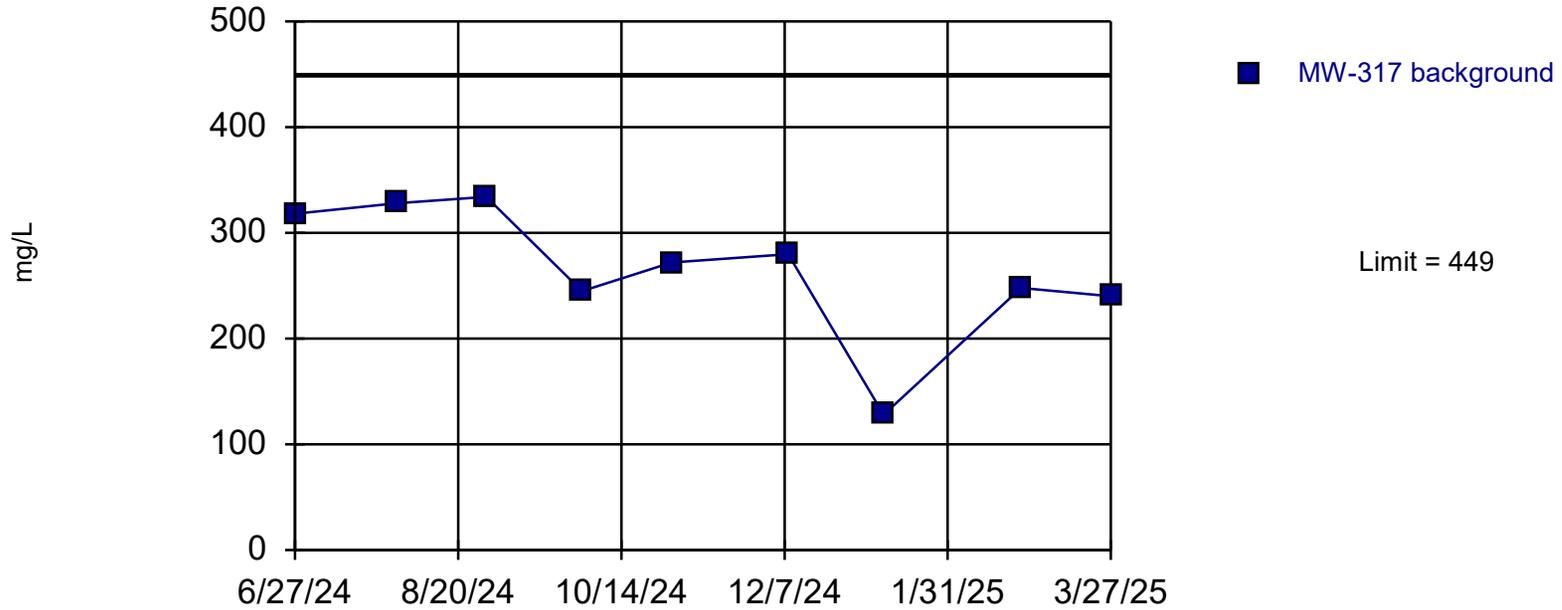
Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-34A
12/21/2015	312 (D)
4/5/2016	298
7/7/2016	304
10/13/2016	288
12/29/2016	242
1/25/2017	310
4/11/2017	330
6/6/2017	366
8/7/2017	358
10/24/2017	340
4/24/2018	412
9/21/2018	460
10/22/2018	392
4/2/2019	310
10/8/2019	314
5/28/2020	284
10/8/2020	306
4/13/2021	290
10/12/2021	278
4/12/2022	402
10/27/2022	436
4/26/2023	302
10/11/2023	302
4/17/2024	278
10/2/2024	278

Prediction Limit

Intrawell Parametric, MW-317



Background Data Summary: Mean=265.9, Std. Dev.=63.14, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8777, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

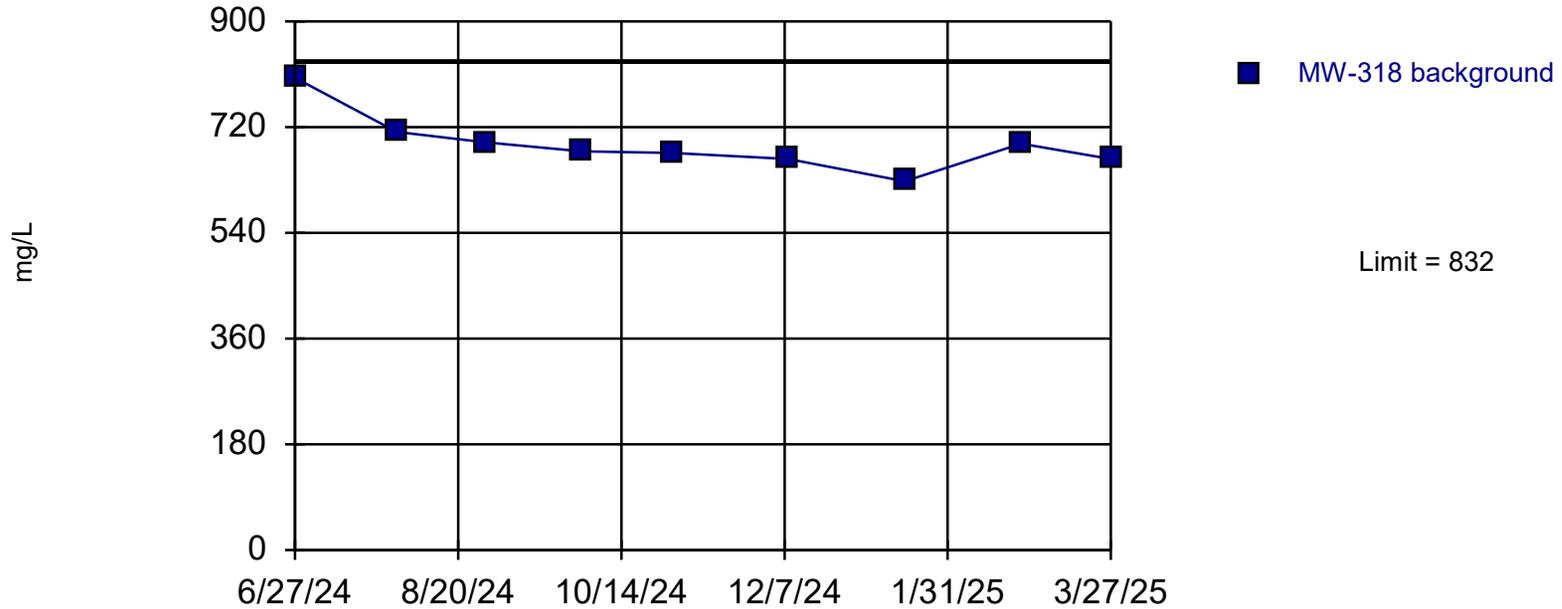
Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:52 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

MW-317

6/27/2024	318
7/31/2024	328
8/30/2024	334
10/1/2024	245 (D)
10/31/2024	272
12/9/2024	280
1/10/2025	128
2/25/2025	248
3/27/2025	240

Prediction Limit

Intrawell Parametric, MW-318



Background Data Summary: Mean=690.8, Std. Dev.=48.49, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8388, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

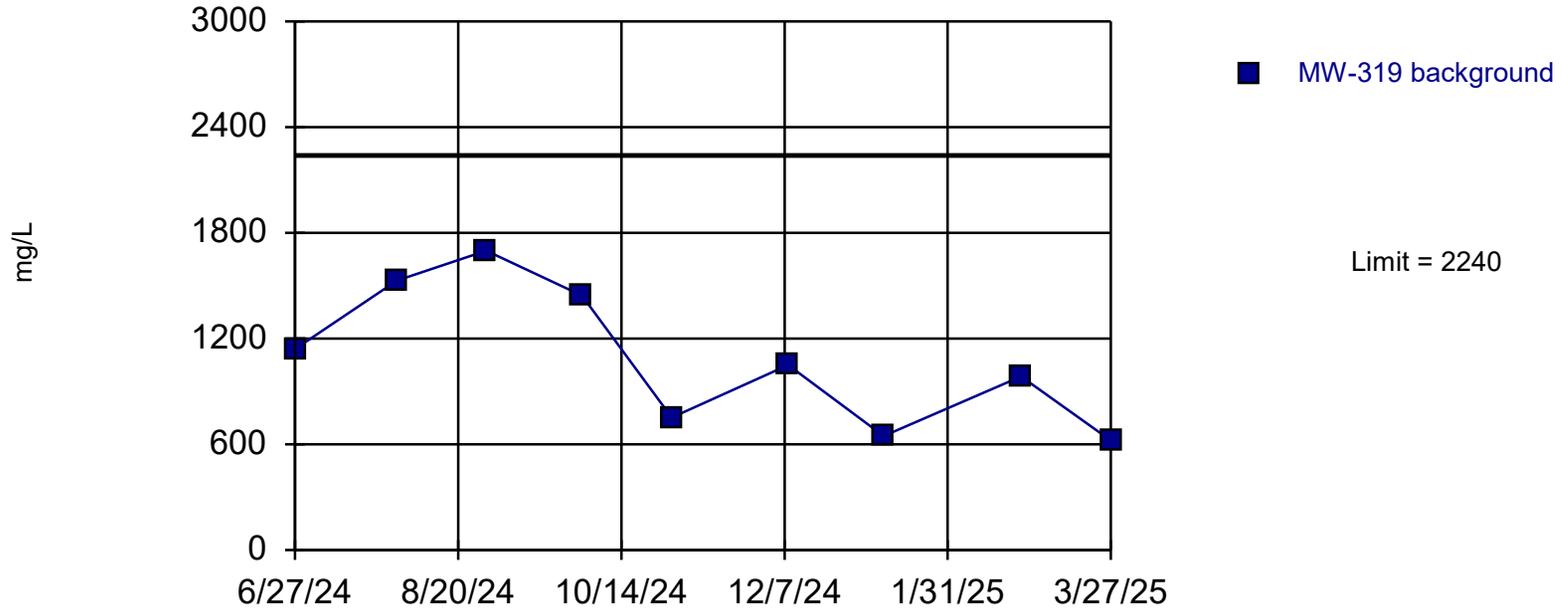
Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:53 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-318
6/27/2024	804
7/31/2024	712
8/30/2024	694
10/1/2024	679 (D)
10/31/2024	676
12/9/2024	666
1/17/2025	628
2/25/2025	692
3/27/2025	666

Prediction Limit

Intrawell Parametric, MW-319



Background Data Summary: Mean=1097, Std. Dev.=392.8, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.931, critical = 0.764. Kappa = 2.907 (c=7, w=9, 1 of 2, event alpha = 0.05132). Report alpha = 0.0008358. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 8/8/2025 5:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 8/8/2025 5:53 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-319
6/27/2024	1140
7/31/2024	1530
8/30/2024	1700
10/1/2024	1445 (D)
10/31/2024	753
12/9/2024	1050
1/10/2025	647
2/25/2025	986
3/27/2025	623



Appendix F
Alternative Source Demonstrations

F1 October/November 2024 Mod 1-3 Detection Monitoring
Alternative Source Demonstration

Alternative Source Demonstration October 2024 Detection Monitoring

Dry Ash Disposal Facility, Modules 1-3
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:



SCS ENGINEERS

25224067.00 | April 29, 2025

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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PE CERTIFICATION

	<p>I, Sherren Clark, hereby certify that the information in this alternative source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	<p style="text-align: center;">  4-28-2025 </p>
	<p>(signature) (date)</p>
	<p>Sherren Clark, PE</p>
	<p>(printed or typed name)</p>
<p>License number E-29863</p>	
<p>My license renewal date is: July 31, 2026.</p>	
<p>Pages or sheets covered by this seal:</p>	
<p>Alternative Source Demonstration, October 2024 Detection</p>	
<p>Monitoring, Dry Ash Disposal Facility, Modules 1-3,</p>	
<p>Columbia Energy Center, Pardeeville, Wisconsin</p>	

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1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report evaluates the SSIs observed in the statistical evaluation of the October 2024 detection monitoring event at the Columbia Energy Center (COL) Dry Ash Disposal Facility (ADF), Modules 1-3 CCR Unit. The first ASD was prepared for this facility for evaluating the SSIs observed in the statistical evaluation of the October 2017 detection monitoring event (SCS Engineers [SCS], 2018). The October 2017 ASD and subsequent semiannual updates have provided several lines of evidence demonstrating that SSIs reported for boron, chloride, field pH, sulfate, and total dissolved solids (TDS) concentrations in the downgradient monitoring wells were likely due to man-made sources other than the CCR Units and/or naturally occurring constituents in the alluvial aquifer.

As discussed in more detail in **Section 4.2** of this ASD, the findings for the October 2024 monitoring event were consistent with those for the previous events.

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the ADF and the Ash Ponds Facility. This ASD will evaluate the conditions at the site for Modules 1-3 of the ADF only. The ADF is operated under the Wisconsin Department of Natural Resources (DNR) License No. 3025.

The groundwater monitoring system monitors the following CCR Unit:

- COL Dry ADF – Modules 1-3 (existing CCR Landfill)

Modules 1-3 were originally described as separate existing CCR landfills, although they are contiguous and are managed as a single landfill by the facility and by the DNR. Wisconsin Power and Light Company (WPL) subsequently clarified that Modules 1-3 are one existing CCR landfill under the federal CCR Rule, and this report reflects WPL's clarification.

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided as **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL. As of October 2024, the other CCR Units included Modules 4-6 of the COL ADF, Modules 10-13 of the COL ADF, the former Primary Ash Pond, and the former Secondary Ash Pond.

On January 31, 2025, the monitoring network for the COL ADF was recertified as a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13. The October and November 2024 samples were collected and data evaluation was in progress prior to the recertification; therefore, results for these events were reported separately and separate ASDs were prepared. Future reporting will be combined for the multiunit monitoring system.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

SSIs were identified by comparing the monitoring results to Upper Prediction Limits (UPLs) established in accordance with 40 CFR 257.93(f)(3) and the statistical method previously selected for the CCR Unit. The UPLs are based on an interwell approach using two background monitoring wells: MW-84A and MW-301. The interwell UPLs were calculated based on a 1-of-2 resampling approach. Under the 1-of-2 approach, an SSI is identified only if both the original result and the resample result exceed the UPL. If resampling is not performed, then an SSI is identified if the single result exceeds the UPL. The UPLs and results for the October 2024 monitoring event are summarized in **Table 1**.

The October 2024 SSIs include the following parameters and wells:

- Boron: MW-33AR, MW-34A, MW-302
- Chloride: MW-33AR
- Sulfate: MW-33AR, MW-34A, MW-302
- TDS: MW-33AR

Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**).
- ASD conclusions (**Section 5.0**).
- Monitoring recommendations (**Section 6.0**).

The CCR Rule constituent results from background and compliance sampling for parameters with SSIs are provided in **Table 2**. The laboratory reports for the October 2024 detection monitoring event will be included in the 2025 Annual Groundwater Monitoring and Corrective Action Report to be completed in January 2026. Complete laboratory reports for the background monitoring events and the previous detection monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

A more detailed discussion of the background information for the site is provided in the ASD for the October 2017 event (SCS, 2018).

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered the uppermost aquifer, as defined under 40 CFR 257.53. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the October 2017 ASD (SCS, 2018).

2.1.2 Site Information

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR wells MW-301 and MW-302, the unconsolidated materials were identified as consisting primarily of silty sand and sand. Boring logs for previously installed monitoring wells MW-33AR, MW-34A, MW-84A, and MW-1AR (abandoned) show silty sand and sand as the primary unconsolidated materials at these locations. All CCR monitoring wells are screened within the unconsolidated sand unit.

Shallow groundwater at the site generally flows to the north and west across the existing landfill Modules 1-3 area, then generally flows west toward the Wisconsin River. The groundwater flow map for October 2024 is shown on **Figure 3**. Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash pond area changed in 2022 and 2023 as the ponds were closed and CCR was removed. The October 2024 flow map continues to show overall flow to the north and northwest, but also shows a local water table high between wells MW-302 and MW-92A. The contours in this area of the site suggest radial flow to the west, northwest, and northeast. The current compliance wells are still downgradient from Modules 1-3 along the western and northwestern flow paths. The northeastern flow path does not lead to the Module 1-3 compliance wells but does lead to compliance wells that are monitored for Modules 4-6 and 10-13.

To address this change in flow directions, WPL combined the monitoring systems to establish a multi-unit monitoring system beginning in 2025.

The groundwater elevation data for the CCR monitoring wells and state monitoring program wells are provided in **Table 3**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells (**Table 1** and **Figure 2**). The background wells include MW-301 and MW-84A. The downgradient wells include MW-302, MW-33AR, and MW-34A. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 29 to 51 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS

Field notes and sampling results were reviewed to determine if a sampling error may have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross-contamination during sampling, or other field error. Field blank sample results were also reviewed for evidence of potential contamination from sampling equipment or containers.

SCS did not identify any sampling errors that may have caused or contributed to observed SSIs.

The October 2024 monitoring event was completed in accordance with the Sampling and Analysis Plan for the monitoring system.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the October 2024 detection monitoring event were reviewed to determine if a laboratory analysis error or issue may have caused or contributed to an observed SSIs for boron,

chloride, sulfate, or TDS. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Based on the review of the laboratory reports, SCS did not identify any laboratory analysis issues that could have caused or contributed to the observed SSIs for boron, chloride, sulfate, or TDS.

Time series plots of the SSI constituent analytical data were also reviewed for anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plots are provided in **Appendix A**. The concentrations observed are similar to historical concentrations for boron, chloride, sulfate, and TDS.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the review of the statistical evaluation, SCS did not identify any errors or issues in the statistical evaluation that caused or contributed to the determination of interwell SSIs for the October 2024 detection monitoring event.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the October 2024 monitoring event based on the methodology and analysis review. No other errors or issues causing or contributing to the reported SSIs were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the boron, chloride, sulfate, and TDS SSIs at the downgradient monitoring wells; identifies the most likely alternative source(s); and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an interwell approach, comparing the October 2024 detection monitoring results to the UPLs calculated based on the sampling of the background wells (MW-84A and MW-301). If concentrations of a constituent that is naturally present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation. Previous monitoring results for boron, chloride, sulfate, and TDS at COL Modules 1-3 landfill are shown in **Table 2**.

Although natural variation is present in the shallow aquifer, it does not appear likely that natural variation is the primary source causing the boron, chloride, sulfate, and TDS SSIs.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the boron, chloride, sulfate, and TDS SSIs could include the closed ash pond landfill, the former ash pond operations, the former ash pond effluent ditch, the coal storage area, road salt use, railroad operations, or other plant operations.

Based on the groundwater flow directions and on previous investigations at the site, the former ash pond effluent ditch, a non-CCR alternative source, appears to be the most likely cause of the boron and/or sulfate SSIs for wells MW-33AR, MW-34A, and MW-302. The ash pond effluent ditch may also have contributed to the chloride SSI at MW-33AR.

The higher chloride and TDS concentrations at MW-33AR are likely related to a non-CCR alternative source.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for boron, chloride, sulfate, and TDS in compliance wells MW-33AR, MW-34A, and MW-302, relative to the background wells, are due to an alternative source include:

1. Elevated levels of boron, sulfate, and TDS were present in the area west of the landfill, where the three compliance wells are located, before the landfill was constructed.
2. Monitoring performed under the state program documents that the concentrations of boron, chloride, and sulfate were elevated before CCR disposal in the landfill began, and have decreased since the landfill has been in operation.
3. Groundwater flow directions have changed through time due to changes in water management at the plant, so that groundwater impacted by the effluent ditch formerly flowed to the east, under the landfill, and is now flowing west and/or north.
4. The variations in chloride and TDS results for well MW-33AR since detection monitoring was initiated have not correlated with boron concentrations, as would be expected for a CCR leachate source; therefore, an alternative source is more likely.

4.2.1 Pre-Landfill Water Quality

Elevated levels of boron sulfate, and TDS were present in the area west of the landfill, where the three compliance wells are located, before the landfill was constructed. Groundwater monitoring performed in 1977 and 1978 as part of the Feasibility Study for the landfill permitting showed that wells located along the west side of the future landfill footprint, where the current compliance wells are located, had elevated results for sulfate, chloride, and specific conductance. TDS was not monitored, but is generally correlated with specific conductance.

The 1978 Feasibility Study (Warzyn, 1978) for the Dry ADF discusses the influence of the ash pond effluent ditch on groundwater west of the proposed site. The former ash pond effluent ditch carried effluent from the ash ponds located north of the plant, and flowed south between the west side of the current landfill and the substation. Groundwater monitoring in December 1977 indicated that sulfate was present at 1,200 milligrams per liter (mg/L) in MW-33A, which was located near the point where the ash pond effluent discharged from a culvert into the effluent ditch. The sulfate

concentration at this well decreased to 830 mg/L in the December 1978 sampling (Warzyn, 1979). Current concentrations of sulfate in this area, while above background, are much lower. The October 2024 sulfate result for MW-33AR (installed to replace MW-33A) was 224 mg/L, for MW-34A was 57.5 mg/L, and for MW-302 was 57.9 mg/L (**Table 1**).

As noted above, TDS was not monitored for the feasibility study, but is generally correlated with specific conductance, which was monitored. Specific conductance was reported at 2,500 micromhos per centimeter (umhos/cm) at MW-33A in December 1977 and 1,950 umhos/cm in December 1978. The December 1977 result for MW-33A was the second highest result of the 59 wells sampled. The 1978 Feasibility Study notes that “The highest conductivity readings were observed in monitoring wells located along the coal storage area and the drainage ditch carrying the ash pond discharge, where values up to 2,600 umhos/cm were measured.”

Boron was not included in the 1977 and 1978 Feasibility Study monitoring at the wells located west of the landfill; however, as discussed in **Section 4.2.2**, the initial landfill monitoring data collected in 1984, prior to CCR disposal, shows elevated boron concentrations.

Selected text and tables from the 1978 Feasibility Study and the 1979 Supplementary Feasibility Study Report are included in **Appendix B**.

4.2.2 Long-Term Concentration Trends

Monitoring performed under the state program documents that concentrations of boron and sulfate were elevated before CCR disposal in the landfill began and have decreased since the landfill has been in operation. Routine groundwater monitoring for the COL ADF began after the Plan of Operation was approved and prior to initial CCR disposal. The earliest data available from the DNR Groundwater Environmental Monitoring System (GEMS) database is from September 1984. Initial placement of CCR in test plots in Module 1 of the ADF was approved in October 1984, and CCR disposal began sometime after that. Therefore, the initial groundwater monitoring results in the GEMS database represent pre-disposal conditions for the landfill.

The earliest historic monitoring data show that before CCR disposal in the landfill began, concentrations of boron and sulfate were significantly higher than current concentrations in the area west of the landfill where the compliance wells are located. Graphs of historical concentrations are provided in **Appendix C**. Results for compliance well MW-34A show that current concentrations of boron, chloride, and sulfate are much lower now than when the landfill was constructed. Results for compliance well MW-302 are plotted with results from monitoring well MW-85, which was located near the current MW-302 location (see **Figure 2**) and was monitored from September 1984 through September 1995. Results for compliance well MW-33AR are plotted with results from well MW-33A. MW-33AR was a replacement well for MW-33A at a slightly different location and depth. The well screen was installed approximately 10 feet higher in MW-33AR than in MW-33A, intersecting the water table, which may explain the increase in concentration that occurred with the well replacement.

The recent boron concentrations are consistent with generally decreasing or stable historical concentrations at MW-33AR and MW-34A (**Appendix A** and **Appendix C**). Recent boron concentrations at MW-302 have been variable, but remain well below the concentrations observed in samples from MW-85 prior to CCR disposal in the landfill.

4.2.3 Groundwater Flow Direction Changes

Groundwater flow directions have changed through time due to changes in water management at the plant, so that groundwater impacted by the effluent ditch formerly flowed to the east, under the landfill, and is now flowing north and/or west. The 1978 Feasibility Study report states that the southern 2/3 of the proposed fill area (including the area of the active CCR landfill phases) exhibits a southeast and southerly groundwater flow direction, toward an agricultural drainage ditch southeast and south of the landfill area. The 1981 Plan of Operation indicates that flow in the landfill area is to the east-southeast. A water table map prepared by RMT, based on October 2002 water level measurements, shows flow under the landfill generally to the east and northeast from a groundwater high near the effluent ditch and the Wisconsin Pollutant Discharge Elimination System (WPDES) pond between the landfill and the substation. The 1981 and 2002 water table maps are provided in **Appendix D**.

Under current conditions, groundwater flow below the active landfill area is generally to the north and northwest. The flow changes with time reflect the termination of discharge to the ash pond effluent ditch in the mid-2000s. When discharge via this ditch was active, the ditch was a source of recharge to the groundwater and created a high groundwater area with flow moving away from the ditch to the east. After discharge to the ditch was terminated, water levels in this area decreased significantly and the groundwater flow direction changed.

With the changes in groundwater flow, historically impacted groundwater moved in alternating directions. While the effluent ditch was active, impacted groundwater likely moved eastward past the current compliance wells, as indicated by the long-term concentration data. Although the compliance wells on the west side of Modules 1-3 are downgradient from the landfill under current flow conditions, the observed groundwater impacts may be residual from the past when the wells were downgradient from the effluent ditch.

4.2.4 Chloride, TDS, and Boron Concentrations

The variations in chloride and TDS results for well MW-33AR since detection monitoring was initiated have not correlated with boron concentrations, as would be expected for a CCR leachate source; therefore, an alternative source is more likely. The chloride results for well MW-33AR increased beginning in 2016, peaked in April 2018 and April 2019, decreased significantly in May 2020, and have remained relatively low since then. The chloride concentrations observed from May 2020 through October 2024 exceeded the interwell UPL but were significantly lower than the values observed in April and October 2019 (**Table 2** and **Appendix A**). As discussed in **Section 4.2.1**, current chloride concentrations at MW-33AR are similar to those reported for samples from MW-33A prior to CCR disposal in the landfill (**Appendix B**).

Over the time period since 2016, when chloride concentrations at MW-33AR were highly variable, boron concentrations at MW-33AR have generally followed a long, steady decreasing trend. The lack of correlation with boron indicates the source of the increase and subsequent decrease in chloride is not likely the CCR landfill.

Sampling of the landfill leachate pond and lysimeters LS-1 and LS-3R, located on the western and southern edges of Modules 1-3, indicates that boron and chloride concentrations are generally both higher than background (**Table 4**); therefore, a leachate source would tend to influence concentrations of both parameters. Furthermore, the peak chloride concentrations in the groundwater samples from MW-33AR in 2018 and 2019 exceeded the chloride concentrations measured in the leachate at that time, indicating the leachate was not the source of chloride at this

location (**Table 2, Table 4, and Appendix A**). Recent samples from the leachate pond have shown increased concentrations of chloride, but this increase does not correlate with results at MW-33AR, which have decreased, or with chloride results from the lysimeters, which remain low. Based on the comparison of groundwater and leachate chloride results, an alternative man-made source, such as road salt, is a more likely source of chloride and TDS than the CCR Unit.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, chloride, sulfate, and TDS concentrations in downgradient monitoring wells MW-33AR, MW-34A, and/or MW-302 demonstrate that the SSIs are likely primarily due to sources other than the CCR Unit. Boron and sulfate concentrations were elevated prior to disposal of CCR in the landfill and are associated with historical discharges from the ash ponds via the effluent ditch located west of the landfill. Historical specific conductance results indicate the pre-landfill TDS concentrations were also elevated in the area of the effluent ditch. Elevated chloride and TDS concentrations detected at well MW-33AR appear likely to be related to an alternative non-CCR source, such as salt.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL Modules 1-3 CCR Units may continue with detection monitoring based on this ASD. The ASD report will be included in the 2025 Annual Report due January 31, 2026.

7.0 REFERENCES

SCS Engineers, 2018, Alternative Source Demonstration, October 2017 Detection Monitoring, Columbia Energy Center Dry Ash Disposal Facility, April 2018.

U.S. EPA, 2015, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, April 2015.

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

Warzyn Engineering, Inc., 1979, and Preliminary Engineering Concepts, Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

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Tables

- 1 Groundwater Analytical Results Summary – October 2024 Event
- 2 Historical Analytical Results for Parameters with SSIs
- 3 Groundwater Elevation – State Monitoring Program and CCR Well Network
- 4 Analytical Results – Lysimeters and Leachate Pond

**Table 1. Groundwater Analytical Results Summary -
Columbia Ash Disposal Facility MOD 1-3 / SCS Engineers Project #25224067.00**

Parameter Name	UPL Method	UPL	Background Wells		Compliance Wells			
			MW-84A	MW-301	MW-33AR		MW-34A	MW-302
			10/2/2024	10/2/2024	10/2/2024	11/5/2024	10/2/2024	10/2/2024
Groundwater Elevation, ft amsl			787.14	787.92	787.33	785.98	786.79	788.35
Appendix III								
Boron, µg/L	NP	36.2	10.3	22.1	477	--	219	290
Calcium, µg/L	NP	126,000	73,300	97,000 P6	96,400	--	57,900	63,600
Chloride, mg/L	P	5.76	3.3	1.5 J	52.7	--	5.4 M0	1.9 J
Fluoride, mg/L	DQ	DQ	<0.095	0.13 J	<0.095 M0	--	<0.095	<0.095
Field pH, Std. Units	P	7.71	7.36	6.85	7.52	7.76	7.64	7.32
Sulfate, mg/L	NP	27.5	1.8 J	10.4	224 M0	--	57.5	57.9
Total Dissolved Solids, mg/L	NP	514	318	410	620	558	278	262

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit	NP = Nonparametric UPL with 1-of-2 retesting	µg/L = micrograms per liter
DQ = Double Quantitation	P = Parametric UPL with 1-of-2 retesting	mg/L = milligrams per liter
SSI = Statistically Significant Increase	LOQ = Limit of Quantitation	ft amsl = feet above mean sea level
-- = Not Analyzed	LOD = Limit of Detection	Std. Units = Standard Units

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in August 2024 based on background well results through October 2023.

Created by: <u>RM</u>	Date: <u>11/20/2024</u>
Last revision by: <u>RM</u>	Date: <u>11/20/2024</u>
Checked by: <u>KMV</u>	Date: <u>12/3/2024</u>
Scientist/Proj Mgr QA/QC: <u>TK</u>	Date: <u>1/11/2025</u>

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 1-3**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Sulfate (mg/L)
Background	MW-301	12/22/2015	26.5	3.70 J	9.30
		4/5/2016	25.2	4.00	15.3
		7/8/2016	23.6	3.50 J	15.0
		10/13/2016	30.6	2.20	13.9
		12/29/2016	32.8	2.00 J	12.3 J
		1/25/2017	32.6	1.50 J	6.50
		4/11/2017	28.8	2.00	10.3
		6/6/2017	21.3	3.50	17.1
		8/8/2017	30.6	5.50	31.6
		10/23/2017	34.3	4.00	27.5
		4/25/2018	24.3	2.30	8.60
		8/8/2018	22.8	--	--
		10/22/2018	27.8	3.20	19.2
		4/3/2019	26.9	2.90 J, B	5.30 J
		10/9/2019	35.9	1.70	8.40
		5/29/2020	21.3	2.00 J	11.5 J
		10/8/2020	28.8	3.40	25.1
		4/13/2021	22.2	1.50 J	8.5
		10/14/2021	31.4	2.70	17.4
		4/13/2022	28.7	1.90 J	12.7
	10/27/2022	37.5	2.3	11.6	
	4/27/2023	20.1	1.5 J	12.3	
	10/11/2023	36.2	2.1	11.8	
	4/17/2024	24.9	1.6 J	11.5	
	10/2/2024	22.1	1.5 J	10.4	
	MW-84A	12/22/2015	11.9	4.90	4.90
		4/5/2016	14.0	4.70	4.30
		7/8/2016	14.7	5.10	3.70 J
		7/28/2016	--	--	--
		10/13/2016	11.1	4.30	2.60 J
		12/29/2016	14.7	4.70	2.70 J
		1/25/2017	16.1	4.60	3.00
		4/11/2017	12.9	4.90	2.80 J
		6/6/2017	14.8	5.50	2.70 J
8/8/2017		22.9	5.50	2.00 J	
10/24/2017		13.8	5.10	2.20 J	
4/25/2018		25.0	4.80	2.80 J	
8/8/2018		12.8	--	--	
10/22/2018		10.1 J	4.20	1.60 J	
4/3/2019		13.6	3.60 B	1.40 J	
10/9/2019		12.0	3.90	1.30 J	
5/29/2020		10.0	3.70	1.50 J	
10/8/2020		9.7 J	4.30	1.30 J	
4/13/2021		14.3	4.40	1.40 J	
10/14/2021		11.1	3.50	17.4	
4/13/2022		10.5	5.20	1.40 J, MO	
10/27/2022		12.2	3.4	1.1 J	
4/27/2023		10.3	3.0	1.3 J	
10/11/2023		14.0	3.1	1.4 J	
4/17/2024	11.9	3.2	1.4 J		
10/2/2024	10.3	3.3	1.8 J		

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 1-3**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Sulfate (mg/L)
Compliance	MW-302	12/22/2015	80.0	4.20	37.4
		4/5/2016	78.8	4.10	55.6
		7/7/2016	134	3.10 J	35.4
		10/13/2016	132	1.10 J	64.7
		12/29/2016	106	1.20 J	56.4
		1/25/2017	149	1.60 J	61.6
		4/11/2017	322	1.60 J	81.3
		6/6/2017	671	3.50	84.6
		8/8/2017	833	4.50	79.0
		10/24/2017	691	6.90	78.4
		4/24/2018	1,950	15.0	109
		9/21/2018	203	1.70 J	30.0
		10/22/2018	296	1.80 J	26.9
		4/2/2019	254	1.50 J	25.2
		10/9/2019	246	1.10 J	16.7
		5/29/2020	611	1.20 J	34.6
		10/8/2020	648	1.10 J	36.5
		4/13/2021	521	1.40 J	36.9
		10/14/2021	495	1.30 J	37.8
		4/12/2022	389	0.79 J	22.1 M0
	10/27/2022	374	2.1	30.3	
	4/27/2023	541	1.3 J	36.6	
	10/11/2023	309	1.6 J	19.9	
	4/17/2024	442	1.1 J	26.8	
	10/2/2024	290	1.9 J	57.9	
	MW-33AR	12/21/2015	954	10.6	96.2
		4/5/2016	813	12.5	91.5
		7/7/2016	794	12.5	99.2
		10/13/2016	827	52.5	124
		12/29/2016	812	39.6	132
		1/25/2017	763	41.4	133
		4/11/2017	760	47.1	139
		6/6/2017	692	68.1	151
		8/7/2017	697	105	164
		10/24/2017	678	119	175
		4/24/2018	601	188	163
9/21/2018		683	32.6	124	
10/22/2018		682	14.4	112	
4/2/2019		568	229	201	
10/8/2019		548	153	182	
5/28/2020		566	15.9	104	
10/8/2020		569	27.3	97.4	
4/13/2021		473	26.9	94.3	
6/11/2021		--	--	--	
10/12/2021		564	22.6	96.4	
4/12/2022	558	59.0	155		
10/27/2022	586	40.5	153		
4/27/2023	532	19.0	104		
10/11/2023	485	24.2	139		
4/17/2024	531	22.8	165		
10/2/2024	477	52.7	224 M0		

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 1-3**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Sulfate (mg/L)
Compliance	MW-34A	12/21/2015	230	4.90	69.9
		4/5/2016	220	5.10	71.6
		7/7/2016	216	5.60	63.4
		7/28/2016	--	--	--
		10/13/2016	212	6.80	54.8
		12/29/2016	224	7.10	63.9
		1/25/2017	214	7.20	71.2
		4/11/2017	214	6.20	87.6
		6/6/2017	201	7.80	106
		8/7/2017	205	7.40	105
		10/24/2017	208	7.60	98.0
		4/24/2018	209	8.20	144
		9/21/2018	241	17.1	141
		10/22/2018	233	19.9	123
		4/4/2019	204	18.7	70.4
		10/8/2019	207	57.9	39.8
		5/28/2020	210	3.90	44.4
		10/8/2020	213	2.10	58.7
		4/13/2021	203	2.30	59.3
		6/11/2022	--	--	--
		10/12/2021	212	1.90 J, M0	56.1
		4/12/2022	237	2.20	146
		10/27/2022	264	2.20	169
	4/28/2023	220	2.0	48.4	
	10/11/2023	237	2.7	43.6	
4/17/2024	265	2.2	51.5		
10/2/2024	219	5.4 M0	57.5		
	MW-1AR ⁽²⁾	4/14/2021	16.1	1.50 J	4.40 M0
		10/14/2021	12.4	1.20 J	3.10

Abbreviations:

µg/L = micrograms per liter or parts per billion (ppb)

mg/L = milligrams per liter or parts per million (ppm)

J = Estimated value below the laboratory's limit of quantitation

B = Analyte was detected in the associated Method Blank.

M0 = matrix spike recovery and/or matrix spike duplicate recovery outside of laboratory control limits.

Notes:

(1) Analytical laboratory reports provided in the Annual Groundwater Monitoring and Corrective Action Reports.

(2) MW-1AR was added to the sampling network in 2021 to provide additional evaluation of site conditions in the CCR unit. MW-1AR was abandoned in March of 2022.

Created by:	<u>NDK</u>	Date:	<u>3/19/2020</u>
Last revision by:	<u>RM</u>	Date:	<u>3/24/2025</u>
Checked by:	<u>BLJ</u>	Date:	<u>3/24/2025</u>

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00**

Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
Screen Length (ft)																	10	5	10
Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
Measurement Date																			
October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 ⁽⁶⁾	NM	NM	NM	NM	NM	NM	NI	NI	NI
February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
July 29, 2024	aband	aband	NM	NM	NM	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
November 5, 2024	NM	NM	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Dry Ash Facility (Facility ID #03025)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00**

Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
Screen Length (ft)											
Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94
Measurement Date											
October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55
April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02
October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36
October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM
April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87
October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03
April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42
October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26
April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36
October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09
April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09
October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61
April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45
October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52
April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46
October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42
May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89
October 7-8 & 17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49
April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49
October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66
April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83
June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM
October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49
March 27-28, 2023	NM	NM	NM								
April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30
May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03
October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43
April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40
April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48
August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95
October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50
October 4, 2024	--	783.57	--	--	--	--	--	--	--	--	--
Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94

Ash Pond Facility
(Facility ID #02325)

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
Measurement Date																								
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI						
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.64	788.64	NI	NI	NI	NI	NI	NI	NI	NI
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	7											

**Table 4. Analytical Results - Lysimeters and Leachate Pond
Columbia Dry Ash Disposal Facility
SCS Engineers Project #25224067.00**

Monitoring Point	Monitoring Period	Monitoring Point Dry/ Broken	Boron, Total (µg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)
LS-1	2015-Apr	DRY	--	--	--
	2015-Oct	BROKEN	--	--	--
	2016-Apr	DRY	--	--	--
	2016-Oct	--	6,530	12.3	789
	2017-Apr	--	6,510	20.7 J	814
	2017-Oct	--	6,200	14.2 J	764
	2018-Apr	--	5,920	16.0 J	856
	2018-Oct	DRY	--	--	--
	2019-Apr	--	5,640	22.0 J	911
	2019-Oct	--	6,180	19.2 J	861
	2020-May	--	6,180	25.4 J	1,040
	2020-Oct	--	5,640	27.2 J	950
	2021-Apr	--	6,010	21.1 J	976
	2021-Oct	--	6,230	14.3 J	987
	2022-Apr	--	6,140	13.3 J	1,040
	2022-Oct	--	6,000	16.7 J	898
	2023-Apr	--	6,200	27.1 J	969
	2023-Oct	--	6,330	<11.8 D3	1,050
	2024-Apr	--	6,020	20.1 J, D3	1,040
	2024-Oct	--	6240 P6	13.7	1,030
LS-3R	2015-Apr	--	6,480	20.6 B	807
	2015-Oct	DRY	--	--	--
	2016-Apr	DRY	--	--	--
	2016-Oct	DRY	--	--	--
	2017-Apr	DRY	--	--	--
	2017-Oct	DRY	--	--	--
	2018-Apr	DRY	--	--	--
	2018-Oct	--	6,180	26.2 J	841
	2019-Apr	DRY	--	--	--
	2019-Oct	DRY	--	--	--
	2020-May	DRY	--	--	--
	2020-Oct	DRY	--	--	--
	2021-Apr	DRY	--	--	--
	2021-Oct	DRY	--	--	--
	2022-Apr	DRY	--	--	--
	2022-Oct	DRY	--	--	--
	2023-Apr	DRY	--	--	--
	2023-Oct	DRY	--	--	--
	2024-Apr	DRY	--	--	--
	2024-Oct	DRY	--	--	--

**Table 4. Analytical Results - Lysimeters and Leachate Pond
Columbia Dry Ash Disposal Facility
SCS Engineers Project #25224067.00**

Monitoring Point	Monitoring Period	Monitoring Point Dry/ Broken	Boron, Total (µg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)
LP-1	2015-Apr	--	4,060	27.8	734
	2015-Oct	--	4,300	37.1	820
	2016-Apr	--	1,830	26.8	416
	2016-Oct	--	4,610	71.5	835
	2017-Apr	--	2,690	66.3	587
	2017-Oct	--	4,970	91.7	739
	2018-Apr	--	2,060	63.2	634
	2018-Oct	--	2,630	151	907
	2019-Apr	--	570	35.1	249
	2019-Oct	--	1,270	63.9	602
	2020-May	--	2,460	179	952
	2020-Oct	--	2,710	243	1,160
	2021-Apr	--	3,340	319	1,180
	2021-Oct	--	3,440	299	1,470
	2022-Apr	--	1,030	89.2	506
	2022-Oct	--	2,040	175	752
	2023-Apr	--	2,110	404	856
	2023-Oct	--	2,640	726	1,350
2024-Apr	--	1,900	442	923	
2024-Oct	--	2,190	493	1,300	

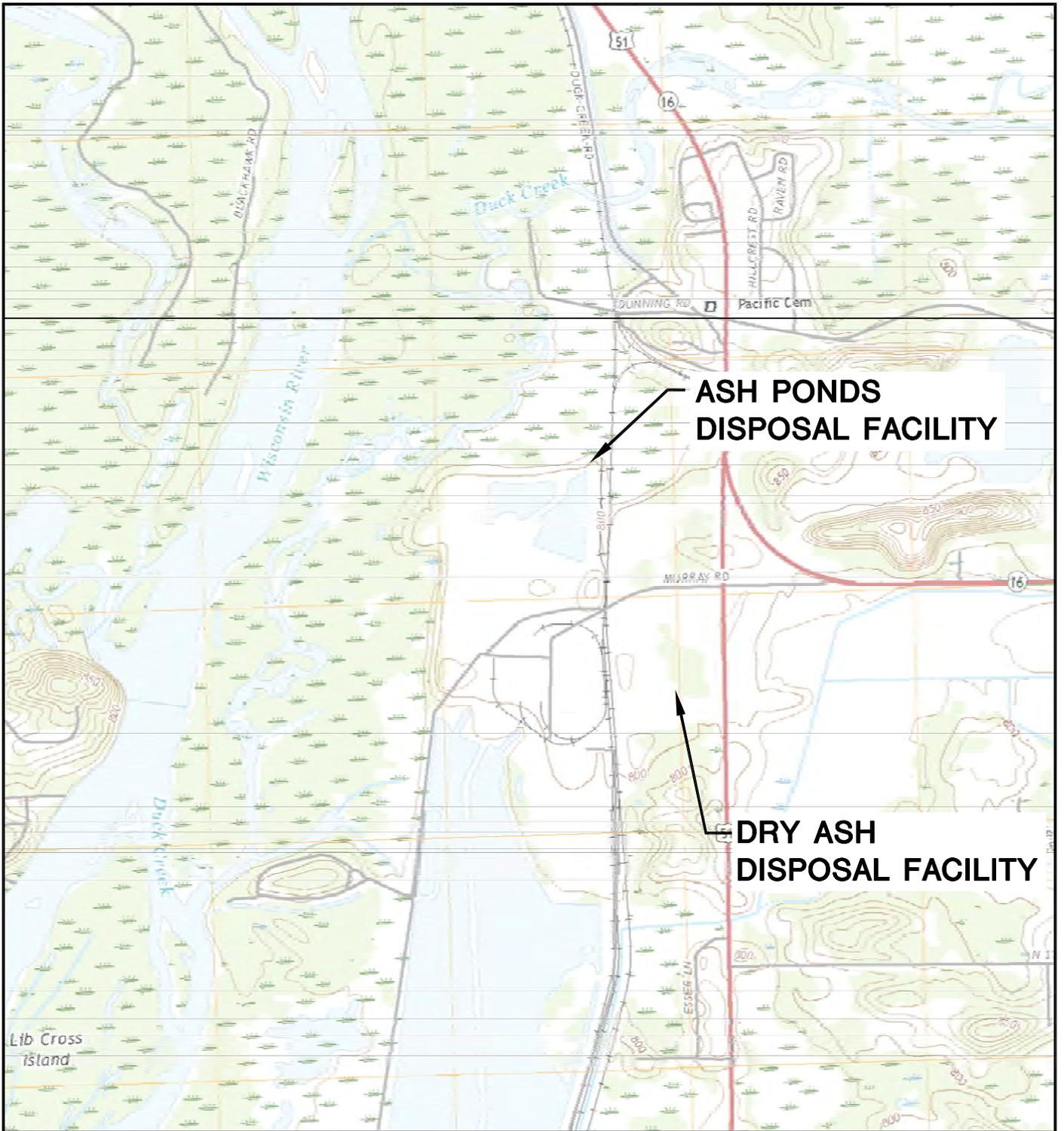
Abbreviations:
µg/L = micrograms per liter
mg/L = milligrams per liter
-- = not analyzed

Notes:
B = Analyte was detected in the associated method blank.
J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ).
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Created by: <u> MDB </u>	Date: <u> 12/1/2014 </u>
Last revision by: <u> RM </u>	Date: <u> 3/24/2025 </u>
Checked by: <u> BLJ </u>	Date: <u> 3/24/2025 </u>

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – October 2024

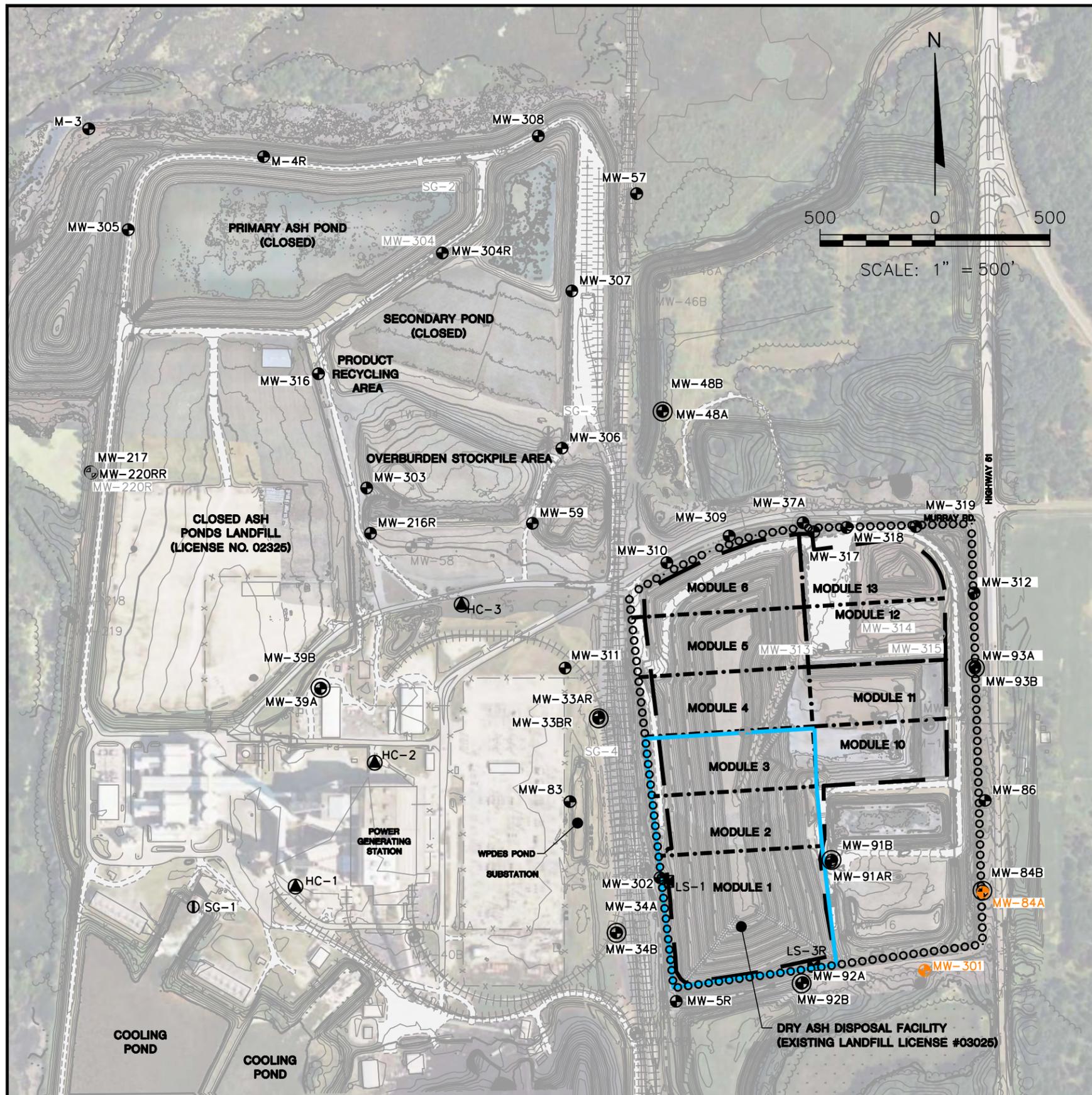


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER WB375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220067.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	12/02/2019	CHECKED BY:	MDB	APPROVED BY:	TK 04/10/2020			
REVISED:	01/10/2020							

I:\25220067.00\Drawings\ASD Mod 1-3 LF\Site Location Map.dwg, 4/12/2020 7:05:09 PM

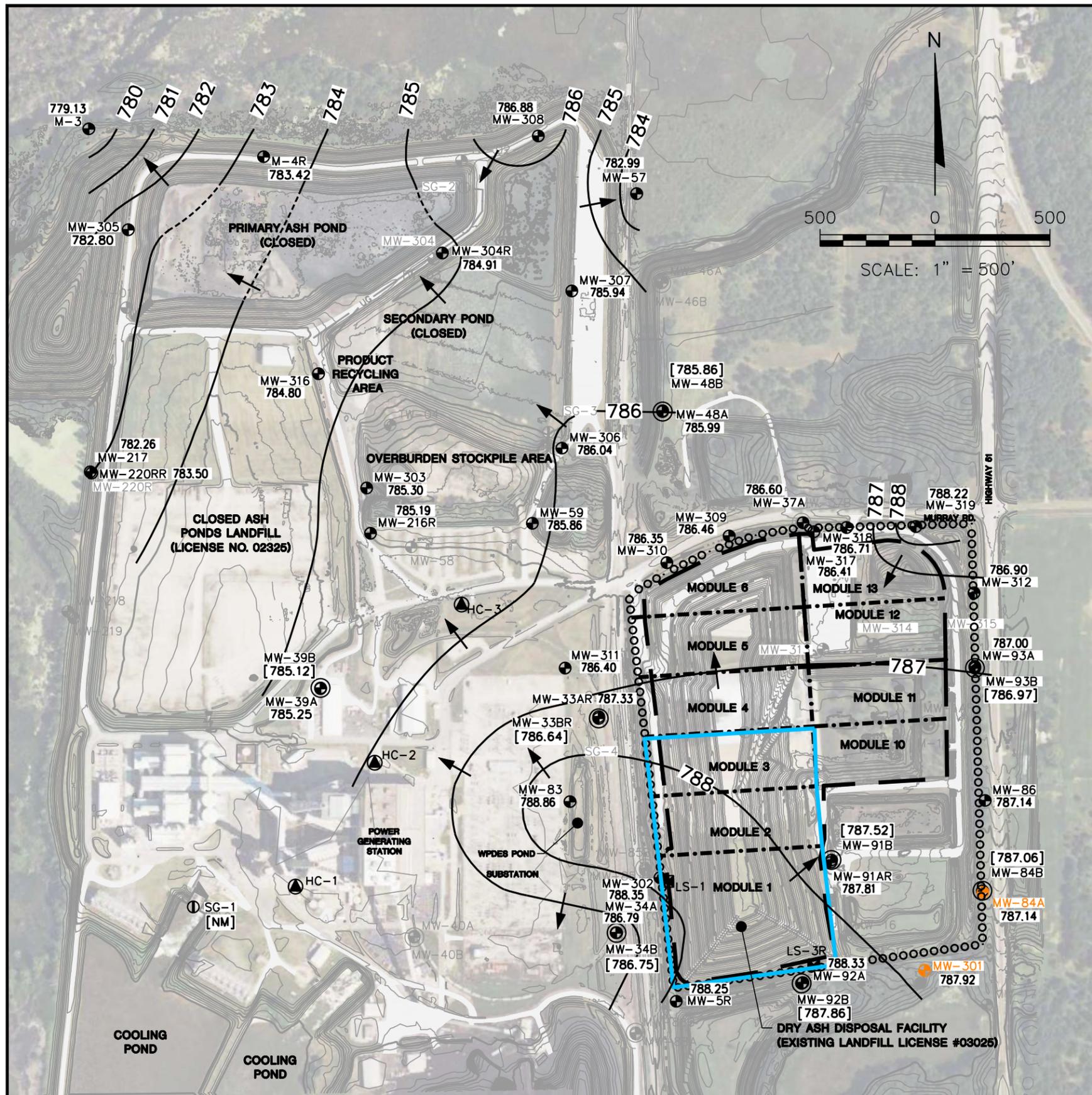


LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	CCR UNIT

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318, AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	FIGURE SITE PLAN AND MONITORING WELL LOCATIONS COLUMBIA DRY ASH DISPOSAL FACILITY 2
DRAWN: 01/03/2025	CHECKED BY: NLB				
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)				

I:\Client\Alliant\PROJECT SITES\Columbia\CAD Master References COL\Water Table Maps\Site Plan\02_Col Site Plan Figures.dwg, 1/21/2025 2:59:23 PM



LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
788.75	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
[NM]	NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	CCR UNIT

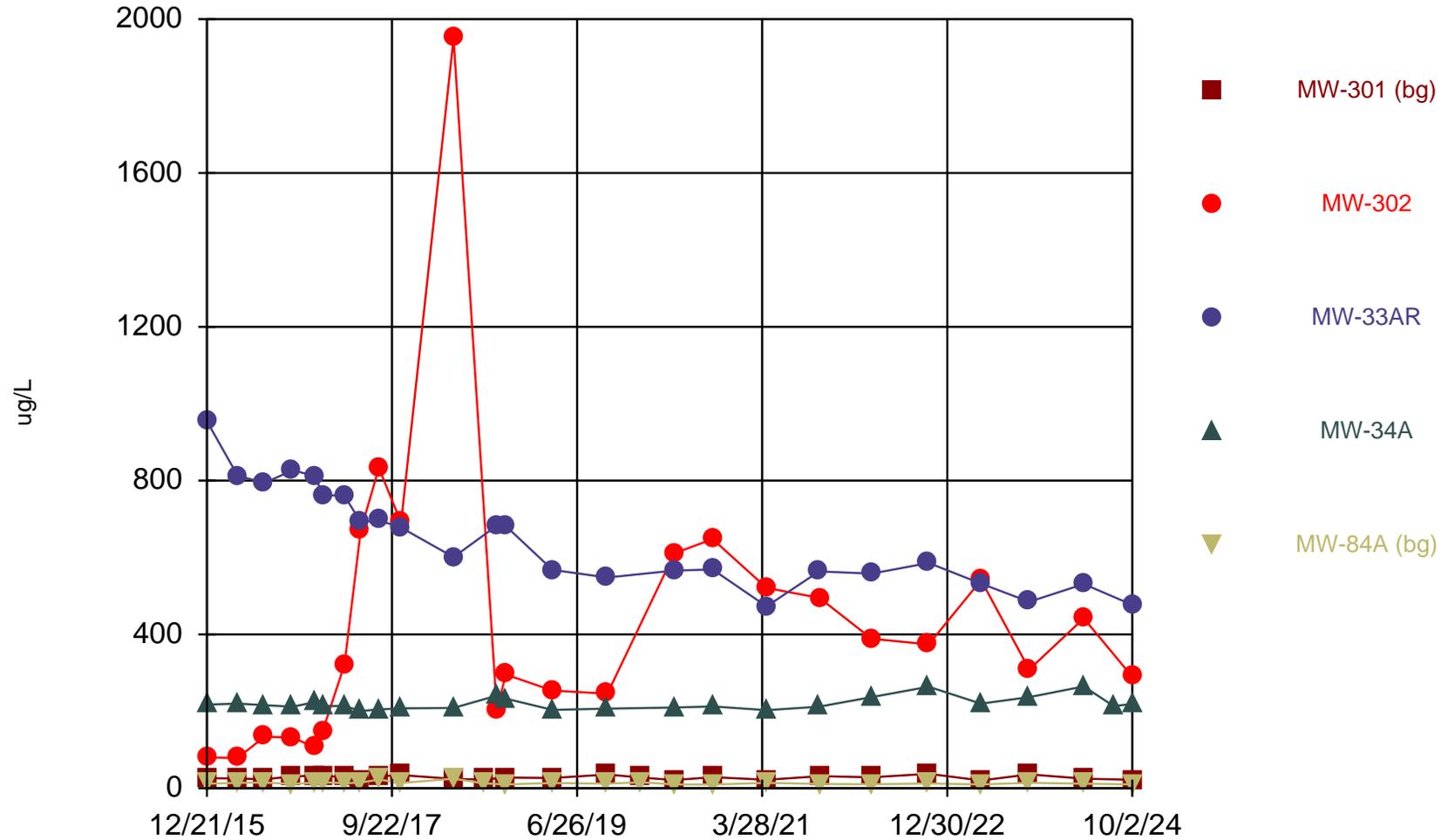
- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP OCTOBER 1-3, 2024	FIGURE
DRAWN: 11/05/2024	CHECKED BY: NLB/BRK (01/21/2025)					3
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

I:\25224067.00\Drawings\COL October 2024 WTBL CCR Units.dwg, 1/21/2025 1:03:17 PM

Appendix A
Trend Plots for CCR Wells

Boron



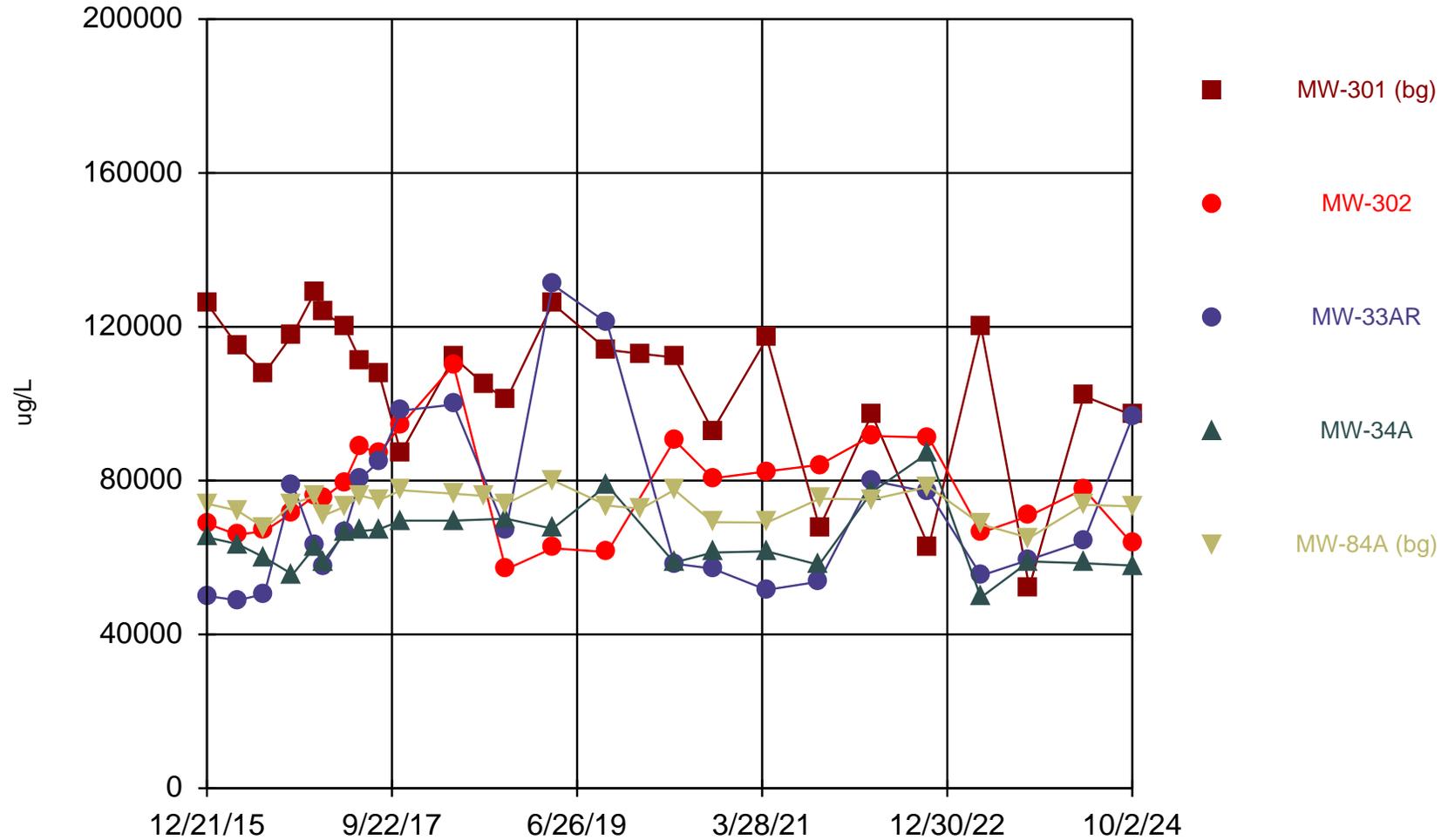
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Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Boron (ug/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			954	217.5 (D)	
12/22/2015	26.5	80			11.9
4/5/2016	25.2	78.8	813	220	14
7/7/2016		134	794	216	
7/8/2016	23.6				14.7
10/13/2016	30.6	132	827	212	11.1
12/29/2016	32.8	106	812	224	14.7
1/25/2017	32.6	149	763	214	16.1
4/11/2017	28.8	322	760	214	12.9
6/6/2017	21.3	671	692	201	14.8
8/7/2017			697	205	
8/8/2017	30.6	833			22.9
10/23/2017	34.3				
10/24/2017		691	678	208	13.8
4/24/2018		1950	601	209	
4/25/2018	24.3				25
8/8/2018	22.8				12.8
9/21/2018		203	683	241	
10/22/2018		296	682	233	
10/24/2018	27.8				10.1 (J)
4/2/2019	26.9	254	568	204	
4/3/2019					13.6
10/8/2019			548	207	
10/9/2019	35.9	246			12
2/3/2020	27.9				15.7
5/28/2020			566	210	
5/29/2020	21.3	611			10
10/8/2020	28.8	648	569	213	9.7 (J)
4/13/2021		521	473	203	
4/14/2021	22.2				14.3
10/12/2021			564	212	
10/14/2021	31.4	495			11.1
4/12/2022		389	558	237	
4/13/2022	28.7				10.5
10/27/2022	37.5	374	586	264	12.2
4/26/2023				220	
4/27/2023	20.1	541	532		10.3
10/11/2023	36.2	309	485	237	14
4/17/2024	24.9	442	531	265	11.9
7/29/2024				214	
10/2/2024	22.1	290	477	219	10.3

Calcium



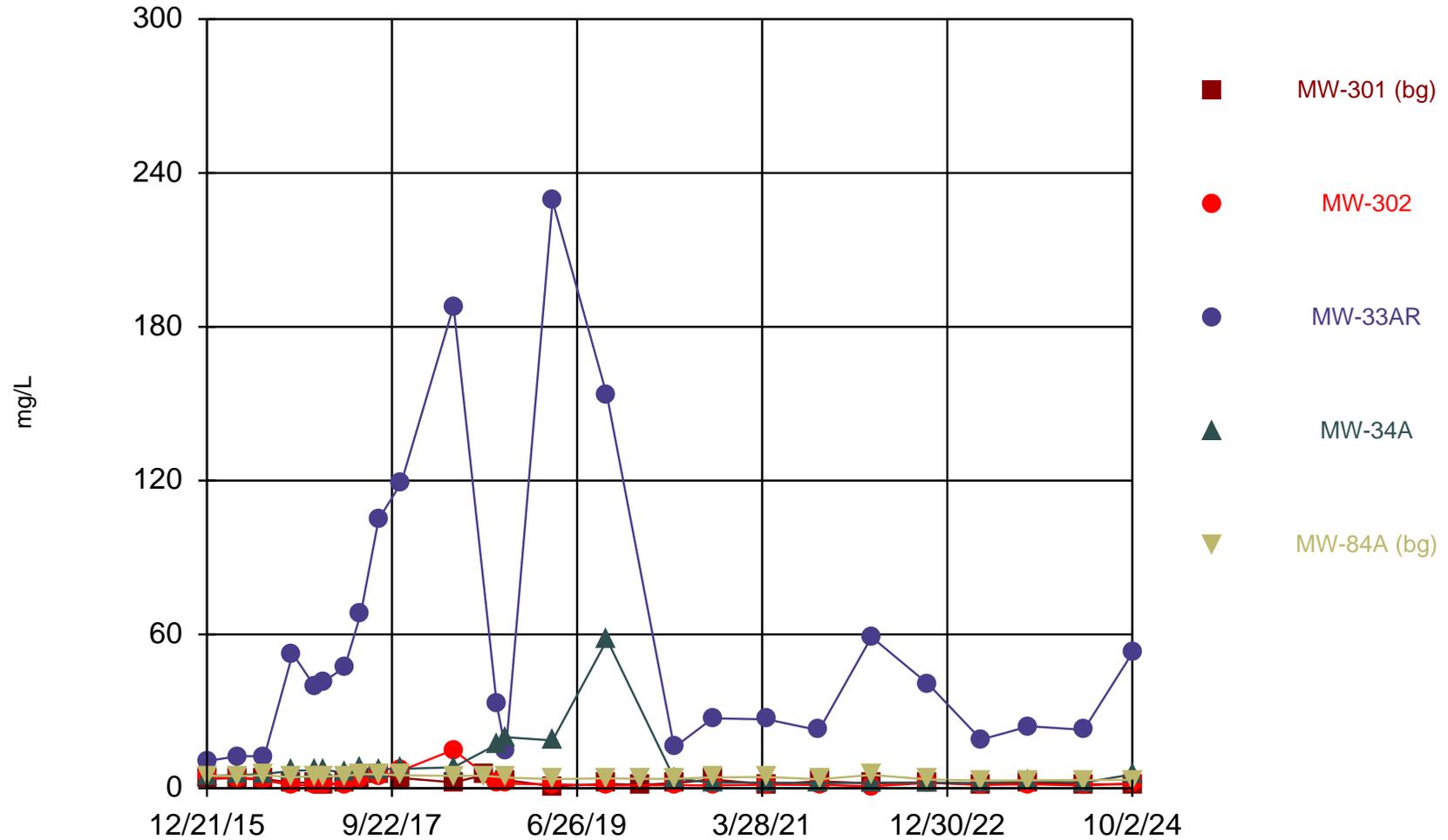
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Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Calcium (ug/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			50000	65250 (D)	
12/22/2015	126000	68800			74000
4/5/2016	115000	65900	48900	63500	72200
7/7/2016		66900	50500	60000	
7/8/2016	108000				67600
10/13/2016	118000	71700	79000	55600	74000
12/29/2016	129000	76100	63100	62800	76000
1/25/2017	124000	75400	57500	58900	70800
4/11/2017	120000	79600	66800	66300	73200
6/6/2017	111000	88900	80700	66900	76100
8/7/2017			84800	67300	
8/8/2017	108000	87100			74900
10/23/2017	87200				
10/24/2017		94400	98200	69600	77500
4/24/2018		110000	99800	69600	
4/25/2018	112000				76600
8/8/2018	105000				76000
10/22/2018		56900	66900	70100	
10/24/2018	101000				74000
4/2/2019	126000	62400	131000	67500	
4/3/2019					80100
10/8/2019			121000	78800	
10/9/2019	114000	61400			73500
2/3/2020	113000				72700
5/28/2020			58400	58700	
5/29/2020	112000	90500			77600
10/8/2020	93000	80600	57100	61300	69200
4/13/2021		82400	51600	61600	
4/14/2021	117000				69100
10/12/2021			53700	58100	
10/14/2021	67800	84100			75300
4/12/2022		91600	80000	77000	
4/13/2022	97300				75100
10/27/2022	62800	91200	77000	87300	78400
4/26/2023				49600	
4/27/2023	120000	66500	55300		68600
10/11/2023	52300	70800	59400	59000	65100
4/17/2024	102000	77800	64200	58500	73700
10/2/2024	97000	63600	96400	57900	73300

Chloride



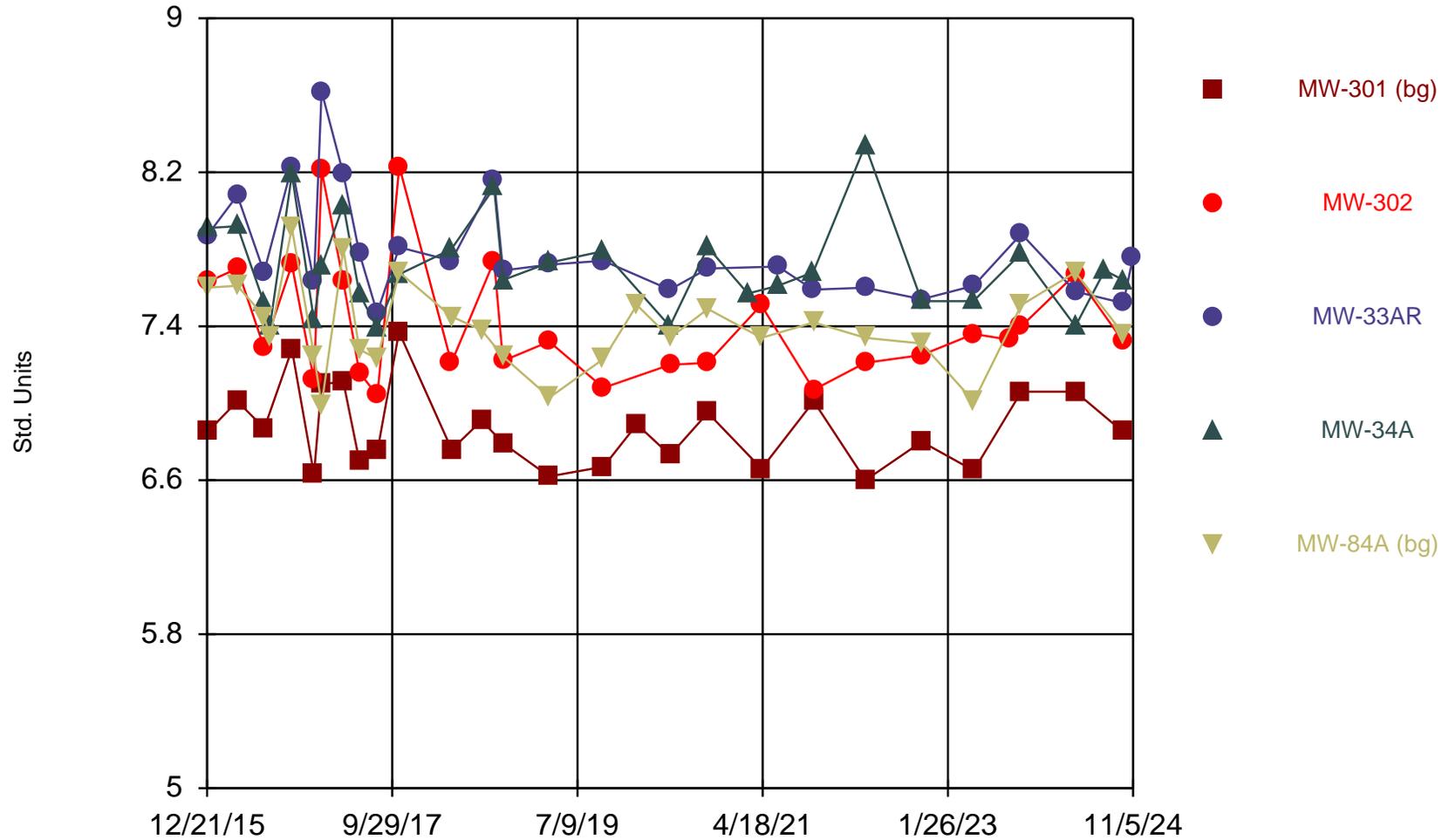
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Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Chloride (mg/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			10.6	4.85 (D)	
12/22/2015	3.7 (J)	4.2			4.9
4/5/2016	4	4.1	12.5	5.1	4.7
7/7/2016		3.1 (J)	12.5	5.6	
7/8/2016	3.5 (J)				5.1
10/13/2016	2.2	1.1 (J)	52.5	6.8	4.3
12/29/2016	2 (J)	1.2 (J)	39.6	7.1	4.7
1/25/2017	1.5 (J)	1.6 (J)	41.4	7.2	4.6
4/11/2017	2	1.6 (J)	47.1	6.2	4.9
6/6/2017	3.5	3.5	68.1	7.8	5.5
8/7/2017			105	7.4	
8/8/2017	5.5	4.5			5.5
10/23/2017	4				
10/24/2017		6.9	119	7.6	5.1
4/24/2018		15	188	8.2	
4/25/2018	2.3				4.8
8/8/2018	5.2				4.9
9/21/2018		1.7 (J)	32.6	17.1	
10/22/2018		1.8 (J)	14.4	19.9	
10/24/2018	3.2				4.2
4/2/2019	0.79 (J)	1.5 (J)	229	18.7	
4/3/2019					3.6
10/8/2019			153	57.9	
10/9/2019	1.7 (J)	1.1 (J)			3.9
2/3/2020	1.3 (J)				3.7
5/28/2020			15.9	3.9	
5/29/2020	2 (J)	1.2 (J)			3.7
10/8/2020	3.4	1.1 (J)	27.3	2.1	4.3
4/13/2021		1.4 (J)	26.9	2.3	
4/14/2021	1.5 (J)				4.4
10/12/2021			22.6	1.9 (J)	
10/14/2021	2.7	1.3 (J)			3.5
4/12/2022		0.79 (J)	59	2.2	
4/13/2022	1.9 (J)				5.2
10/27/2022	2.3	2.1	40.5	2.2	3.4
4/26/2023				2	
4/27/2023	1.5 (J)	1.3 (J)	19		3
10/11/2023	2.1	1.6 (J)	24.2	2.7	3.1
4/17/2024	1.6 (J)	1.1 (J)	22.8	2.2	3.2
10/2/2024	1.5 (J)	1.9 (J)	52.7	5.4	3.3

Field pH



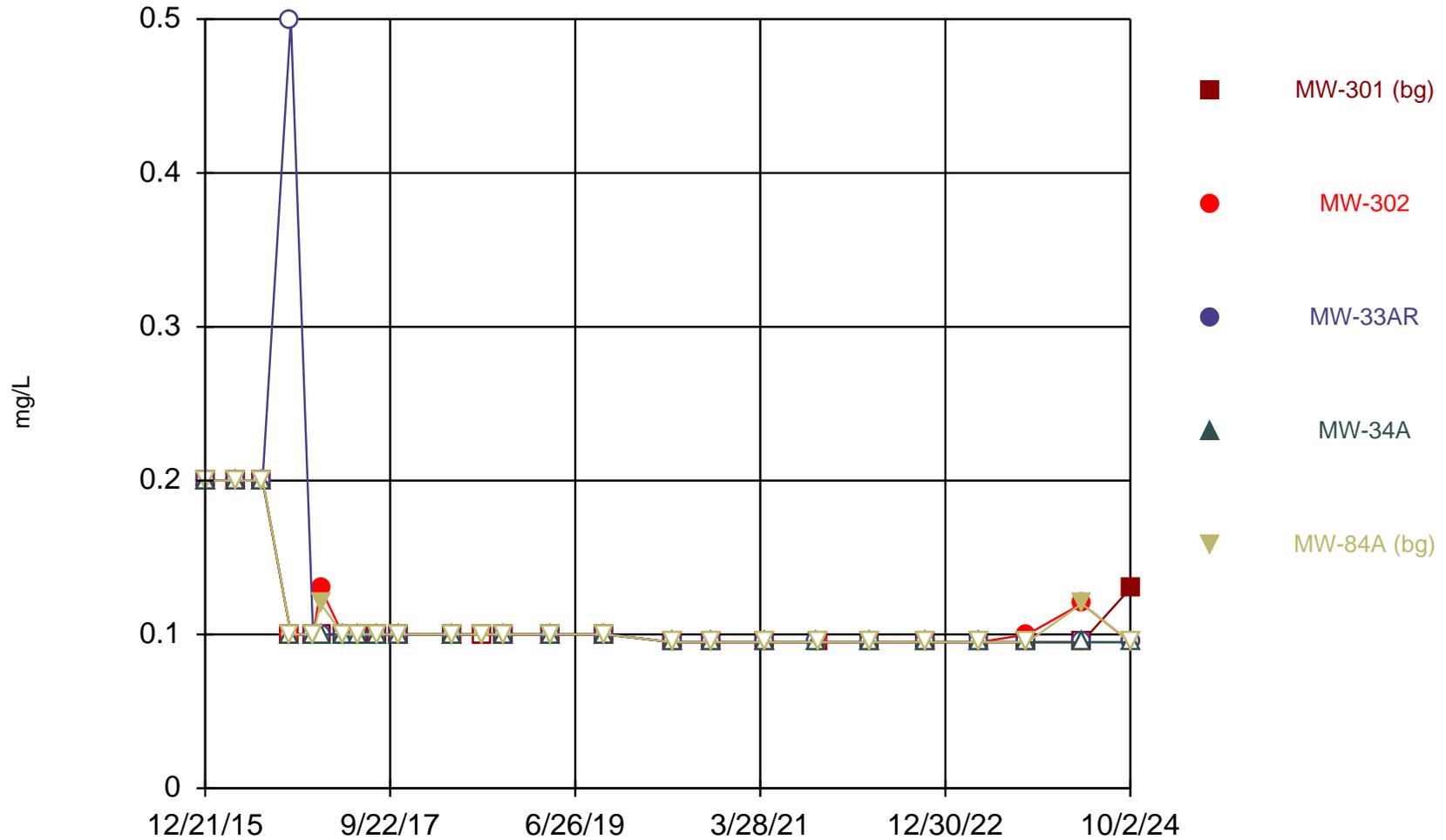
Time Series Analysis Run 2/25/2025 3:39 PM View: MOD 1-3 LF
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Field pH (Std. Units) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			7.87	7.91	
12/22/2015	6.85	7.63			7.6
4/5/2016	7.01	7.7	8.08	7.92	7.61
7/7/2016		7.29	7.68	7.52	
7/8/2016	6.87				7.45
7/28/2016				7.4	7.34
10/13/2016	7.28	7.72	8.23	8.19	7.91
12/29/2016	6.63	7.12	7.63	7.43	7.25
1/25/2017	7.1	8.21	8.62	7.71	6.99
4/11/2017	7.11	7.63	8.19	8.03	7.8
6/6/2017	6.7	7.16	7.78	7.57	7.28
8/7/2017			7.47	7.39	
8/8/2017	6.75	7.04			7.23
10/23/2017	7.37				
10/24/2017		8.23	7.81	7.67	7.68
4/24/2018		7.21	7.74	7.8	
4/25/2018	6.76				7.45
8/8/2018	6.91				7.38
9/21/2018		7.74	8.16	8.12	
10/22/2018		7.22	7.69	7.64	
10/24/2018	6.79				7.24
4/2/2019	6.62	7.32	7.72	7.73	
4/3/2019					7.03
10/8/2019			7.74	7.79	
10/9/2019	6.67	7.08			7.23
2/3/2020	6.89				7.51
5/28/2020			7.59	7.4	
5/29/2020	6.73	7.2			7.34
10/8/2020	6.95	7.21	7.7	7.81	7.49
2/25/2021				7.57	
4/13/2021		7.51			
4/14/2021	6.66				7.34
6/11/2021			7.71 (R)	7.61 (R)	
10/12/2021			7.59	7.68	
10/14/2021	7.01	7.07			7.42
4/12/2022		7.21	7.6	8.34	
4/13/2022	6.6				7.34
10/27/2022	6.8	7.25	7.54	7.53	7.31
4/26/2023				7.53	
4/27/2023	6.65	7.36	7.61		7.01
8/31/2023		7.33			
10/11/2023	7.06	7.4	7.88	7.78	7.51
4/17/2024	7.06	7.67	7.58	7.4	7.68
7/29/2024				7.69	
10/2/2024	6.85	7.32	7.52	7.64	7.36
11/5/2024			7.76		

Fluoride



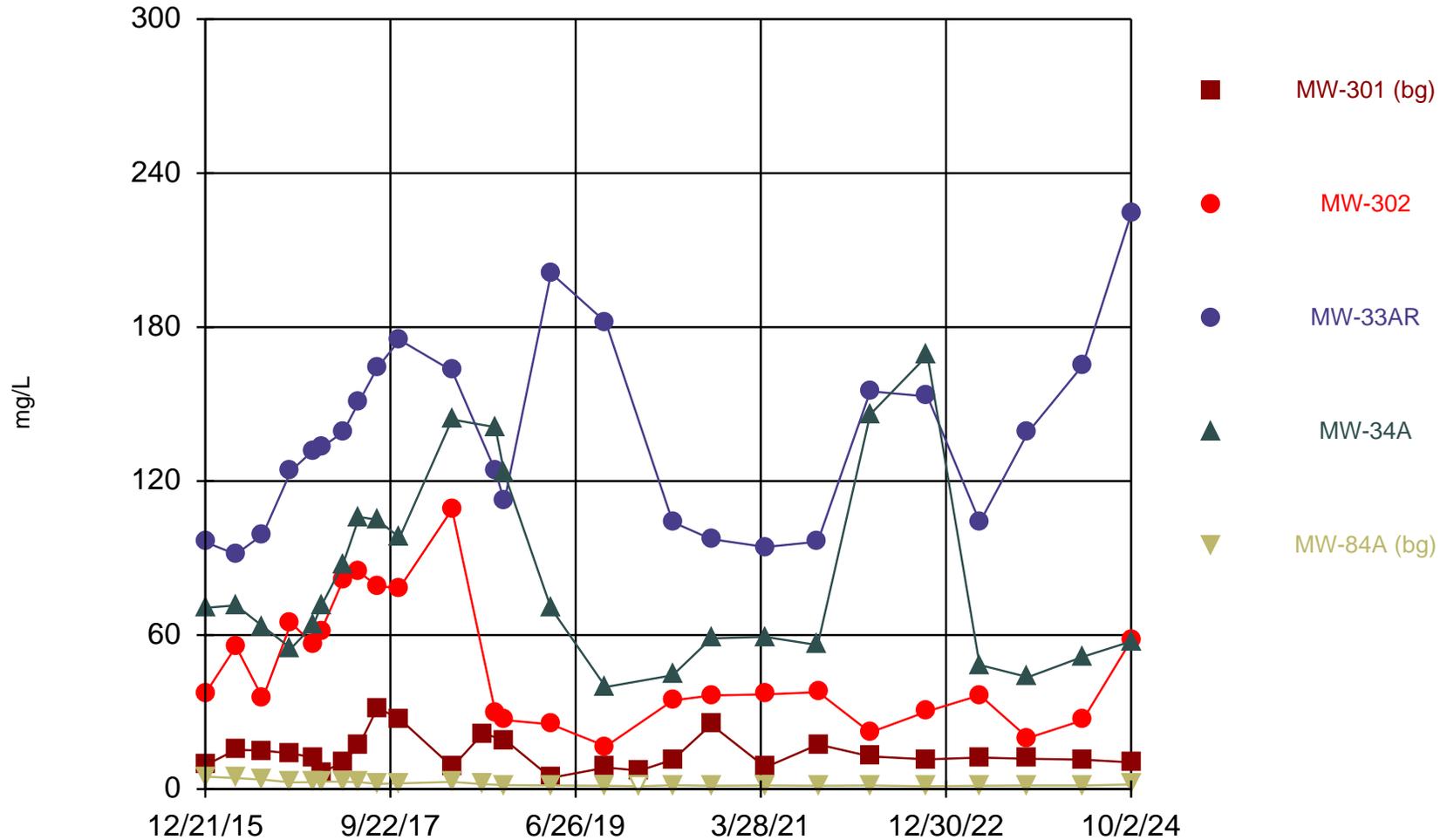
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Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Fluoride (mg/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			<0.2 (U)	<0.2 (UD)	
12/22/2015	<0.2 (U)	<0.2 (U)			<0.2 (U)
4/5/2016	<0.2 (U)	<0.2 (U)	<0.2 (U)	<0.2 (U)	<0.2 (U)
7/7/2016		<0.2 (U)	<0.2 (U)	<0.2 (U)	
7/8/2016	<0.2 (U)				<0.2 (U)
10/13/2016	<0.1 (U)	<0.1 (U)	<0.5 (U)	<0.1 (U)	<0.1 (U)
12/29/2016	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)
1/25/2017	<0.1 (U)	0.13 (J)	<0.1 (U)	<0.1 (U)	0.12 (J)
4/11/2017	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)
6/6/2017	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)
8/7/2017			<0.1 (U)	<0.1 (U)	
8/8/2017	<0.1 (U)	<0.1 (U)			<0.1 (U)
10/23/2017	<0.1 (U)				
10/24/2017		<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)
4/24/2018		<0.1 (U)	<0.1 (U)	<0.1 (U)	
4/25/2018	<0.1 (U)				<0.1 (U)
8/8/2018	<0.1 (U)				<0.1 (U)
10/22/2018		<0.1 (U)	<0.1 (U)	<0.1 (U)	
10/24/2018	<0.1 (U)				<0.1 (U)
4/2/2019	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	
4/3/2019					<0.1 (U)
10/8/2019			<0.1 (U)	<0.1 (U)	
10/9/2019	<0.1 (U)	<0.1 (U)			<0.1 (U)
5/28/2020			<0.095 (U)	<0.095 (U)	
5/29/2020	<0.095 (U)	<0.095 (U)			<0.095 (U)
10/8/2020	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)
4/13/2021		<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/14/2021	<0.095 (U)				<0.095 (U)
10/12/2021			<0.095 (U)	<0.095 (U)	
10/14/2021	<0.095 (U)	<0.095 (U)			<0.095 (U)
4/12/2022		<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/13/2022	<0.095 (U)				<0.095 (U)
10/27/2022	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)
4/26/2023				<0.095 (U)	
4/27/2023	<0.095 (U)	<0.095 (U)	<0.095 (U)		<0.095 (U)
10/11/2023	<0.095 (U)	0.1 (J)	<0.095 (U)	<0.095 (U)	<0.095 (U)
4/17/2024	<0.095	0.12 (J)	<0.095	<0.095	0.12 (J)
10/2/2024	0.13 (J)	<0.095	<0.095	<0.095	<0.095

Sulfate



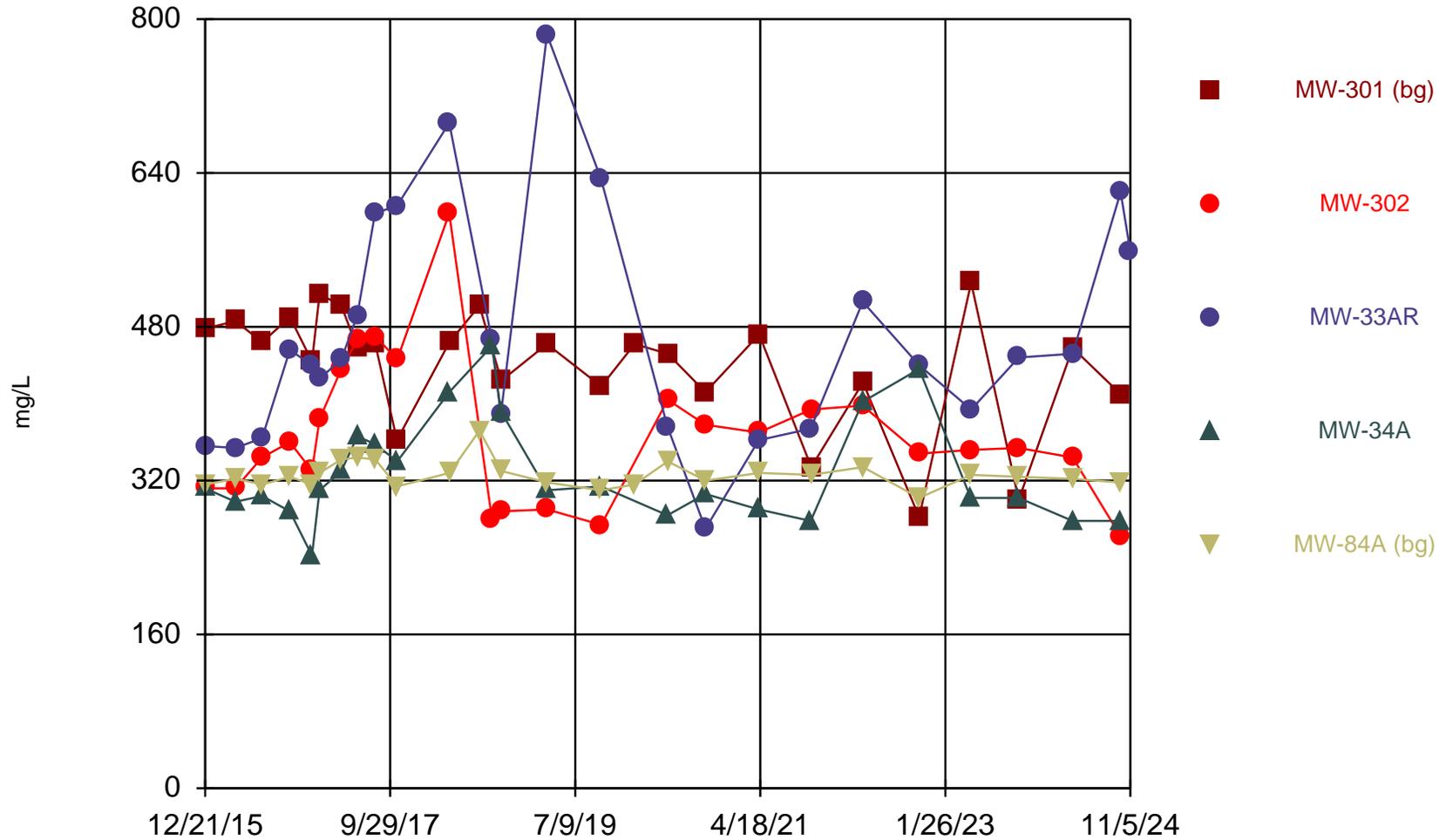
Time Series Analysis Run 2/25/2025 3:39 PM View: MOD 1-3 LF
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Sulfate (mg/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			96.2	70.6 (D)	
12/22/2015	9.3	37.4			4.9
4/5/2016	15.3	55.6	91.5	71.6	4.3
7/7/2016		35.4	99.2	63.4	
7/8/2016	15				3.7 (J)
10/13/2016	13.9	64.7	124	54.8	2.6 (J)
12/29/2016	12.3 (J)	56.4	132	63.9	2.7 (J)
1/25/2017	6.5	61.6	133	71.2	3
4/11/2017	10.3	81.3	139	87.6	2.8 (J)
6/6/2017	17.1	84.6	151	106	2.7 (J)
8/7/2017			164	105	
8/8/2017	31.6	79			2 (J)
10/23/2017	27.5				
10/24/2017		78.4	175	98	2.2 (J)
4/24/2018		109	163	144	
4/25/2018	8.6				2.8 (J)
8/8/2018	21.6				1.9 (J)
9/21/2018		30	124	141	
10/22/2018		26.9	112	123	
10/24/2018	19.2				1.6 (J)
4/2/2019	4.4	25.2	201	70.4	
4/3/2019					1.4 (J)
10/8/2019			182	39.8	
10/9/2019	8.4	16.7			1.3 (J)
2/3/2020	7.2				<2.2 (U)
5/28/2020			104	44.4	
5/29/2020	11.5	34.6			1.5 (J)
10/8/2020	25.1	36.5	97.4	58.7	1.3 (J)
4/13/2021		36.9	94.3	59.3	
4/14/2021	8.5				1.4 (J)
10/12/2021			96.4	56.1	
10/14/2021	17.4	37.8			1.3 (J)
4/12/2022		22.1	155	146	
4/13/2022	12.7				1.4 (J)
10/27/2022	11.6	30.3	153	169	1.1 (J)
4/26/2023				48.4	
4/27/2023	12.3	36.6	104		1.3 (J)
10/11/2023	11.8	19.9	139	43.6	1.4 (J)
4/17/2024	11.5	26.8	165	51.5	1.4 (J)
10/2/2024	10.4	57.9	224	57.5	1.8 (J)

Total Dissolved Solids



Time Series Analysis Run 2/25/2025 3:39 PM View: MOD 1-3 LF
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

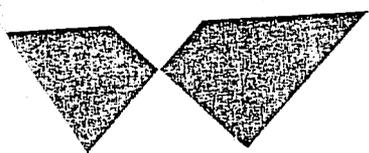
Constituent: Total Dissolved Solids (mg/L) Analysis Run 2/25/2025 3:40 PM View: MOD 1-3 LF
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-302	MW-33AR	MW-34A	MW-84A (bg)
12/21/2015			356	312 (D)	
12/22/2015	478	312			316
4/5/2016	486	312	354	298	322
7/7/2016		344	364	304	
7/8/2016	464				316
10/13/2016	490	360	456	288	324
12/29/2016	444	330	440	242	316
1/25/2017	514	384	426	310	328
4/11/2017	502	436	446	330	342
6/6/2017	458	466	492	366	344
8/7/2017			598	358	
8/8/2017	462	470			342
10/23/2017	362				
10/24/2017		446	606	340	314
4/24/2018		598	692	412	
4/25/2018	464				328
8/8/2018	502				372
9/21/2018		280	466	460	
10/22/2018		288	388	392	
10/24/2018	424				330
4/2/2019	462	290	784	310	
4/3/2019					318
10/8/2019			634	314	
10/9/2019	418	274			310
2/3/2020	462				316
5/28/2020			376	284	
5/29/2020	452	404			340
10/8/2020	412	378	270	306	320
4/13/2021		370	362	290	
4/14/2021	472				328
10/12/2021			374	278	
10/14/2021	334	394			326
4/12/2022		398	506	402	
4/13/2022	422				334
10/27/2022	282	348	440	436	302
4/26/2023				302	
4/27/2023	526	352	394		326
10/11/2023	300	354	448	302	324
4/17/2024	458	344	452	278	322
10/2/2024	410	262	620	278	318
11/5/2024			558		



Appendix B
Feasibility Study Water Quality Information

1370



FEASIBILITY STUDY
PROPOSED FLY ASH AND/OR SCRUBBER SLUDGE
DISPOSAL FACILITY-COLUMBIA SITE
WISCONSIN POWER AND LIGHT COMPANY
TOWN OF PACIFIC, COLUMBIA COUNTY, WISCONSIN

Jan 78

C 7134

conceivable that groundwater flow in the area north of Murray Road may be altered such that contaminants derived from the present ash settling basin might be diverted southerly towards the homes along Murray Road. These questions would have to be addressed in greater detail, consistent with the goals of Wisconsin Power and Light Company.

WATER QUALITY

During the first two weeks of December, 1977, 64 water samples were obtained from surface waters and groundwater monitoring wells at the Columbia Energy Center. The purpose of the sampling was to assess background water quality in the vicinity of the proposed disposal site. The sampling stations included 59 monitoring wells, the cooling lake, ash settling pond, the drainage ditch carrying the ash pond discharge waters and the agricultural drainage ditch along the southern boundary of the site. Due to the large number of sampling stations, the analyses were limited to pH, specific conductance, iron, calcium, magnesium, sulfate and chloride. The analytical data is contained in Appendix F and is discussed below.

pH

Most groundwaters found in the United States have pH values ranging from around 6.0 to 8.5. The pH of a water represents the result of a number of interrelated chemical equilibria. This equilibria can be altered shortly after sampling by gains or losses of carbon dioxide, the oxidation of ferrous iron and numerous other chemical reactions. Thus, pH measurements must be taken shortly after obtaining the sample. For this study, the pH of samples was determined immediately upon return to the laboratory.

Within the proposed site boundaries at the Columbia Energy Center, pH values ranged between 6.3 and 8.1 and averaged 7.5. Typically, the lower pH values were observed in the lowland areas and wetlands, probably as a result of acidic organic soils. The pH of water in the ash disposal settling pond and the cooling lake was 11.4 and 8.3, respectively.

SPECIFIC CONDUCTANCE

Specific conductance, or conductivity, is the ability of a substance to conduct an electric current. The conductance determination is correlative with the dissolved-solids concentration. Conductivity, however, is temperature dependent and thus requires the reference of specific conductance measurements to a standard temperature. The values discussed here are referred to 25°C.

The specific conductance of groundwater in the study area ranged from 220 umhos/cm to a maximum of 2600 umhos/cm. The highest conductivity readings were observed in monitoring wells located along the coal storage area and the drainage ditch carrying the ash pond discharge where values up to 2600 umhos/cm were measured. The conductivity of the ash pond effluent was 1380 umhos/cm. This data appears to confirm earlier speculation of infiltration of effluent from the ash pond discharge channel and from the coal storage area into the groundwater. Conductance within the proposed site boundaries averaged approximately 465 umhos/cm.

Conductivity in the ash disposal settling pond was measured at 1510 umhos/cm. Shallow monitoring wells M-6 and 39A, located adjacent to the pond also exhibited elevated values of 1160 umhos/cm and 1800 umhos/cm, respectively.

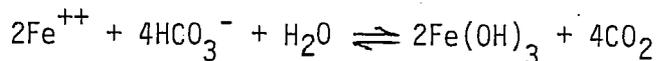
High conductivities were also observed along U. S. Highway 51 at monitoring wells 51A and 51B. The chloride data, discussed below, indicates infiltration of road salt has probably occurred at this location.

Specific conductance measurements obtained in the vicinity of the proposed disposal site are shown on Drawing C 7134-15.

IRON

The element iron is an abundant element found in most rocks and soil. It generally occurs as sulfides and oxides in igneous and metamorphic rocks and as iron oxide and hydroxide cementing materials in coarse-grained sedimentary rocks.

Ferrous iron is unstable in the presence of oxygen where it is bound to hydroxide anions as $2\text{Fe}(\text{OH})_3$.



If subjected to a strong reducing environment, such as a marsh, the reaction is reversed and iron goes back into solution. The amount which dissolves is related to a number of variables including the velocity with which water moves through this environment.

The U. S. Public Health Service recommends an iron concentration of less than 0.3 mg/l in water used for drinking and culinary purposes. Laundry and porcelain tend to be stained when concentrations reach 0.5 to 1.0 mg/l. At this level it can also be tasted.

The presence of iron under the proposed disposal area in the majority of cases was below the detection limit of 0.1 mg/l. In monitoring wells 5 and 18, located in or near the central marsh area, iron increased to 10 mg/l and 5.7 mg/l, respectively. In the southern marsh, monitoring wells exhibited concentrations between 0.5 mg/l and 6.1 mg/l. Although the iron concentration in the cooling lake was below the detection limit, down-gradient wells 44 and 30A located on the cooling lake dike yielded values of 11 mg/l and 26 mg/l iron respectively. Boring logs indicated trace amounts of organic material at the base of the dike which is probably the reason for the high concentrations observed. At the same location, iron in well 30B installed to a depth of 100 feet below the surface was below 0.1 mg/l. Thus, the occurrence of high iron concentrations in this area appears restricted to groundwater in the upper portion of the aquifer where organic material is present and conditions are favorable for the dissolution of iron.

The ash pond discharge in the drainage ditch paralleling the west site boundary showed an iron concentration of 3.7 mg/l. Shallow monitoring wells 33A and 34A adjacent to the ditch indicated less than 0.1 mg/l iron.

North of Murray Road the iron concentration in monitoring wells in the marsh and uplands were typically less than 0.1 mg/l. Although the ash basin had less than 0.1 mg/l iron, several wells along cross-section F-F' showed anomalously high values (#M6-2.3 mg/l; #47-16 mg/l; #51B-21 mg/l).

CALCIUM

Calcium, because of its relative abundance and mobility, is the principle cation in most natural fresh water. Calcium is a constituent of many rock types but is found in greatest quantities in waters leaching deposits of limestone and dolomite. In sandstone and other detrital rock, calcium carbonate is a common cement between grains.

Monitoring wells located within the site boundaries exhibited calcium concentrations between 30 mg/l and 66 mg/l and averaged about 42 mg/l. Similar to iron, the concentrations of calcium in monitoring wells along cross-section F-F' were anomalously high, up to 150 mg/l calcium. Water table wells along the drainage ditch carrying the ash pond discharge averaged 83 mg/l while the ash pond effluent contained 28 mg/l. Generally the amount of calcium in groundwater decreased with depth. Nested monitoring wells typically showed somewhat lower concentrations of calcium in the deeper wells.

MAGNESIUM

As a relatively abundant element on the earth's crust, the principle sources of magnesium in natural waters are considered to be ferromagnesian minerals in igneous rocks and magnesium carbonate in carbonate rocks (limestone and dolomite). Waters in which magnesium is the predominant cation are somewhat unusual. Like calcium, magnesium imparts the property of hardness to water and is, therefore, of concern to industrial users.

Generally, concentrations of magnesium were 1/3 to 1/2 of the calcium levels. Magnesium concentrations within the site boundaries ranged between 10 mg/l and 36 mg/l and averaged 27 mg/l. Similar to calcium and iron, higher magnesium values were observed, in general, north of Murray Road and especially in monitoring wells along cross-section F-F'.

SULFATE

Sulphur is widely distributed in reduced form in both igneous and sedimentary rocks as metallic sulfides and when present in sufficient concentrations, constitutes ore of economic importance. During weathering processes with aerated water, the sulfides are oxidized to sulfate ions and are dissolved into water. Pyrite (FeS_2) crystals often occur in sedimentary rocks and are particularly associated with biogenic deposits such as coal which were deposited under strongly reducing conditions.

The concentrations of sulfate in groundwater in the vicinity of the proposed disposal site ranged from less than 1 mg./l to 1,200 mg./l of sulfate. (Refer to Drawing C 7134-15.) Typically, within the site boundaries concentrations averaged approximately 12 mg./l. Near the coal storage area, however, significant increases were observed. Observation wells 26A, 26B, and 42 exhibited concentrations between 900 and 1100 mg./l. The depth of sulfate enrichment in groundwater, near the coal pile, appears to extend to considerable depths, indicated by relatively high sulfate concentrations in Well 26B sealed 100 feet below ground surface. The oxidation of pyrite minerals in the coal leaching into the groundwater is probably the major source of the high concentrations observed.

Sulfate concentrations in the ash disposal settling pond were 520 mg./l. In the ditch carrying the ash pond discharge, the effluent is treated with sulfuric acid which results in precipitation of barium sulfate and aluminum hydroxide (personal communication, Merlin Horn, 1978). Consequently, the sulfate concentration of the effluent waters is lowered considerably to 13 mg./l. Well 33A, however, located near the point of effluent discharge, exhibited 1200 mg./l sulfates.

CHLORIDE

Chloride is generally present in much lower concentrations in rocks than many of the other major constituents of natural water. Important sources, however, are associated with sedimentary rocks, particularly the evaporites. The chemical behavior of chloride in natural water is relatively inert compared to the other major ions. There are few oxidation-reduction reactions and no significant chemical complexing reactions which chloride enters into. In addition, chloride ions are not significantly adsorbed on mineral surfaces. For these reasons, chloride is commonly used as a tracer in groundwater.

Chloride concentrations in groundwater in the vicinity of the Columbia Energy Center typically range between 0.5 mg./l and 30 mg./l. The highest concentrations in monitoring wells tended to be located adjacent to U. S. Highway 51 where the use of road salt has resulted in the percolation of chloride into the groundwater. Monitoring Wells 51A and 51B located in a low area north of Murray Road along U. S. Highway 51, yielded chloride concentrations in excess of 200 mg./l. Two other wells, 52A and 19, also located along U. S. Highway 51, yielded values of 30 mg./l and 42.5 mg./l chloride, respectively.

Within the proposed site boundaries, the chloride concentration averaged 7.1 mg./l. Excluding the few wells adjacent to U. S. Highway 51 exhibiting elevated concentrations, no other significant trends in the occurrence of chloride were observed.

SUMMARY

In summary, the groundwater in the vicinity of the proposed disposal site exhibited a somewhat alkaline pH. In lowland areas, the pH was typically below 7.0, probably a result of the presence of acidic organic soils.

Specific conductance within the proposed site averaged 465 umhos/cm. Conductivities up to 2600 umhos/cm were observed, however, in the vicinity of the coal storage area, the present ash disposal pond and ash pond effluent channel where infiltration of water from these sources is occurring into the groundwater system.

The groundwater typically exhibited relatively low iron concentrations although, locally, concentrations in excess of drinking water standards were observed in about 20% of the wells. The occurrence of the higher iron concentrations appears to be related to the presence of organic soils.

Groundwater at the proposed site also tended to exhibit high calculated hardness (216 mg./l) based on average observed values for calcium (42 mg./l) and magnesium (27 mg./l). Dissolution of limestone and dolomite rocks in the glacial drift are the probable sources of these elements in the groundwater.

Enrichment of sulfate in groundwater has occurred as a result of leaching of pyrite (FeS_2) minerals from the coal storage area where concentrations up to 1200 mg./l were observed. The depth of this enrichment appears to extend beyond the maximum depth into the aquifer investigated. Sulfate concentrations decreased rapidly away from the coal storage area to an average of 12 mg./l within the proposed site boundaries. Other local sources of sulfate in groundwater appear to be related to the present ash settling pond.

The concentration of chloride within the proposed site averaged 7.1 mg./l. Higher levels were generally observed in wells adjacent to U. S. Highway 51 where the infiltration of road salt has locally raised chloride concentrations.

The above interpretations are based on one round of water quality sampling only and should be considered as preliminary in nature. High sulfate and chloride concentrations observed at greater depths may be a temporary condition resulting from contamination of spoil backfill materials with coal dust or salt, respectively, during installation of the monitoring well. Future sampling of these monitoring wells will help to distinguish short term contamination from actual conditions existing in the aquifer.

APPENDIX F
WATER QUALITY DATA

WELL NO.	pH	SPECIFIC CONDUCTANCE (umhos/cm @ 25°C)	SULFATE (mg/l)	CHLORIDE (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)
1A	7.6	550	17.	6.5	52	37	<0.1
1B	8.05	460	16.	10.5	39	31	<0.1
2	7.8	527	14.	2.5	45	32	<0.1
3A	7.5	548	13.	2.5	58	36	<0.1
3B	8.1	506	14.	7.0	50	34	<0.1
4	7.8	580	10.	4.0	59	34	<0.1
5	6.3	560	210.	12.5	13	29	10
16	7.6	408	12.	1.5	42	28	<0.1
17	6.45	350	30.	16.5	16	13	0.6
18	6.45	380	4.	4.5	33	22	5.7
19	7.9	570	10.	42.5	44	24	<0.1
20	8.0	340	10.	5.0	36	24	<0.1
21	6.9	220	20.	4.5	23	10	0.1
24A	7.45	775	18.	6.0	76	52	0.1
24B	7.85	440	15.	6.0	43	31	0.1
25	8.1	300	10.	2.5	29	20	<0.1
26A	7.2	2100	900	17.0	140	48	1.5
26B	7.5	2600	1100	16.5	43	7.0	0.2
27	7.15	400	6.	8.0	23	18	<0.1
28A	7.75	500	3.	0.5	48	31	<0.1
28B	7.6	480	4.	3.5	39	28	<0.1
29A	7.8	330	16.	1.5	33	21	0.5
30A	6.75	920	64.	11.0	38	30	26
30B	7.6	770	210	21.0	37	19	<0.1
33A	8.2	2500	1200	24.0	83	50	<0.1
33B	7.9	390	22.	6.5	31	27	0.2
34A	7.7	680	140.	10.0	58	45	0.1
34B	7.7	1700	660	15.0	48	22	<0.1
35	6.8	740	<1.0	4.0	66	33	2.9
36	6.8	740	<1.0	3.5	53	35	6.1
37A	7.7	460	9.	4.0	48	31	0.8
37B	7.5	630	73.	7.5	71	35	<0.1
39A	7.5	1800	350	22.0	180	100	0.1
39B	7.9	330	560	20.5	31	22	0.1
40A	8.0	630	140	8.5	43	29	<0.1
40B	8.1	330	17.	3.0	31	22	<0.1
41	6.8	590	16.	11.0	58	27	9.3

WELL NO.	pH	SPECIFIC CONDUCTANCE (umhos/cm @ 25°C)	SULFATE (mg/l)	CHLORIDE (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)
42	7.4	2400	900	17.5	50	12	0.5
44	6.9	490	<1.	16.5	39	23	11
45	7.6	390	14.	3.0	40	25	<0.1
46A	7.3	1100	21.	15.5	140	82	<0.1
46B	7.8	470	25.	17.5	40	26	<0.1
47	6.6	1200	3.	8.0	140	40	16
48A	7.3	620	15.	8.0	62	37	<0.1
48B	7.1	520	22.	20.0	43	29	0.2
49	7.15	730	6.	3.5	75	41	<0.1
50A	7.6	520	28.	15.5	51	34	<0.1
50B	7.5	410	21.	18.0	31	21	<0.1
51A	6.1	1850	8.	205.	65	40	<0.1
51B	7.2	1250	23.	275.	57	36	21
52A	7.7	450	16.	30.5	36	17	<0.1
52B	7.4	430	40.	17.5	32	20	<0.1
53	7.75	450	27.	10.5	39	28	<0.1
54A	7.8	350	12.	4.0	34	21	0.1
54B	7.55	390	15.	5.5	40	24	0.1
55B	7.9	340	23.	17.5	32	22	0.1
56	7.8	450	22.	9.5	43	28	0.1
57	7.85	380	17.	7.0	38	24	0.1
M-6	7.0	1160	5.	7.0	150	91	2.3
Cooling Lake	8.3	370	31.	18.0	34	21	<0.1
Ash Pond Effluent	7.45	1380	13.	4.0	28	1.2	3.7
Ash Pond Drainage	11.4	1510	520.	23.5	29	0.2	<0.1
Ditch (A) Drainage	7.8	500	21.	7.0	43	29	<0.1
Ditch (B)	9.05	1780	750	14.0	42	5.4	<0.1

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APPENDICES TO

SUPPLEMENTARY FEASIBILITY STUDY REPORT
AND PRELIMINARY ENGINEERING CONCEPTS
COLUMBIA SITE
WISCONSIN POWER AND LIGHT COMPANY
TOWN OF PACIFIC, COLUMBIA COUNTY, WISCONSIN

D. N. R. APPROVED
DATE 9/3/80
Nile Ostenso, Hydro



APPENDIX I

WATER QUALITY DATA - DECEMBER 1978



WATER QUALITY DATA

12/78

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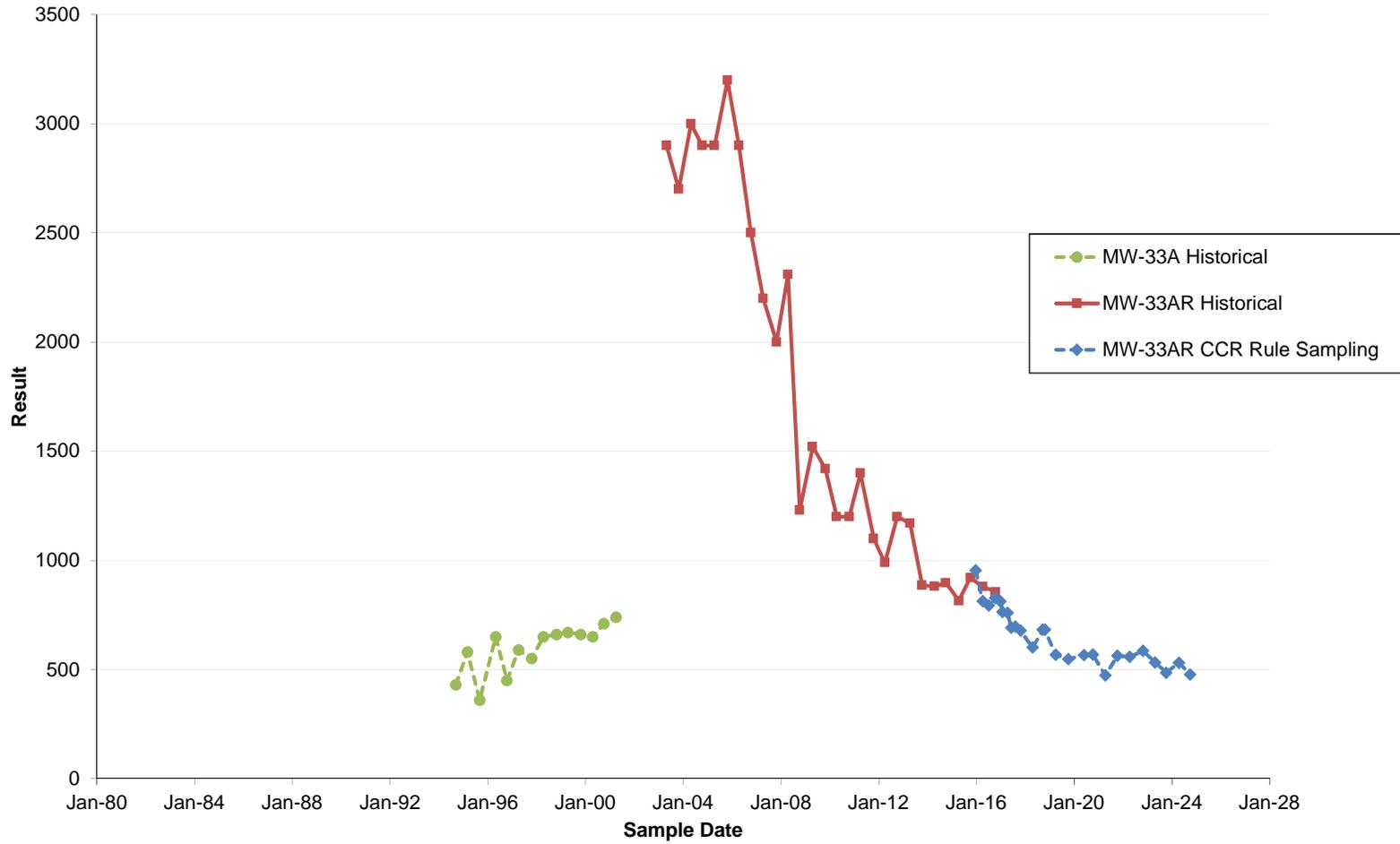
WELL NO.	pH	SPECIFIC CONDUCTANCE (umhos/cm @ 25°C)	SULFATE (mg/l)	CHLORIDE (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)	BORON (mg/l)
1A	7.3	530	30	3.1	54	35	<0.1	-
1B	7.0	470	67	6.1	49	30	<0.1	-
2	7.25	458	91	<.5	48	24	<0.1	-
3A	7.0	560	36	<.5	61	31	<0.1	-
3B	7.15	530	52	35.7	37	33	<0.1	-
4	7.2	750	69	5.8	49	30	<0.1	-
5	6.35	1,650	670	14.1	14	13	1.7	-
16	6.9	390	69	1.0	49	23	<0.1	-
17	5.55	295	57	16.3	14	8.6	0.2	-
18	5.9	430	10	4.2	47	21	1.1	-
19	7.4	765	75	4.2	51	28	<0.1	-
20	7.4	380	26	1.6	39	26	<0.1	-
21	5.7	250	54	10.4	15	8.3	0.2	-
24A	7.2	730	36	1.6	65	42	<0.1	-
24B	7.2	470	10	7.3	42	28	<0.1	-
25	7.0	335	29	7.8	39	21	0.2	-
26A	7.4	2,250	650	12.6	32	8.6	<0.1	-
26B	6.8	2,530	840	20.8	49	18	<0.1	-
27	6.9	410	24	4.2	40	24	0.4	-
28A	7.2	500	61	0.5	45	28	<0.1	-
28B	7.0	465	6	2.1	39	26	0.1	-
29A	7.1	410	24	3.6	31	22	0.1	-
30A	5.8	1,140	15	<0.5	97	56	38	-
30B	6.65	835	160	14.6	37	20	<0.1	-
33A	7.8	1,970	830	16.7	21	8.9	<0.1	-
33B	7.5	380	31	7.3	24	27	<0.1	-
34A	7.25	560	46	4.2	53	33	<0.1	-
34B	8.5	1,575	730	21.9	28	29	0.1	-
35	6.7	545	61	3.6	60	26	1.0	-
36	6.4	515	5.0	2.6	43	24	4.8	-
37A	7.05	438	30	3.7	50	28	<0.1	-
37B	6.7	325	18	7.3	1.0	0.5	<0.1	-
39A	6.35	1,260	33	13.6	70	7.6	0.1	-
39B	6.7	385	25	4.2	30	21	<0.1	<.05
40A	7.35	483	40	<0.5	48	24	<0.1	-
40B	7.25	343	4	4.2	21	14	<0.1	-
41	6.1	640	54	19.8	43	32	<0.1	-

WELL NO.	pH	SPECIFIC CONDUCTANCE (umhos/cm @ 25°C)	SULFATE (mg/l)	CHLORIDE (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)	BORON (mg/l)
42 <i>near old well</i>	7.15	2,050	910	15.6	23	7.5	0.1	-
44 <i>near old well</i>	6.15	710	6	0.5	56	27	3.5	-
45 <i>near old well</i>	7.2	420	32	1.0	44	26	<0.1	-
46A <i>near old well</i>	7.0	560	93	<0.5	130	75	<0.1	<0.05
46B <i>near old well</i>	6.5	1,290	170	20.8	46	30	<0.1	<0.05
47 <i>near old well</i>	7.3	958	120	<0.5	110	48	<0.1	-
48A <i>near old well</i>	6.15	640	59	<0.5	42	51	<0.1	<0.05
48B <i>near old well</i>	6.8	450	23	5.2	40	27	<0.1	<0.05
49 <i>near old well</i>	7.0	880	26	2.1	93	58	0.1	-
50A <i>near old well</i>	7.4	660	25	17.7	60	36	<0.1	-
50B <i>near old well</i>	7.1	405	16	17.7	38	23	<0.1	-
51A <i>near old well</i>	7.0	1,170	57	135	66	31	<0.1	-
51B <i>near old well</i>	7.3	1,410	22	330	46	39	<0.1	-
52A <i>near old well</i>	7.0	370	110	18.5	35	10	<0.1	-
52B <i>near old well</i>	7.0	595	43	52.5			0.1	-
53	Frozen							
54A <i>near old well</i>	7.5	345	10	1.0	36	22	<0.1	<0.05
54B <i>near old well</i>	Frozen							
55B <i>near old well</i>	7.3	505	26	15.6	52	29	<0.1	<0.05
56 <i>near old well</i>	Frozen							
57 <i>near old well</i>	Frozen							
M-6								
58 <i>near old well</i>	6.55	1,265	140*	<0.5	110	65	0.1	-
59 <i>near old well</i>	6.8	925	40	<0.5	86	60	<0.1	-
60 <i>near old well</i>	7.2	1,510	54	4.7	130	85	<0.1	-
61A <i>near old well</i>	6.85	590	39	30.2	58	31	<0.1	-
61B <i>near old well</i>	7.2	505	6	13.5	48	29	<0.1	-
62 <i>Insect Hydrant</i>	6.7	1,517	72	178	120	53	<0.1	-
64 <i>near old well</i>	6.9	670	100	26.8	63	36	0.8	-
65 <i>near old well</i>	7.2	830	57	17.8	78	50	<0.1	-
66 <i>near old well</i>	6.5	680	55	40	66	24	3.6	-

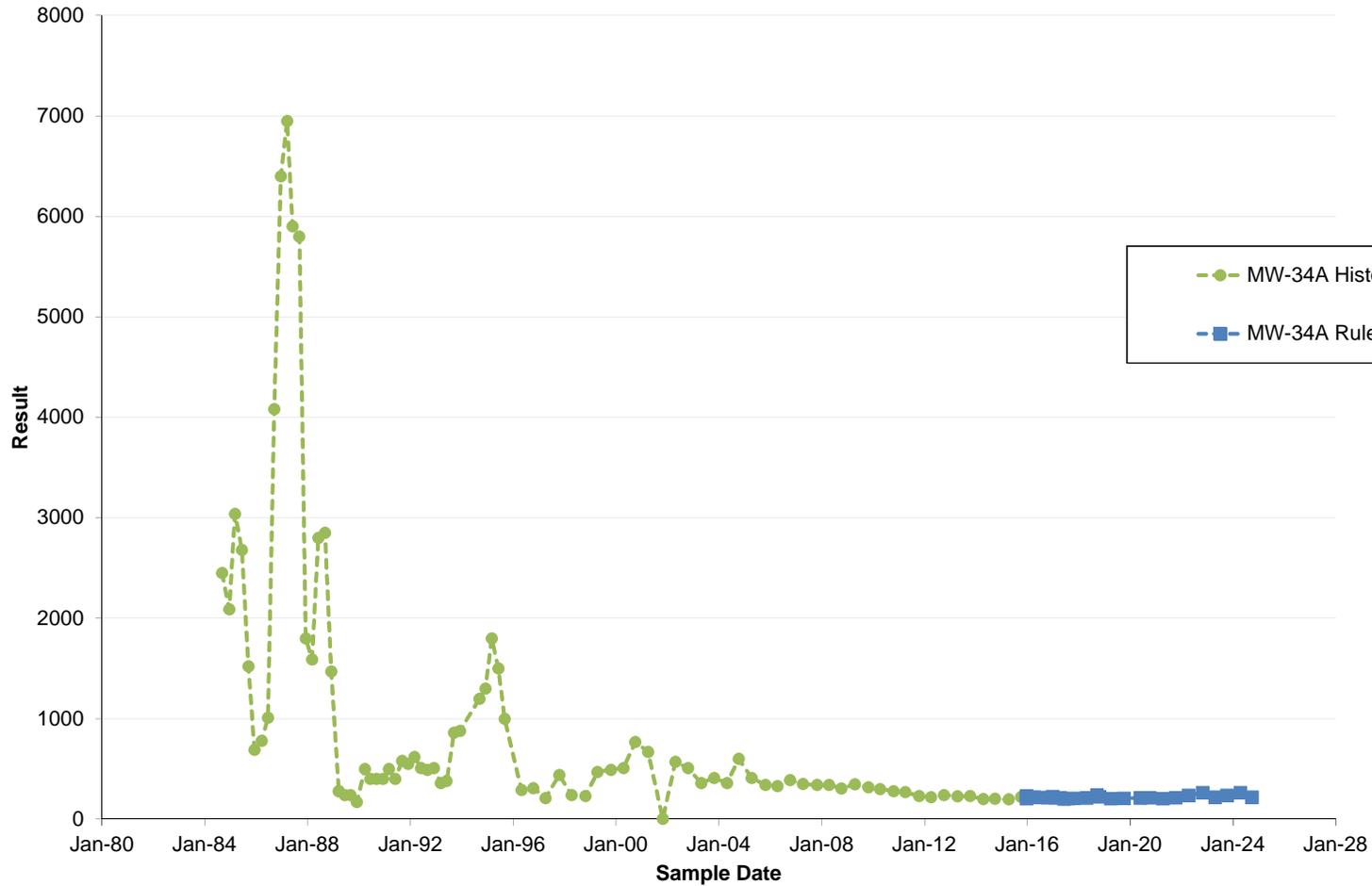
WELL NO.	pH	SPECIFIC CONDUCTANCE (umhos/cm @ 25°C)	SULFATE (mg/l)	CHLORIDE (mg/l)	CALCIUM (mg/l)	MAGNESIUM (mg/l)	IRON (mg/l)	BORON (mg/l)
67	7.0	560	100	1.0	57	32	1.0	-
68A	7.6	440	32	2.1	40	27	<0.1	-
68B	7.2	400	36	1.0	42	25	<0.1	-
70A	7.5	440	20	<0.5	27	37	<0.1	-
70B	7.3	520	25	5.2	51	34	<0.1	-
72AZ	6.45	860	11	<0.5	100	41	1.8	-
72B	8.4	230	45	<0.5	17	19	<0.1	-
M-4	7.6	864	180	26.1	20	11	<0.1	-
MM-4			2	2.6	14	21	0.9	0.39
Cooling Lake at 1	7.7	355	36	13.6	31	21.2	<0.1	-
Ash Pond at 2	11.4	3,210	1,100	22.9	34	<0.1	<0.1	-
Ash Pond at 3	8.7	725	34	21.9	48	16	<0.1	-
Ash Pond Effluent at 4	6.7	3,090	1,400	25.0	39	0.4	<0.1	-
Drainage Ditch at 5	7.2	730	74	33.9	56	38	<0.1	-
Drainage Ditch at 6	7.35	2,750	640	18.8	34	7.5	<0.1	-
Drainage Ditch at 7	8.05	1,780	740	27.1	31	0.2	<0.1	-

Appendix C
Long-Term Concentration Trend Plots

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33A and MW-33AR - Boron ($\mu\text{g/l as B}$)

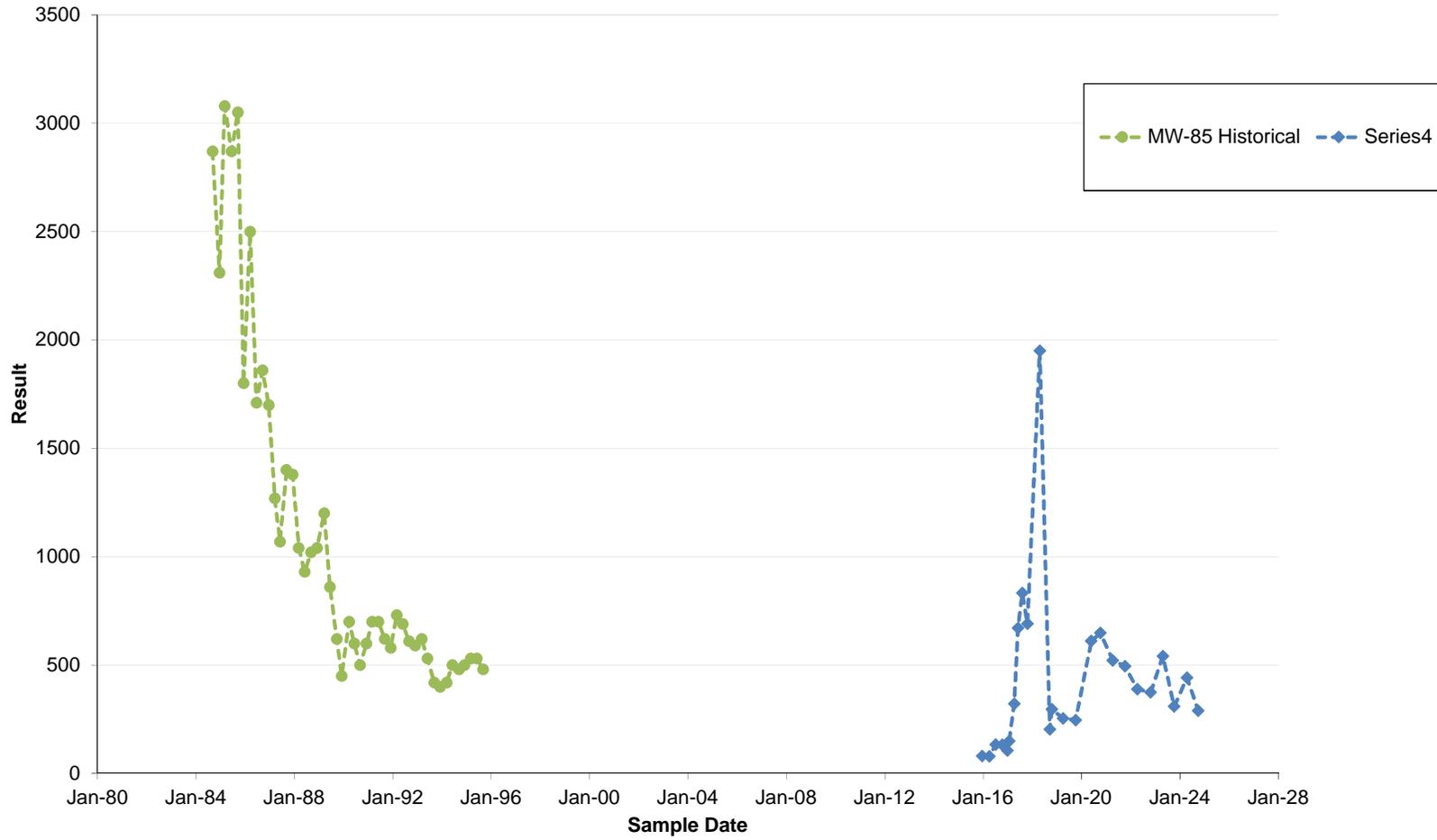


Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW34A - Boron ($\mu\text{g/l}$ as B)



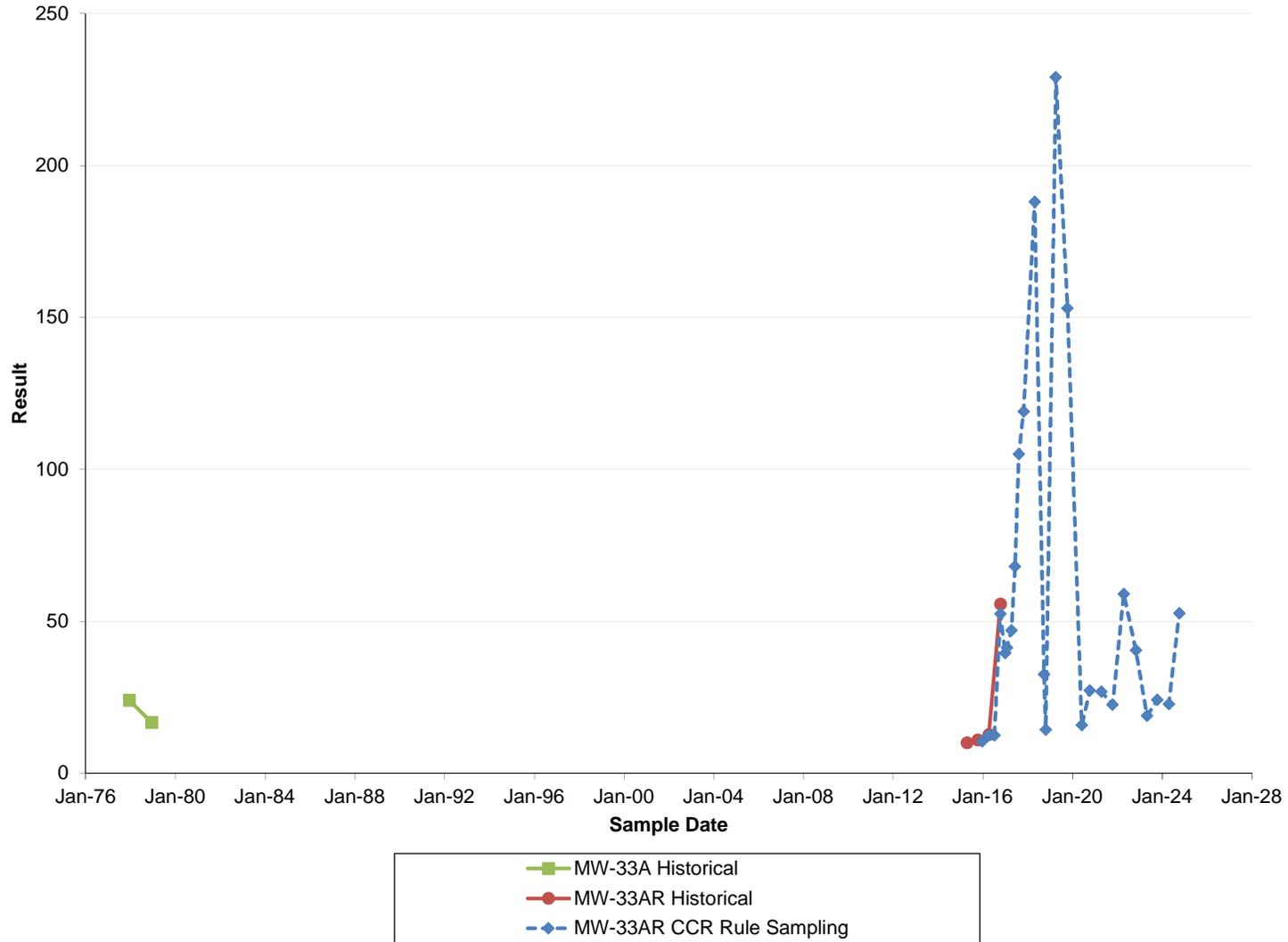
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[Bo_COL Dry.xlsx]MW-34A

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-302 and MW-85 - Boron ($\mu\text{g/l}$ as B)



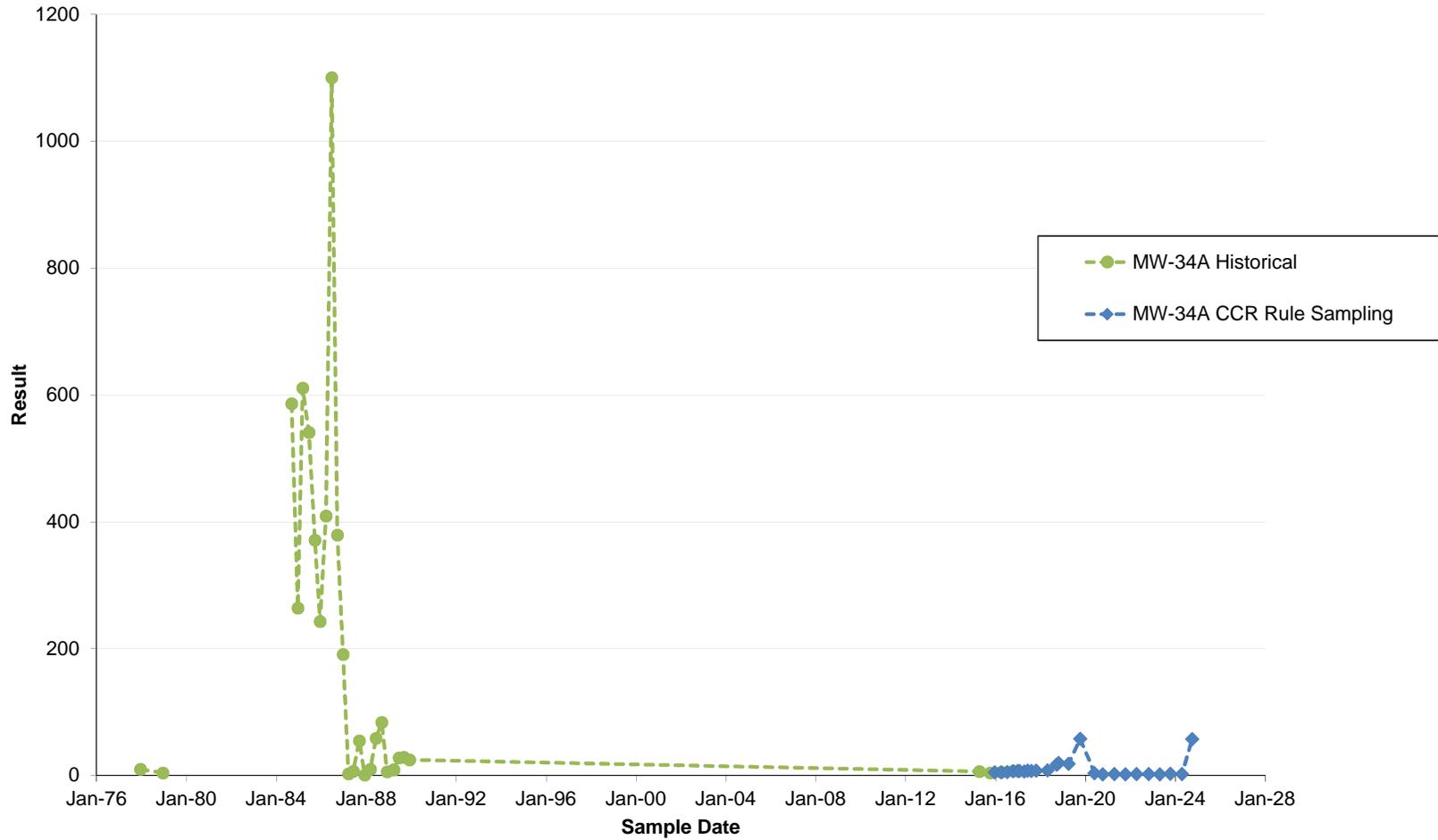
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[Bo_COL Dry.xlsx]MW-85_MW-302

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33 and MW-33AR - Chloride (mg/l as Cl)



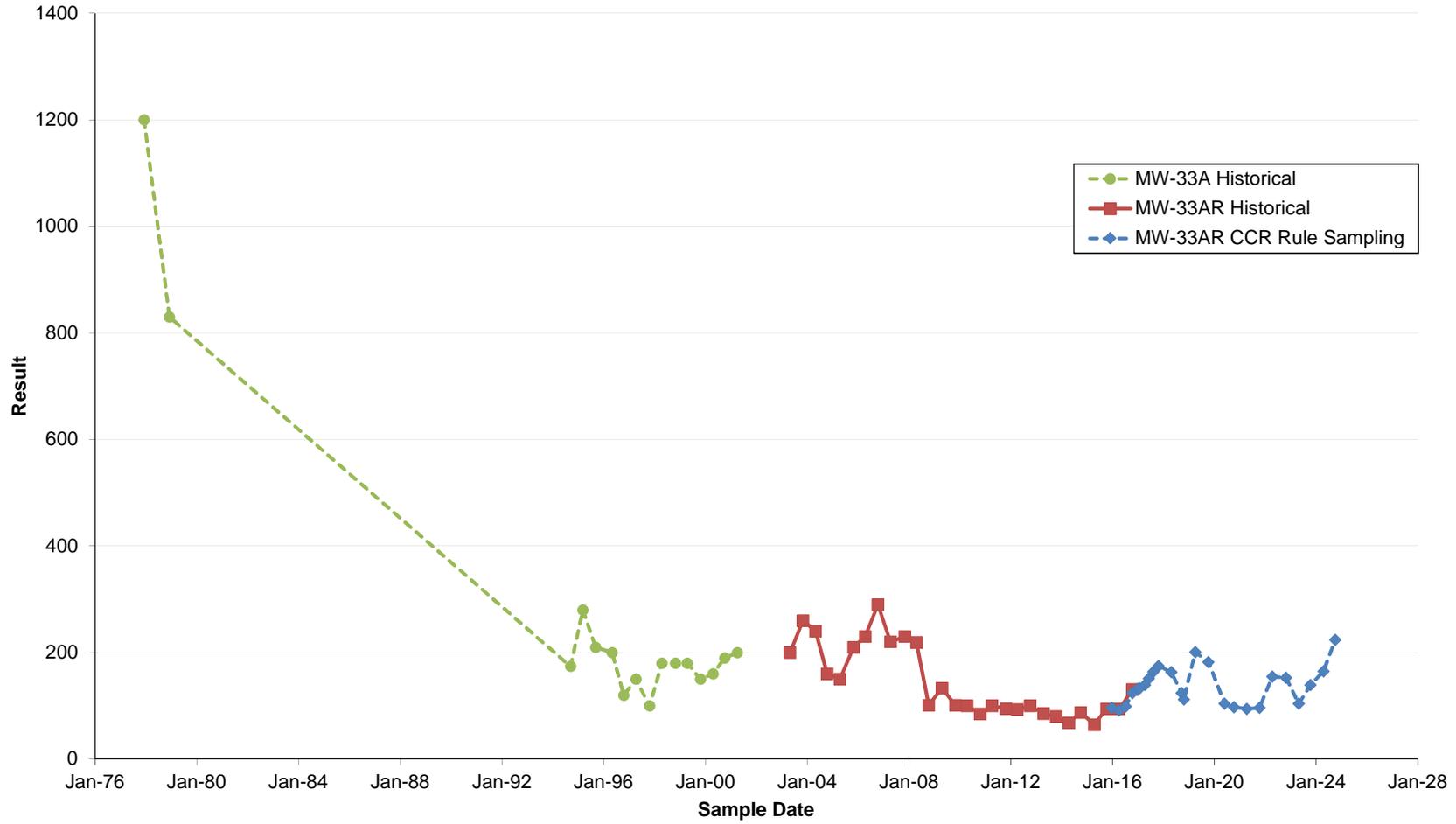
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[Cl_COL Dry.xlsx]MW-33AR

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW34A - Chloride (mg/l as Cl)



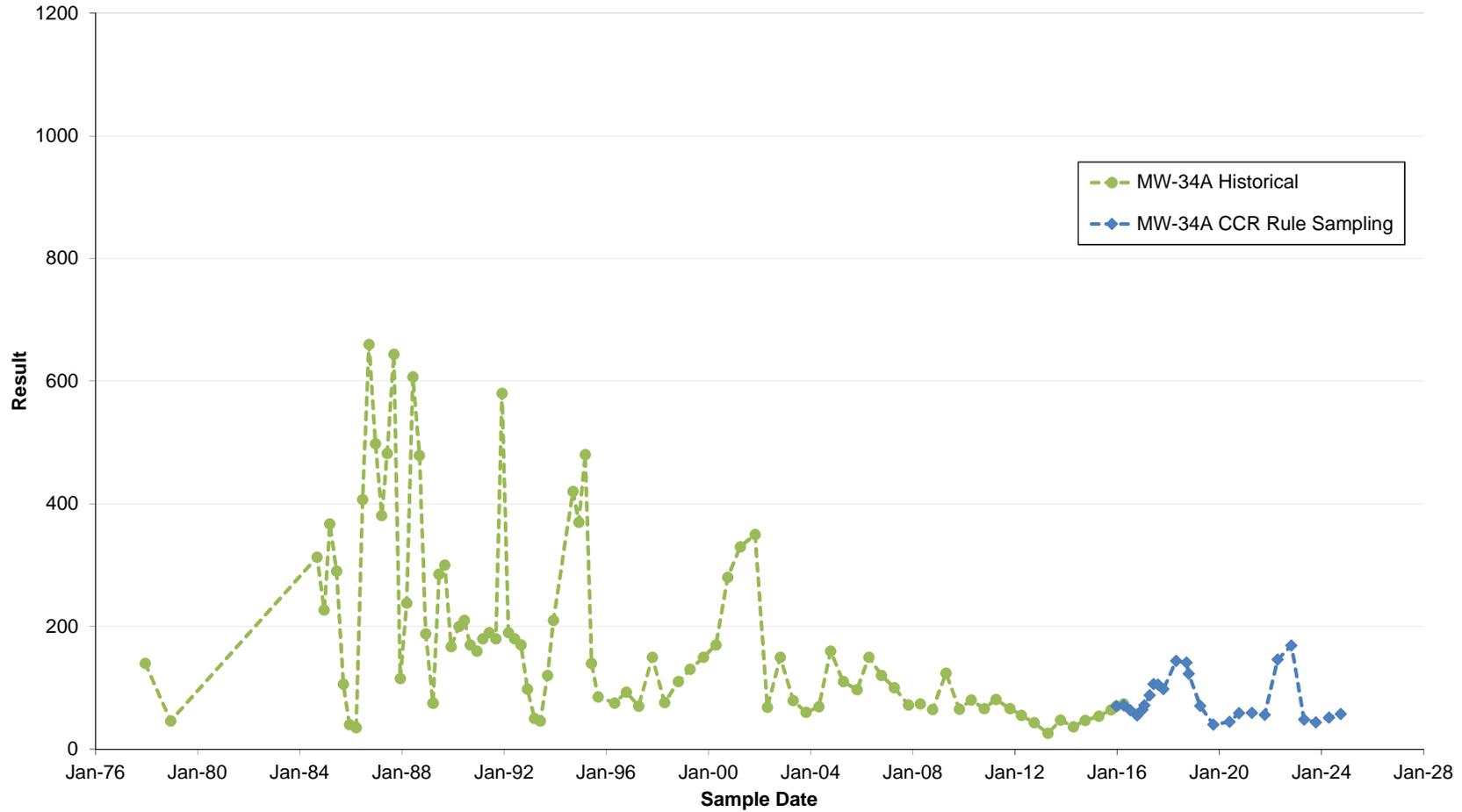
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[Cl_COL Dry.xlsx]MW-34A

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33 and MW-33AR - Sulfate (mg/l as SO4)



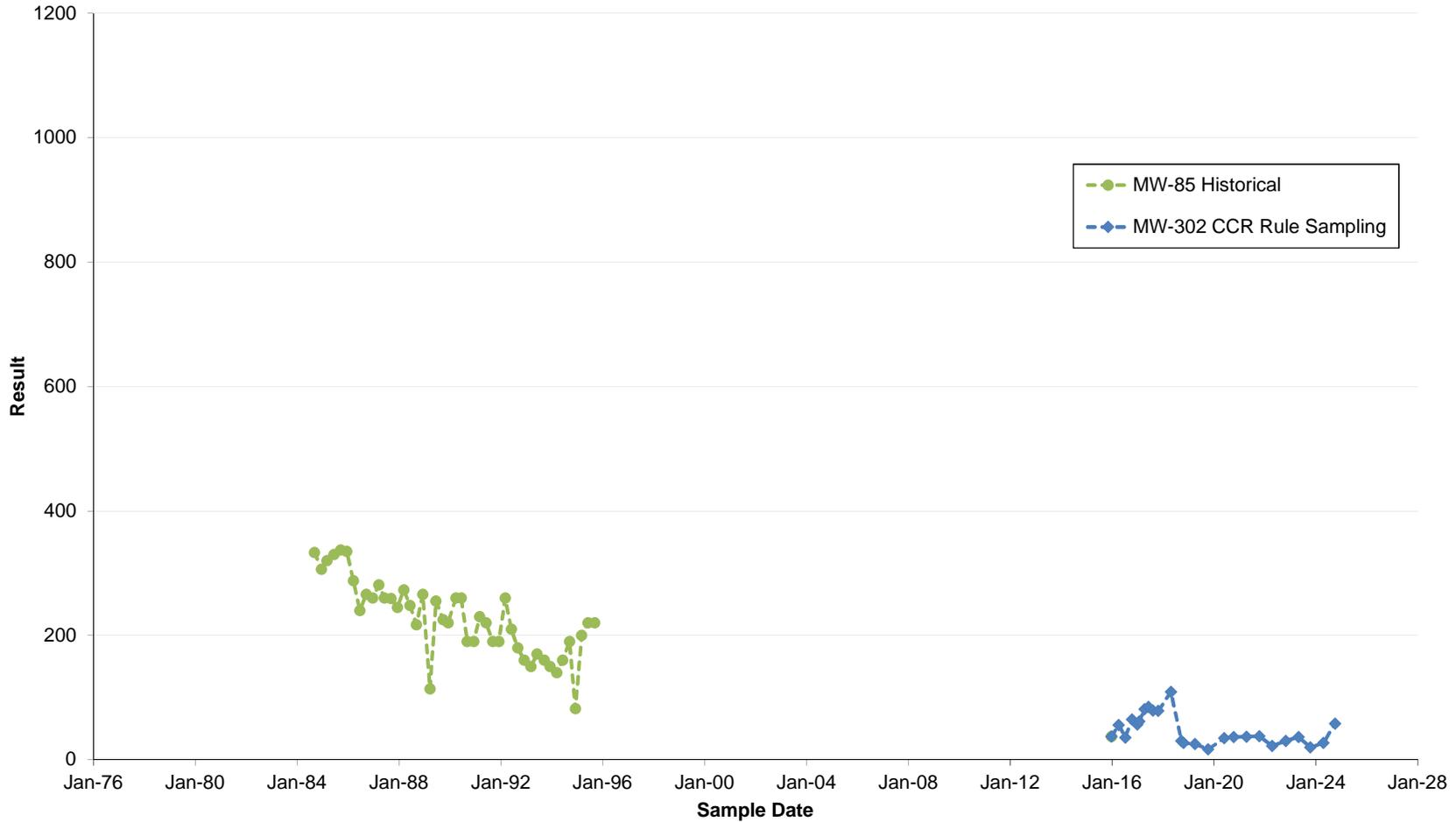
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[SO4_COL Dry.xlsx]MW-33AR CCR

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-34A - Sulfate (mg/l as SO4)



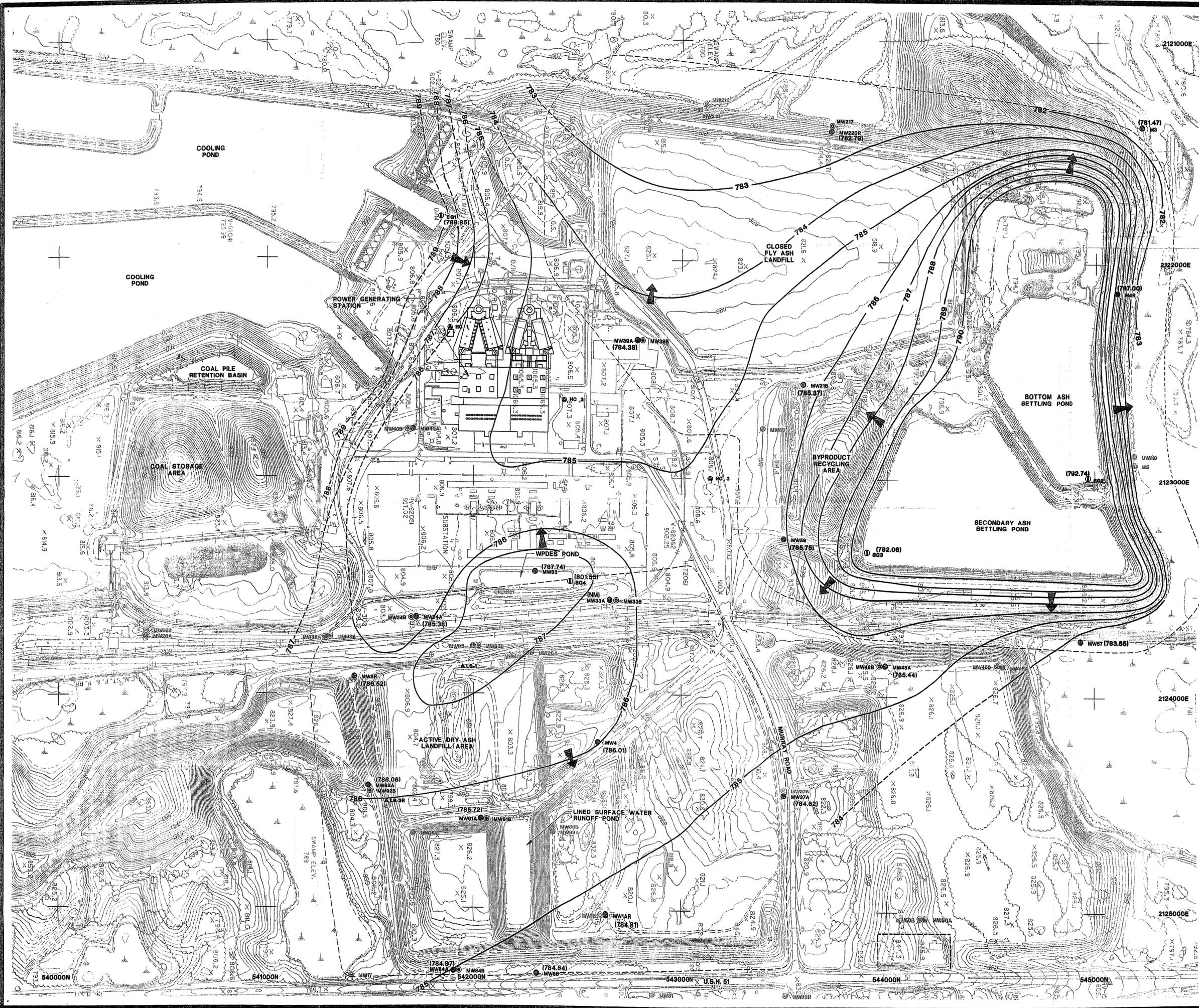
I:\25224067.00\Deliverables\COD Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[SO4_COL Dry.xlsx]MW-34A CCR

Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-85 and MW-302 - Sulfate (mg/l as SO4)



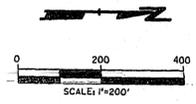
I:\25224067.00\Deliverables\COL Mod 1-3 - Oct 2024 ASD\Graphs_do not print\[SO4_COL Dry.xlsx]MW-85_MW-302 CCR

Appendix D
Historical Groundwater Flow Maps



- LEGEND**
- PROPERTY LINE
 - EXISTING RAILROAD TRACKS
 - EXISTING GROUND CONTOUR
 - CONTOUR DEPRESSION
 - EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - EXISTING FENCE
 - EXISTING BUILDING
 - EXISTING SPOT ELEVATION
 - TRESSES AND/OR BRUSH
 - WETLAND AREA
 - EDGE OF WATER
 - HC 1 WATER SUPPLY WELL
 - MW61A WATER TABLE WELL
 - MW61B PIEZOMETER
 - MW217 ABANDONED WATER TABLE WELL
 - MW220R ABANDONED PIEZOMETER
 - SG1 STAFF GAUGE
 - ALS-1 LYSEMETER
 - DESIGN MANAGEMENT ZONE
 - PROPERTY LINE
 - O.S. OPEN STORAGE
 - O.H. OVERHEAD STRUCTURE
 - E.P.S. ELECTRICAL POWER STATION
 - T TANK
 - W WALL
 - (785.31) WATER TABLE ELEVATION (FT.-MSL)
(N.M. = NOT MEASURED)
 - 786 GROUNDWATER CONTOUR LINE
(FT. INTERVAL - FT. M.S.L.)
(DASHED WHERE INFERRED)
 - ➔ GROUNDWATER FLOW DIRECTION

- NOTES**
1. BASE MAP IS PROVIDED BY WISCONSIN POWER & LIGHT CO. AND IS BASED ON PHOTOS TAKEN ON APRIL 6, 1995 BY AERO-METRIC ENGINEERING, SHEBOYGAN, WI.
 2. HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE - DATUM NAD 83(01).
 3. VERTICAL DATUM IS REFERENCED TO U.S.G.S. MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS TWO FEET.
 4. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER & LIGHT CO. IN DECEMBER 1994 & NOVEMBER 1996.
 5. THE LOCATION OF THE DESIGN MANAGEMENT ZONE DEMARCATION LINE IS APPROXIMATE.
 6. WATER ELEVATION USED TO PREPARE THIS MAP WERE MEASURED ON OCTOBER 24, 2002.
 7. THE WATER LEVEL AT MW 33A AND MW 33B COULD NOT BE MEASURED DURING OCTOBER 2002 DUE TO AN OBSTRUCTION IN THE WELL CASING.



3.			
2.			
1.			
NO.	BY	DATE	REVISION
PROJECT: ALLIANT ENERGY - WP&L COLUMBIA ASH PONDS & DRY ASH DISPOSAL FACILITY			
SHEET TITLE: WATER TABLE MAP (OCTOBER 2002)			
DRAWN BY: defoe	SCALE: 1"=200'	PROJ. NO. 3024.28	
CHECKED BY: JMR		FILE NO. WATERTBL.PLT	
APPROVED BY: JCD	DATE PRINTED:		FIGURE 3
DATE: JANUARY 2003			

PROJECT: ALLIANT ENERGY - WP&L COLUMBIA ASH PONDS & DRY ASH DISPOSAL FACILITY
 SHEET: WATER TABLE MAP (OCTOBER 2002)
 DRAWN BY: defoe
 CHECKED BY: JMR
 APPROVED BY: JCD
 DATE: JANUARY 2003
 SCALE: 1"=200'
 PROJ. NO. 3024.28
 FILE NO. WATERTBL.PLT
 FIGURE 3

F2 October/November 2024 Mod 4-6 Detection Monitoring
Alternative Source Demonstration

Alternative Source Demonstration October 2024 Detection Monitoring

Dry Ash Disposal Facility, Modules 4-6
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:



SCS ENGINEERS

25224067.00 | April 29, 2025

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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- Appendix B Historical Water Table Maps
- Appendix C Historical Calcium Data
- Appendix D Precipitation Graph
- Appendix E TDS and Chloride Correlation Plot

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PE CERTIFICATION

 <p>WISCONSIN Sherren C. Clark E-29863 Madison, Wis. PROFESSIONAL ENGINEER</p>	<p>I, Sherren Clark, hereby certify that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	<p style="text-align: center;">  4-26-2025 </p>
	<p>(signature) (date)</p>
	<p>Sherren Clark</p>
	<p>(printed or typed name)</p> <p>License number E-29863</p> <p>My license renewal date is July 31, 2026.</p> <p>Pages or sheets covered by this seal: Alternative Source Demonstration, October 2024 Detection Monitoring, Dry Ash Disposal Facility, Modules 4-6 Columbia Energy Center, Pardeeville, Wisconsin (Entire Document)</p>

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1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

This ASD also provides the results for the October 2024 sampling event and a supplemental resampling event completed in November 2024.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs for boron, calcium, chloride, sulfate and total dissolved solids (TDS) that were identified in the statistical evaluation of the October 2024 detection monitoring event and the November 2024 resampling event at the Columbia Energy Center (COL) Dry Ash Disposal Facility, Modules 4-6 CCR Unit (Mod 4-6).

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the Dry Ash Disposal Facility (ADF) and the Ash Ponds Facility. This ASD evaluates the conditions at the site for Mod 4-6 of the ADF only. The Module 4 CCR Unit became operational in 2018. Modules 5 and 6 were constructed in 2021 and began receiving waste in 2022. The monitoring network certification was updated to include Modules 5 and 6 on December 9, 2021, and the CCR Unit was subsequently referred to as Mod 4-6. The ADF is operated under the Wisconsin Department of Natural Resources (DNR) License No. 3025.

The groundwater monitoring system at the COL Mod 4-6 facility monitors a single CCR Unit:

- COL Dry Ash Disposal Facility – Modules 4-6

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided on **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL. As of October 2024, the other CCR Units included Modules 1-3 of the COL ADF, Modules 10-13 of the COL ADF, the former Primary Ash Pond, and the former Secondary Ash Pond.

On January 31, 2025, the monitoring network for the COL ADF was recertified as a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13. The October and November 2024 samples were collected and data evaluation was in progress prior to the recertification, therefore, results for these events were reported separately and separate ASDs were prepared. Future reporting will be combined for the multiunit monitoring system.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

The statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3) using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the Upper Prediction Limit (UPL) to evaluate whether an SSI has occurred. The evaluation was based on an intrawell UPL with 1-of-2 retesting, calculated using Sanitas software. The retesting approach results in a slightly lower UPL, but only 1 of 2 samples collected for the event (original and retest) must meet the UPL to demonstrate compliance. The intrawell UPLs, the October 2024 sampling results, and the November 2024 resampling results are summarized in the attached **Table 1**.

The October 2024 SSIs include the following parameter and well:

- Boron: MW-309
- Calcium: MW-310
- Chloride: MW-310
- Sulfate: MW-309, MW-310
- Total Dissolved Solids (TDS): MW-309, MW-310

These SSIs have previously been reported for each of these parameters at one or more CCR well in the COL Dry Ash Disposal Facility and the SSIs were attributed to alternative sources in previous ASDs. TDS at MW-309 and MW-310 and sulfate at MW-310 are present at higher concentrations than historically observed. Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**).
- ASD conclusions (**Section 5.0**).
- Monitoring recommendations (**Section 6.0**).

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with an SSI are provided in **Table 2**. The laboratory reports for the October 2024 detection

monitoring event and November 2024 resampling event will be included in the 2025 Annual Groundwater Monitoring and Corrective Action Report to be submitted in January 2026. Complete laboratory reports for the background monitoring events and the previous detection monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the May 2020 ASD (SCS Engineers [SCS], 2020).

2.1.2 Site Information and Groundwater Flow

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR well MW-301, the unconsolidated materials were identified as consisting primarily of silty sand. The boring log for previously installed monitoring well MW-84A shows silty sand and sand as the primary unconsolidated materials at these locations. CCR monitoring wells MW-84A and MW-301 are screened within the unconsolidated sand unit. The geology in the vicinity of wells MW-309, MW-310, and MW-311 is a poorly graded sand and gravel.

Shallow groundwater at the site generally flows to the northwest across the existing landfill area, then generally flows west toward the Wisconsin River. A groundwater flow map for October 2024 is shown on **Figure 3**. The groundwater elevation data for the state and CCR monitoring program wells are provided in **Table 3**.

Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash ponds area changed in 2022 and 2023 as the ponds were closed, dewatering wells operated temporarily, and CCR was removed. The April 2024 water levels indicated a flow direction of southeast to northwest in the Mod 4-6 area, with the pond area no longer showing the effects of mounding due to infiltration or low levels due to temporary dewatering. The August 2024 and October 2024 water levels indicate a slightly more northerly flow direction in the area of Mod 4-6. For comparison to the October 2024 event, the April 2022, October 2022, April 2023, October 2023, April 2024, and August 2024 water table maps are provided in **Appendix B**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells. The background wells include MW-301 and MW-84A. The downgradient wells include MW-309, MW-310, and MW-311. The background wells are shared with the other COL CCR Units. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 36 to 38 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS

Field notes and sampling results were reviewed to determine if a sampling error could have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers.

SCS collected samples on October 1 and 2, 2024. Retest samples were collected on November 5, 2024. Field parameter results were compiled by SCS and provided to the laboratory for inclusion in the laboratory report. SCS did not identify issues with the sample collection based on review of the data and field notes.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the October 2024 detection monitoring event and the November 2024 resampling event were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to an observed SSI for sulfate. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Based on the review of the laboratory reports, SCS did not identify any laboratory quality control flags or issues in the laboratory reports that affect the usability of the data for detection monitoring, however, some results were flagged by the laboratory as follows:

- Sampling results for background well MW-301 included a P6 flag for calcium indicating the matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level. The percent recovery for the laboratory control sample was within the control limits and the sample result is consistent with historical concentrations.
- Sampling results for MW-309 included a D3 flag for fluoride, indicating that the sample was diluted due to the presence of high levels of non-target analytes or other matrix interference. The limit of detection for this sample was elevated and the result was non-detect, which is consistent with historical results for this monitoring well.

Based on this review of the laboratory flags, the laboratory results were accepted as usable data.

A time series plot of the Appendix III parameters with SSIs identified during the October 2024 sampling event was reviewed for anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plot is provided in **Appendix A**. Some of the October and/or November 2024 results were higher than previous results for the same wells, but when reviewed in the context of previous results and the resamples, the October/November results were not identified as anomalous results indicating a likely sampling or laboratory error.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the October 2024 sampling results and the November 2024 retest results, SSIs for boron, calcium, chloride, sulfate, and TDS occurred for MW-309 and/or MW-310 for the October 2024 semiannual event.

Based on the review of the statistical evaluation, SCS did not identify any errors in the statistical evaluation that caused or contributed to the determination of intrawell SSIs for boron, calcium, chloride, sulfate, and TDS at MW-309 and/or MW-310.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the October 2024 monitoring event based on the methodology and analysis review, and no errors or issues caused or contributed to the reported SSIs.

4.0 ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the SSI at the downgradient monitoring wells MW-309 and MW-310; identifies the most likely alternative source(s); and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an intrawell approach, comparing the October 2024 detection monitoring results to the UPLs calculated based on background sampling of the compliance wells (MW-309, MW-310, and MW-311). If concentrations of a constituent that is naturally present in the aquifer vary with time, then the potential exists that the compliance sampling concentrations may be higher than background concentrations due to natural temporal variation.

Temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Background monitoring for the CCR rule wells and historical calcium data for non-CCR rule wells indicates that calcium concentrations in the range of those observed in the samples from MW-310 in October and November 2024 are present upgradient from the ADF and were present before the ADF was constructed. Although the MW-309 October/November calcium results exceeded the intrawell UPL for MW-309 (65,700 micrograms per liter ([ug/L]), they were below the intrawell UPL for nearby well MW-310 (137,000 ug/L) and were below the interwell UPL calculated for Modules 1-3 based on shared upgradient wells MW-84A and MW-301 (126,000 ug/L).

Historical calcium data for non-CCR rule wells at the ADF and select wells associated with the nearby Ash Ponds Facility (License #2525) are included in **Attachment C**. The earliest available data for wells associated with the ADF are from September 1984. Initial placement of CCR in test plots in Module 1 of the ADF was approved in October 1984, and CCR disposal began sometime after that. Therefore, the initial groundwater monitoring results represent pre-disposal conditions for the ADF. These historical data show fluctuating calcium concentrations. Of the ADF and Ash Ponds wells closest to MW-309 and MW-310, 15 wells show concentrations above 100 mg/L (100,000 ug/L).

The upgradient and historical results for calcium indicate that the SSI for calcium at MW-309 may reflect natural spatial and temporal variation in groundwater calcium concentrations.

Background sampling at the three Mod 4-6 compliance wells was performed prior to disposal of CCR in Mod 4-6. Because the background sampling at the three compliance wells was performed after other potential man-made sources of boron, calcium, chloride, sulfate, and TDS had been in operation for many years, it is difficult to determine how much of the variation in concentrations is due to natural sources versus man-made alternative sources associated with the long-term use of the property, as discussed in **Section 4.1.2**. Based on comparison to the two upgradient wells, it appears likely that boron chloride, sulfate, and TDS may reflect man-made sources. Regardless of the source, natural temporal variations in infiltration and groundwater flow direction may have contributed to the SSIs for boron, calcium, chloride, sulfate, and TDS at MW-309 and/or MW-310.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially have contributed to the SSIs could include the closed ash pond landfill, the closed ash ponds, the surface water/leachate collection pond for the ADF, the former ash pond effluent ditch, the coal storage area, railroad operations, road salt use, storm water runoff from the plant entrance road, and/or other plant operations.

Historically, groundwater flow directions have varied significantly at the site due to changes in water and ash management, making it difficult to identify a specific source for low levels of boron, calcium, chloride, sulfate, and TDS in the area of the Mod 4-6 compliance monitoring wells. Furthermore, recent dewatering activities around the Secondary Ash Pond (2022) and the Primary Ash Pond (2023) likely also affected groundwater flow, further complicating the evaluation of historic sources. Nevertheless, there are several lines of evidence indicating that the October 2024 SSIs and MW-309 and MW-310 are not due to a release from the Mod 4-6 CCR unit.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for boron, calcium, chloride, sulfate, and TDS in compliance wells MW-309 and/or MW-310, relative to the intrawell background sampling, are due to one or more alternative sources include:

1. The Mod 4-6 CCR Unit was constructed with a composite liner system and leachate collection system. Module 4 has only been receiving CCR since late 2018, and Modules 5 and 6 started receiving CCR in 2022; therefore, it is unlikely that a release from Mod 4-6 could have reached MW-309 or MW-310 by October 2024. More information about the composite liner is presented in **Section 4.2.1**.
2. The detected concentrations exceeding the intrawell UPL for MW-309 are below the background UPL for nearby compliance well MW-310, and the calcium, chloride, and TDS concentrations exceeding the intrawell UPL for MW-310 are below the background UPL for well MW-309. These results indicate that concentrations in this range were present in the groundwater in this area prior to initiation of CCR disposal in the Mod 4-6 CCR Unit. The background data for the intrawell statistical analysis represent pre-disposal conditions. Information about the historical boron, calcium, chloride, and TDS concentrations is presented in **Section 4.2.2**.
3. The concentrations of sulfate at MW-309 and MW-310 increased in April and June 2023, decreased in October 2023 through June 2024, and increased again in October 2024. These short-term fluctuations are not an expected behavior in response to a release from the landfill. More information about the concentration changes with time is presented in **Appendix A** and **Section 4.2.3**.
4. Groundwater pumping for dewatering in the ash pond area during 2022-2023 and unusually high precipitation during 2024 likely induced changes in groundwater levels and flow patterns that may have contributed to short-term changes in Appendix III parameter concentrations at MW-309 and MW-310. Groundwater flow and precipitation changes are discussed in **Section 4.2.4**.
5. Because MW-309 and MW-310 are shallow wells located near the plant entrance road where elevated chloride concentrations due to road salt applications are likely. Elevated calcium concentrations can also be caused by cation exchange following road salt application. Influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a

deicing material) may be accentuated. These factors contribute to temporal variability. TDS is a sum of the dissolved substances in water and includes calcium, chloride, and sulfate; therefore, elevated concentrations of calcium, chloride, and sulfate will inevitably lead to elevated TDS. More information about the effects of road salt on the chloride, calcium, sulfate, and TDS concentrations are discussed in **Section 4.2.5**.

6. Chloride and boron are generally considered conservative tracers in groundwater. If either the landfill or the leachate pond were the source of groundwater standards exceedances for chloride or boron at MW-309 and MW-310, one would expect to see concentrations of these two parameters at similar ratios to their concentrations in leachate. Comparison of the ratio of boron to sulfate in the leachate and in the samples from monitoring wells MW-309 and MW-310 leads to a similar conclusion for the sulfate SSIs at MW-309 and MW-310. Comparison of groundwater and leachate data is discussed in **Section 4.2.6**.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Mod 4-6 Composite Liner

The Mod 4-6 CCR Unit was constructed with a composite liner system and a leachate collection system and has only been receiving CCR since late 2018 in Module 4 and since 2022 in Modules 5 and 6. Given the short active timeframe, it is very unlikely that a release from Mod 4-6 could have reached MW-309 or MW-310 by October 2024. The liner system includes the following:

- 2 feet of compacted clay
- Geosynthetic clay liner (GCL)
- 60-mil high density polyethylene (HDPE) geomembrane
- Leachate collection drainage layer
- Leachate collection piping

The Module 4 liner was constructed in 2018, and CCR placement in Module 4 began in November 2018. CCR placement in Modules 5 and 6 began in 2022.

Given the liner system in place, a release from Mod 4-6 would have to penetrate the HDPE liner at a flaw, flow vertically through the GCL and compacted clay liner, and travel with the groundwater approximately 600 feet north to MW-309 and 500 feet north to MW-310 from Module 4 in 6 years, or travel to the wells from Modules 5 and 6 in 2 years. Based on the hydraulic conductivity of the liner clay (10^{-8} centimeters/second), the lack of any evidence of a flaw in the HDPE liner, and the very low estimated average groundwater velocity (0.7 to 1.1 feet per year [SCS, 2025b]), it is very unlikely that changes in sulfate concentrations at MW-309 and MW-310 reflect a release from Mod 4-6. Extensive testing was performed as part of the DNR-approved construction documentation (SCS, 2021) to document the proper construction of the liner.

4.2.2 Area Background Concentrations for Boron, Calcium, Chloride, and TDS

The boron concentrations exceeding the intrawell UPL for MW-309 are below the background UPL for nearby compliance well MW-310. The calcium, chloride, and TDS concentrations exceeding the intrawell UPL for MW-310 are below the background UPL for well MW-309. These results indicate that concentrations in this range were present in the groundwater in this area prior to initiation of

CCR disposal in the Mod 4-6 CCR Unit. The background data for the intrawell statistical analysis represent pre-disposal conditions. The time series plots in **Appendix A** provide a visual comparison of background data versus the October and November 2024 results.

As discussed in more detail in the ASD for the May 2020 monitoring event (SCS, 2020), the background concentrations of boron in the area of the Mod 4-6 compliance wells likely reflect historical ash management activities at the site under different groundwater flow conditions. The background concentrations of calcium, chloride, and TDS may also partially reflect historical ash management activities and/or historical road salt use or other man-made influences. The background data for the intrawell statistical analysis represent pre-disposal conditions at Mod 4-6.

These results indicate that boron, calcium, chloride, and TDS concentrations in the ranges detected at the Mod 4-6 compliance wells in October and November 2024 were present in the groundwater in this area prior to initiation of CCR disposal in the Mod 4-6 CCR Unit. Based on these results, it is likely that the boron concentrations at MW-309 and the calcium, chloride, and TDS concentrations at MW-310 due to natural and/or man-made alternative sources have varied in concentration at in response to changes in groundwater flow and infiltration.

4.2.3 Parameter Concentration Changes with Time

The concentrations of multiple Appendix III parameters reported for samples from MW-309 and MW-310 increased in early 2023, decreased in late 2023, continued to drop in the April and June 2024 sampling events, and rose again in the October and November 2024 sampling events. These short-term increases and decreases are not an expected behavior in response to a release through the composite liner. The previous fluctuations of Appendix III parameters were attributed to alternative sources as discussed in ASDs prepared for the 2022 and 2023 monitoring events.

The historical boron, calcium, chloride, sulfate, and TDS concentrations from all five Mod 4-6 wells are shown in **Table 2** and on the time series plots in **Appendix A**.

4.2.4 Influence of Groundwater Flow Pattern Changes

Groundwater pumping for dewatering in the ash pond area likely induced changes in groundwater levels and flow patterns that may have contributed to the short-term peak in sulfate at MW-309 in April and June 2023 and the subsequent decrease in sulfate concentrations. In 2022, dewatering wells were installed around the Secondary Pond, and groundwater was pumped to lower the water table below the pond to facilitate CCR removal and pond closure. Pumped groundwater was discharged to the Primary Ash Pond. In 2023, groundwater was pumped from dewatering wells installed around the Primary Ash Pond to lower the water table below the pond to facilitate CCR removal and pond closure. The pumped groundwater was discharged to the large cooling pond south of the generating station.

The dewatering activities at the Primary Ash Pond were completed in September 2023, and excavation of CCR material from the Primary Ash Pond was completed in early October 2023. For comparison, the April 2022, October 2022, April 2023, and October 2023 water table maps are provided in **Appendix B**.

The April 2022 water table map shows radial flow away from the Primary Ash Pond and flow to the northwest in the Mod 4-6 area. The October 2022 water table map shows the influence of dewatering around the Secondary Pond. The April 2023 water table map shows the influence of initial dewatering around the Primary Ash Pond, and potentially some residual effects of the 2022

dewatering around the Secondary Pond. The October 2023 and April 2024 maps both show a westerly flow direction to the west of the Primary Pond. All maps continue to generally show flow to the north and/or northwest in Mod 4-6, but hydraulic gradients and flow paths likely varied locally as dewatering was started and stopped at different locations.

In addition to influence from dewatering activities conducted in 2022-2023, groundwater flow at the site in summer and fall 2024 was likely influenced by unusually high overall precipitation and several intense rain events. During 2024, Columbia County experienced the highest total precipitation in a May through July 3-month period on record (**Appendix D**). Site-specific rain measurements were recorded as part of landfill construction oversight activities in 2024 and include unusually heavy rain events of 5.5 inches on June 2, 5.5 inches on June 21 and 22, 3.75 inches over the weekend preceding July 15, and 4.75 inches on September 22. The overall high precipitation and numerous intense rain events led to substantial surface runoff and subsequent infiltration. These precipitation events and subsequent infiltration appear to have had a short-term effect on groundwater flow at the site, as evidenced by unusual groundwater flow patterns observed during the August 2024 (**Appendix B**) and October 2024 (**Figure 3**) monitoring events.

4.2.5 Surface Water Infiltration Effects

Because MW-309 and MW-310 are shallow wells located near the plant entrance road, elevated chloride concentrations due to road salt impacts are likely. Elevated calcium concentrations can also be caused by cation exchange following road salt application. Additionally, influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a deicing material) may be accentuated. These factors contribute to temporal variability.

The influence of surface water infiltration and road salt impacts is apparent in the chloride monitoring results for MW-309 and MW-310. During background monitoring, prior to CCR disposal in Mod 4-6, MW-309 had chloride concentrations ranging from 141 to 811 milligrams per liter (mg/L), and concentrations since then have been highly variable but below the intrawell UPL.

While chloride provides the strongest indication of impacts from surface water infiltration, concentrations of other parameters can also vary to the surface water impacts. Sulfate can be present as an impurity in rock salt used for deicing. Surface water infiltration can also affect seasonal water levels and local flow directions.

Monitoring well MW-310 is located adjacent to the plant entrance road, where elevated chloride concentrations due to road salt impacts are likely. In order to be located as close as possible to the waste boundary of the CCR Unit (including the Mod 5/6 additions constructed in 2021), MW-309 and MW-310 are installed between the entrance road and the storm water ditch on the south side of the road. At this location, there is a high potential for road salt application to result in increased chloride concentrations in groundwater.

A temporary increase in both calcium and chloride concentrations was previously observed at MW-309 in August 2018, prior to CCR disposal in Mod 4-6 (**Appendix A**). These fluctuations indicate that the increased concentrations are at least partly attributable to a seasonal or impermanent source such as road salt application.

October and November 2024 chloride concentrations at MW-310 were lower than baseline concentrations at nearby well MW-309 and within the range of historic concentrations at non-CCR well MW-86 (SCS, 2025a). MW-86 is located on the east side of the ADF near US Highway 51.

Elevated concentrations at both MW-309 and MW-86 have been attributed to impacts from road salt.

Chloride is a major component of dissolved solids, and historical TDS results at MW-310 are highly correlated with chloride concentrations (R^2 value of 0.91, **Appendix E**). The UPL exceedance for TDS at MW-310 in October/November 2024 is therefore also attributable to impacts from road salt.

4.2.6 Comparison to Leachate Monitoring Data

Chloride and boron are generally considered conservative tracers in groundwater. If either the landfill or the leachate pond were the source of groundwater standards exceedances for chloride or boron at MW-309 and MW-310, one would expect to see concentrations of these two parameters at similar ratios to their concentrations in leachate. Comparison of the ratio of boron to sulfate in the leachate and in the samples from monitoring wells MW-309 and MW-310 leads to a similar conclusion for the sulfate SSIs at MW-309 and MW-310.

Additional context for boron and chloride concentrations at site wells compared to available GEMS data for leachate monitoring points LP-1 (leachate pond) and LS-1 (lysimeter) is below.

- At leachate pond monitoring point LP-1
 - Historical boron concentrations have been variable and ranged from 570 $\mu\text{g/L}$ to 5,830 $\mu\text{g/L}$.
 - Chloride concentrations have generally increased, with an historic range of 27.8 mg/L to 726 mg/L.
 - This chloride concentration range overlaps with the chloride concentration ranges detected at MW-309 and MW-310, but boron concentrations at MW-309 and MW-310 are much lower (one to two orders of magnitude).
- At lysimeter LS-1 (Module 1)
 - Chloride concentrations LS-1 chloride range from non-detect to 27.2 mg/L.
 - Boron concentrations historically ranged from non-detect to 11,000 $\mu\text{g/L}$, but have been between approximately 4,000 $\mu\text{g/L}$ to 6,500 $\mu\text{g/L}$ since the mid-1990s.
 - These chloride concentrations are lower than those detected at MW-309 and MW-310 since detection monitoring began, but the boron concentrations at LS-1 in the last 30 years are one to two orders of magnitude higher than concentrations at MW-309 and MW-310.
- Lysimeter LS-3R is typically dry and has only been sampled four times since the 1990s, so results from this monitoring point were not evaluated for this ASD.

These comparisons indicate that the landfill is not a likely source of the chloride SSI at MW-310.

For boron and sulfate, comparison of the 2024 monitoring results for leachate pond LP-1 and lysimeter LS-1 with the October/November 2024 results for MW-309 and MW-310 indicates the following:

- At LP-1, boron ranged from 1,900 to 2,190 ug/L and sulfate ranged from 923 to 1,300 mg/L.
- At LS-1, boron ranged from 6,020 to 6,240 ug/L and sulfate ranged from 1,030 to 1,040 mg/L.
- At MW-309 and MW-310, boron ranged from 72.1 to 95.1 ug/L and sulfate ranged from 131 to 194 mg/L.

This comparison indicates that the sulfate concentrations at MW-309 and MW-310 are not consistent with a landfill leachate source, because they are significantly higher than would be expected based on the observed boron concentrations and the boron:sulfate ratios observed in the leachate data.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, calcium, chloride, sulfate, and TDS at MW-309 and/or MW-310 demonstrate that the SSIs are likely due to sources other than the Mod 4-6 CCR Unit.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL Mod 4-6 CCR Unit may continue with detection monitoring based on this ASD. The ASD report will be included in the 2025 Annual Report due January 31, 2026.

7.0 REFERENCES

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SCS, 2025a, November 2024 Resampling Event – Environmental Monitoring Data Submittal and Demonstration of False Groundwater Exceedance, Wisconsin Power and Light Company, Columbia Dry Ash Disposal Facility, Portage, WI, January 21, 2025.

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Tables

- 1 Groundwater Analytical Results Summary
- 2 Historical Analytical Results for Parameters with SSIs
- 3 Groundwater Elevation – State Monitoring Program and CCR Well Network

Table 1. Groundwater Analytical Results Summary
Columbia Dry Ash Disposal Facility - Module 4-6 / SCS Engineers Project #25224067.00

Parameter Name	Background Wells		Compliance Wells							
	MW-84A	MW-301	MW-309			MW-310			MW-311	
	10/2/2024	10/2/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024
Groundwater Elevation, ft amsl	787.14	787.92		786.46	785.66		786.35	785.45		786.40
Appendix III										
Boron, µg/L	10.3	22.1	61.9	72.1	72.3	82.4	93.1	78.4	43.1	34.0
Calcium, µg/L	73,300	97,000 P6	137,000	105,000	--	65,700	108,000	99,700	76,300	64,800
Chloride, mg/L	3.3	1.5 J	772	971	743	277	420	435	3.67	2.6
Fluoride, mg/L	<0.095	0.13 J	DQ	<4.8 D3	--	DQ	<0.095	--	DQ	0.10 J
Field pH, Std. Units	7.36	6.85	7.94	7.64	7.77	8.02	7.65	7.70	7.95	7.71
Sulfate, mg/L	1.8 J	10.4	64.6	142	131	107	179	194	124	11.2
Total Dissolved Solids, mg/L	318	410	1,600	2,180	1,630	773	1,210	1,190	380	262

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
 DQ = Double Quantification
 -- = Not Analyzed

LOQ = Limit of Quantitation
 LOD = Limit of Detection

mg/L = milligrams per liter
 µg/L = micrograms per liter
 SSI = Statistically Significant Increase

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
 D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
 P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
- Intrawell UPLs were calculated from background sampling results for the compliance wells from February 2018 through October 2023.

Created by: <u>RM</u>	Date: <u>5/24/2024</u>
Last revision by: <u>RM</u>	Date: <u>11/20/2024</u>
Checked by: <u>KMV</u>	Date: <u>12/3/2024</u>
Scientist/PM QA/QC: <u>TK</u>	Date: <u>1/11/2025</u>

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 4-6**

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Background	MW-301	12/22/2015	26.5	126000	3.7 J	9.3	478
		4/5/2016	25.2	115000	4.0	15.3	486
		7/8/2016	23.6	108000	3.5 J	15.0	464
		10/13/2016	30.6	118000	2.2	13.9	490
		12/29/2016	32.8	129000	2.0 J	12.3 J	444
		1/25/2017	32.6	124000	1.5 J	6.5	514
		4/11/2017	28.8	120000	2.0	10.3	502
		6/6/2017	21.3	111000	3.5	17.1	458
		8/8/2017	30.6	108000	5.5	31.6	462
		10/23/2017	34.3	87200	4.0	27.5	362
		4/25/2018	24.3	112000	2.3	8.6	464
		8/8/2018	22.8	105000	5.2	21.6	502
		10/24/2018	27.8	101000	3.2	19.2	424
		4/2/2019	26.9	126000	0.79 J	4.4	462
		10/9/2019	35.9	114000	1.7 J	8.4	418
		2/3/2020	27.9	113000	1.3 J	7.2	462
		5/29/2020	21.3	112000	2.0 J	11.5	452
		10/8/2020	28.8	93000	3.4	25.1	412
		4/14/2021	22.2	117000	1.5 J	8.5	472
		10/14/2021	31.4	67800	2.7	17.4	334
		4/13/2022	28.7	97300	1.9 J	12.7	422
		10/27/2022	37.5	62800	2.3	11.6	282
		4/27/2023	20.1	120000	1.5 J	12.3	526
		10/11/2023	36.2	52300	2.1	11.8	300
	4/17/2024	24.9	102000	1.6 J	11.5	458	
	10/2/2024	22.1	97000	1.5 J	10.4	410	
	MW-84A	12/22/2015	11.9	74000	4.9	4.9	316
		4/5/2016	14.0	72200	4.7	4.3	322
		7/8/2016	14.7	67600	5.1	3.7 J	316
		10/13/2016	11.1	74000	4.3	2.6 J	324
		12/29/2016	14.7	76000	4.7	2.7 J	316
		1/25/2017	16.1	70800	4.6	3.0	328
		4/11/2017	12.9	73200	4.9	2.8 J	342
		6/6/2017	14.8	76100	5.5	2.7 J	344
		8/8/2017	22.9	74900	5.5	2.0 J	342
		10/24/2017	13.8	77500	5.1	2.2 J	314
		4/25/2018	25.0	76600	4.8	2.8 J	328
		8/8/2018	12.8	76000	4.9	1.9 J	372
		10/24/2018	10.1 J	74000	4.2	1.6 J	330
		4/3/2019	13.6	80100	3.6	1.4 J	318
		10/9/2019	12.0	73500	3.9	1.3 J	310
		2/3/2020	15.7	72700	3.7	<2.2	316
5/29/2020		10.0	77600	3.7	1.5 J	340	
10/8/2020		9.7 J	69200	4.3	1.3 J	320	
4/14/2021		14.3	69100	4.4	1.4 J	328	
10/14/2021		11.1	75300	3.5	1.3 J	326	
4/13/2022	10.5	75100	5.2	1.4 J	334		
10/27/2022	12.2	78400	3.4	1.1 J	302		
4/27/2023	10.3	68600	3.0	1.3 J	326		
10/11/2023	14.0	65100	3.1	1.4 J	324		
4/17/2024	11.9	73700	3.2	1.4 J	322		
10/2/2024	10.3	73300	3.3	1.8 J	318		

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 4-6**

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	MW-309	2/21/2018	31.4	42700	147	12.2	576
		3/23/2018	31.0	41800	157	12.2	552
		4/23/2018	30.4	39600	157	12.0	562
		5/24/2018	28.0	52700	141	17.5	478
		6/23/2018	26.6	67600	203	24.1	548
		7/23/2018	35.5	63800	557	33.1	1210
		8/22/2018	40.5	93600	811	43.3	1570
		9/21/2018	30.0	55200	329	35.9	830
		4/2/2019	37.4	45300	145	35.2	548
		10/8/2019	33.4	46900	43.2	21.9	370
		5/29/2020	54.6	51600	350	28.6	960
		6/30/2020	50.7	--	--	--	--
		8/6/2020	55.3	--	--	--	--
		10/8/2020	57.7	65300	575	21.8	1160
		12/11/2020	65.9	--	--	--	--
		4/13/2021	48.0	62300	390	30.3	916
		6/11/2021	49.9	--	--	--	--
		10/14/2021	42.9	83100	519	27.7	1110
		12/21/2021	36.4	--	--	--	--
		4/12/2022	32.5	80200	319	17.9	764
		10/26/2022	46.6	162000	796	28.9	1670
		11/30/2022	49.3	153000	--	143	1250
		4/26/2023	50.8	35500	372	--	--
		6/29/2023	59.4	--	--	147	--
		10/9/2023	41.5	66800	259	80.6	858
		11/9/2023	--	--	--	89.0	--
	4/15/2024	38.7	82600	391	75.1	948	
	6/4/2024	--	--	--	68.8	--	
	10/1/2024	72.1	105000	971	142	2180	
	11/5/2024	72.3	--	743	131	1630	
	MW-310	2/21/2018	67.1	32400	19.8	31.6	406
		3/23/2018	62.1	33400	21.7	33.1	398
		4/23/2018	60.7	32100	22.1	32.0	396
		5/24/2018	59.2	32100	68.6	28.0	436
		6/23/2018	61.4	34300	59.8	30.4	438
		7/23/2018	69.5	39700	118	60.2	532
		8/22/2018	64.2	38800	139	32.8	526
		9/21/2018	80.3	54100	152	118	736
		4/2/2019	73.0	38800	76.0	58.4	470
		10/8/2019	81.8	57600	190	85.9	650
		12/23/2019	--	55400	--	--	--
		5/29/2020	74.4	41100	128	68.2	582
		10/8/2020	77.6	62000	310	60.0	846
		12/11/2020	--	56800	227	--	700
		4/13/2021	69.6	49300	227	43.3	654
		6/11/2021	--	--	220	--	--
10/14/2021		72.0	38900	84.6	54.3	498	
4/12/2022		72.0	31900	35.2	39.8	416	
10/26/2022		71.3	68900	323	32.8	750	
11/30/2022		--	55500	215	--	--	
4/26/2023	57.5	36800	128	102	654		
10/9/2023	65.6	37500	71.3	90.7	554		
4/15/2024	65.2	44600	175	98.9	686		
10/1/2024	93.1	108000	420	179	1210		
11/5/2024	78.4	99700	435	194	1190		

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 4-6**

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	MW-311	2/21/2018	43.7	58000	2.9	7.1	260
		3/23/2018	42.7	61000	2.7	7.2	274
		4/23/2018	40.1	56600	2.6	7.9	262
		5/24/2018	31.7	62500	3.5	36.9	304
		6/23/2018	33.6	70700	3.0	72.3	352
		7/23/2018	30.1	76800	2.0 J	84.7	372
		8/22/2018	32.4	65700	2.0 J	53.6	332
		9/21/2018	27.5	75400	3.9	92.4	424
		4/2/2019	35.7	65600	1.9 J	23.1	276
		10/8/2019	33.5	63900	1.5 J	21.2	272
		5/29/2020	25.7	62200	1.5 J	39.1	326
		10/8/2020	26.2	73400	1.4 J	72.1	380
		4/14/2021	33.6	59000	1.3 J	15.6	270
		10/14/2021	31.7	61000	1.3 J	14.2	276
		4/12/2022	32.7	61800	1.0 J	8.9	278
		10/27/2022	34.2	66300	1.2 J	15.5	268
		4/26/2023	23.0	52800	2.1	22.2	292
		10/9/2023	31.0	60900	2.0 J	10.8	270
4/15/2024	30.9	59900	2.3	10.1	276		
10/1/2024	34.0	64800	2.6	11.2	262		

Abbreviations:

µg/L = micrograms per liter or parts per billion (ppb)

mg/L = milligrams per liter or parts per million (ppm)

-- = Not sampled

J = Estimated value below the laboratory's limit of quantitation

Note:

(1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by: RM
 Last revision by: RM
 Checked by: NLB

Date: 3/4/2025
 Date: 3/4/2025
 Date: 1/0/1900

I:\25224067.00\Deliverables\COL Mod 4-6 - Oct 2024 ASD\Tables\[Table 2 - Historical Analytical Results with SSIs.xlsx]Table 2. Analy. Rslts- CCR

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
Screen Length (ft)																	10	5	10
Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
Measurement Date																			
October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 ⁽⁶⁾	NM	NM	NM	NM	NM	NM	NI	NI	NI
February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
July 29, 2024	aband	aband	NM	NM	NM	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
November 5, 2024	NM	NM	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Dry Ash Facility (Facility ID #03025)

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
Screen Length (ft)											
Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94
Measurement Date											
October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55
April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02
October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36
October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM
April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87
October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03
April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42
October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26
April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36
October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09
April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09
October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61
April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45
October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52
April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46
October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42
May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89
October 7-8 & 17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49
April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49
October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66
April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83
June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM
October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49
March 27-28, 2023	NM	NM	NM								
April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30
May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03
October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43
April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40
April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48
August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95
October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50
October 4, 2024	--	783.57	--	--	--	--	--	--	--	--	--
Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94

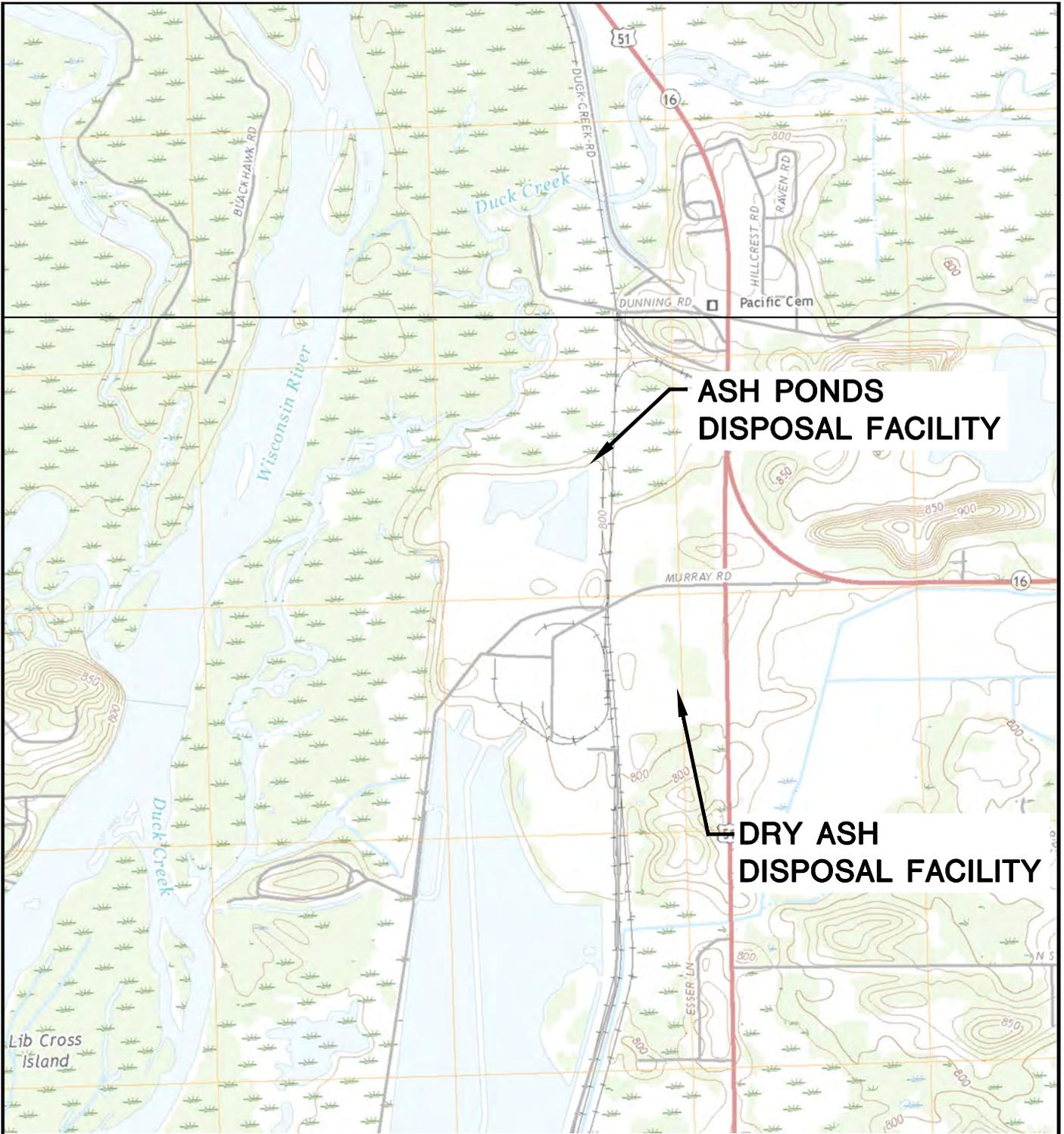
Ash Pond Facility
(Facility ID #02325)

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
Measurement Date																								
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI						
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NI	NI	NI	NI	NI	NI	NI	NI						
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM								

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – October 2024

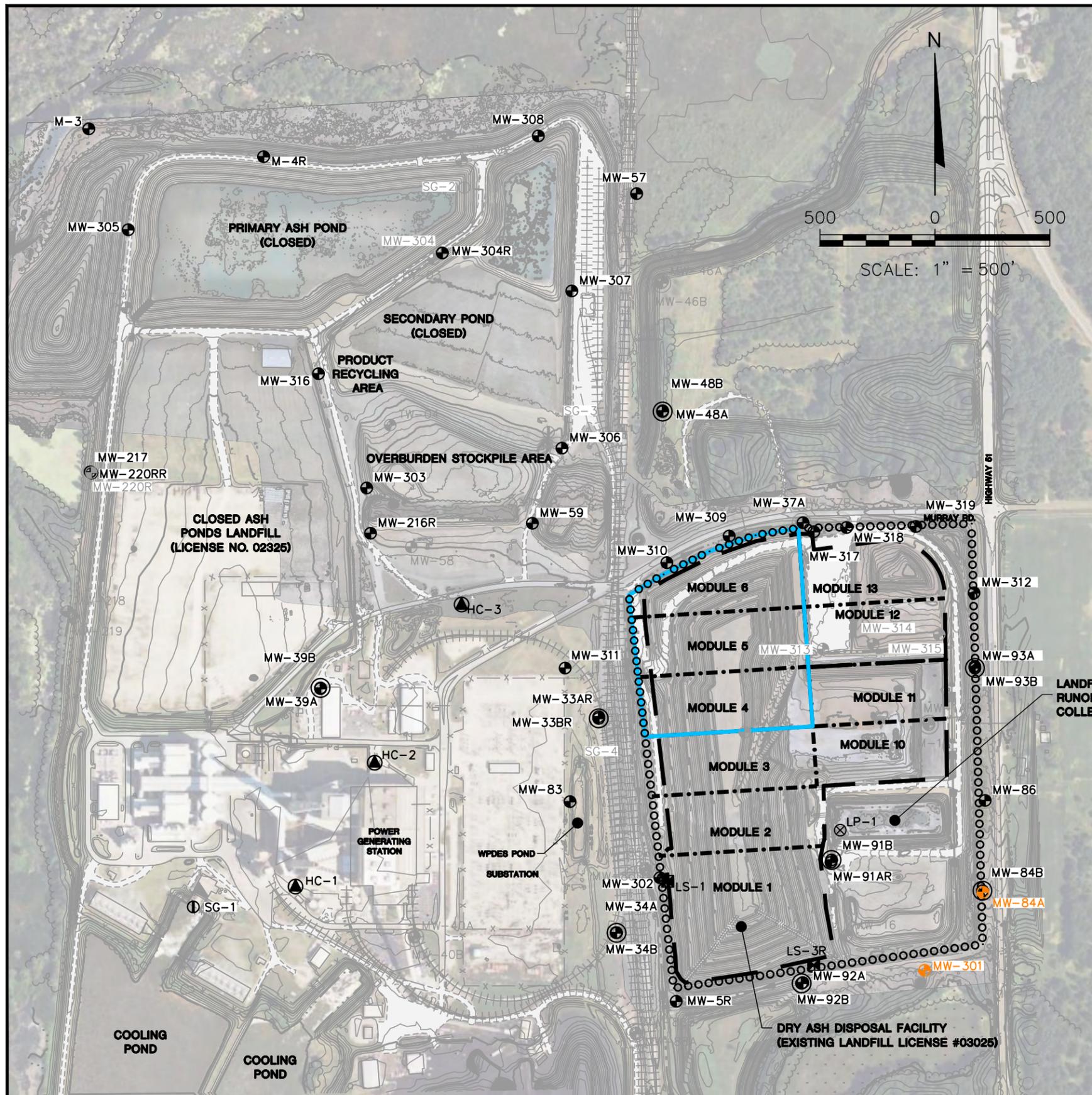


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830		FIGURE
	PROJECT NO.	25219067.00		DRAWN BY:	BSS		1		
	DRAWN:	12/02/2019	CHECKED BY:	MDB					
	REVISED:	01/10/2020	APPROVED BY:	TK 01/30/2020					

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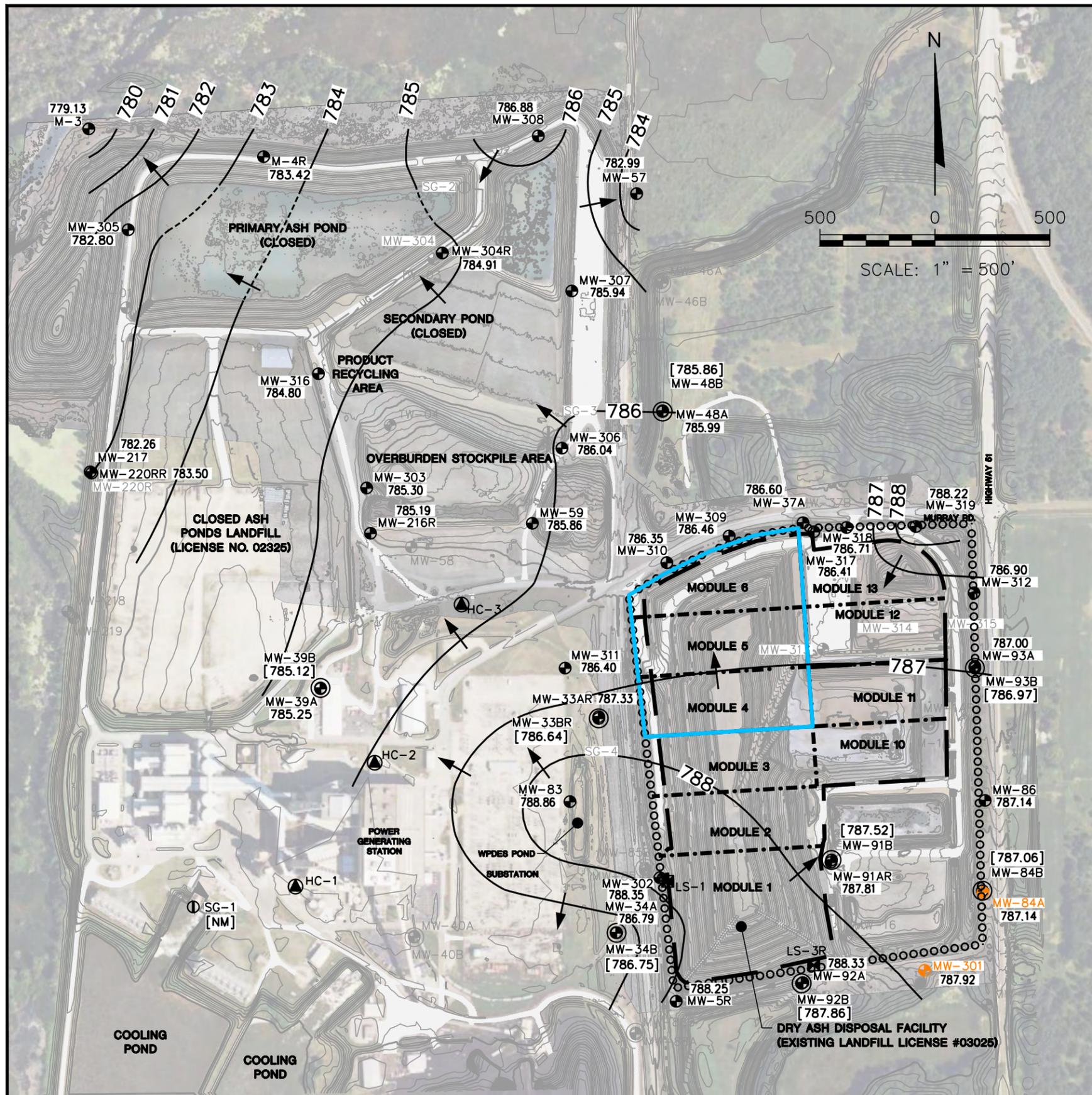


LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	SURFACE WATER SAMPLE LOCATION
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	CCR UNIT

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318, AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	FIGURE SITE PLAN AND MONITORING WELL LOCATIONS COLUMBIA DRY ASH DISPOSAL FACILITY 2
DRAWN: 01/03/2025	CHECKED BY: NLB				
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)				

I:\Client\Alliant\PROJECT SITES\Columbia\CAD Master References COL\Water Table Maps\Site Plan\02_Col Site Plan Figures.dwg, 1/21/2025 3:01:08 PM



LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
788.75	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
[NM]	NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	CCR UNIT

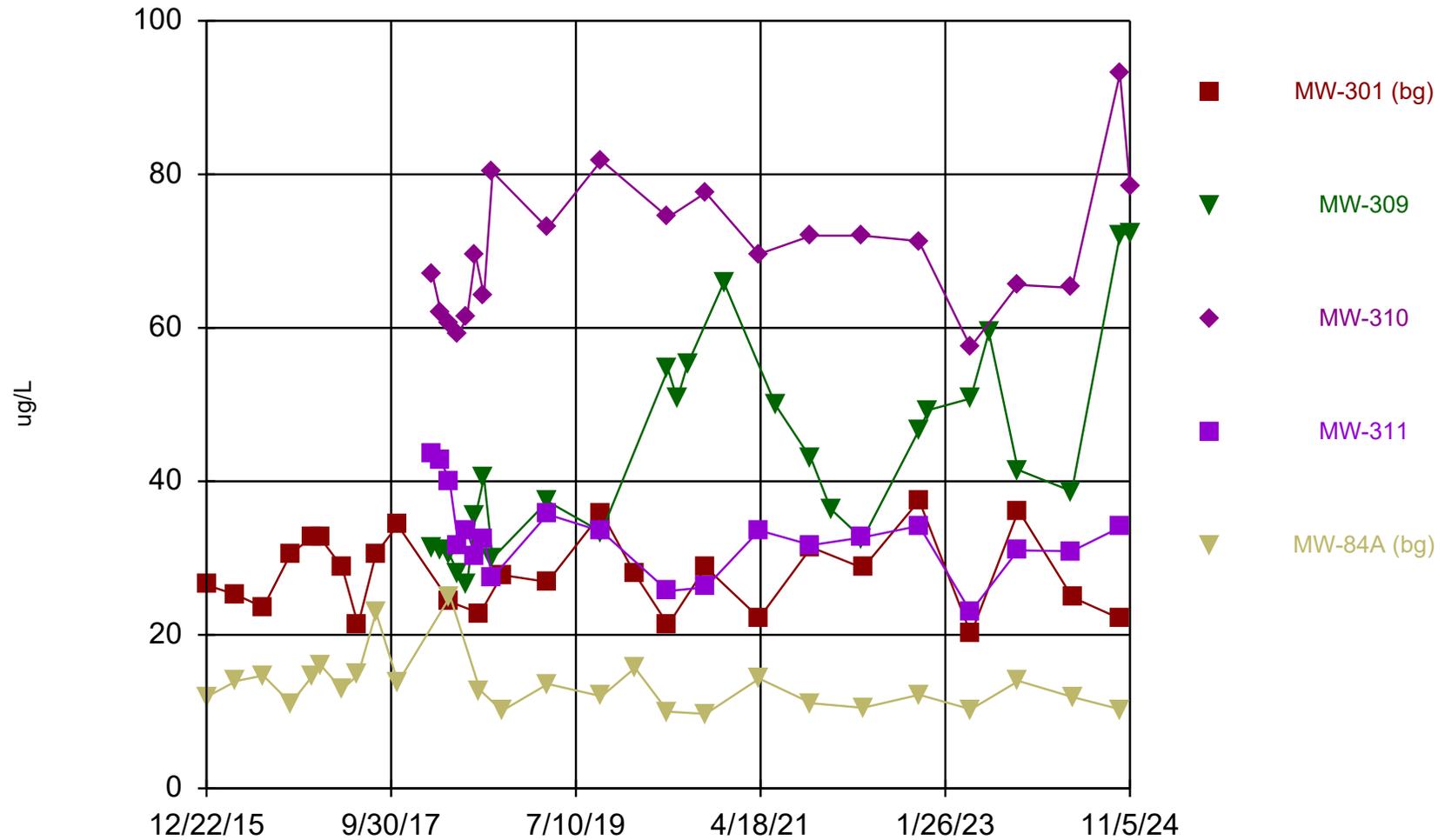
- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
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 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP OCTOBER 1-3, 2024	FIGURE
DRAWN: 11/05/2024	CHECKED BY: NLB/BRK (01/21/2025)					3
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

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Appendix A
Time Series Plots for CCR Wells

Boron



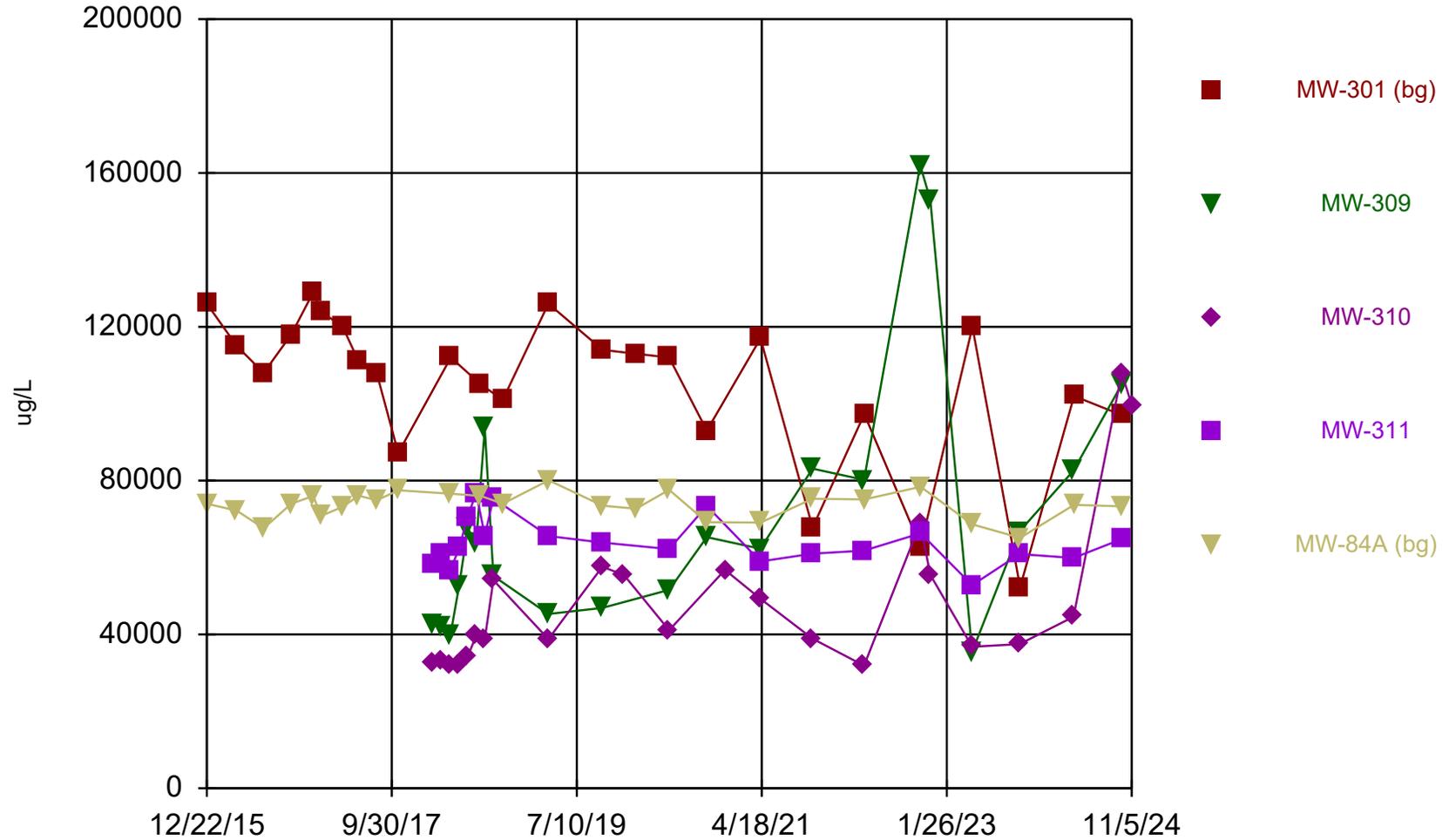
Time Series Analysis Run 3/3/2025 7:06 AM View: COL MOD 4-6
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Boron (ug/L) Analysis Run 3/3/2025 7:07 AM View: COL MOD 4-6
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-311	MW-84A (bg)
12/22/2015	26.5				11.9
4/5/2016	25.2				14
7/8/2016	23.6				14.7
10/13/2016	30.6				11.1
12/29/2016	32.8				14.7
1/25/2017	32.6				16.1
4/11/2017	28.8				12.9
6/6/2017	21.3				14.8
8/8/2017	30.6				22.9
10/23/2017	34.3				
10/24/2017					13.8
2/21/2018		31.4	67.1	43.7	
3/23/2018		31	62.1	42.7	
4/23/2018		30.4	60.7	40.1	
4/25/2018	24.3				25
5/24/2018		28	59.2	31.7	
6/23/2018		26.6	61.4	33.6	
7/23/2018		35.5	69.5	30.1	
8/8/2018	22.8				12.8
8/22/2018		40.5	64.2	32.4	
9/21/2018		30	80.3	27.5	
10/24/2018	27.8				10.1 (J)
4/2/2019	26.9	37.4	73	35.7	
4/3/2019					13.6
10/8/2019		33.4	81.8	33.5	
10/9/2019	35.9				12
2/3/2020	27.9				15.7
5/29/2020	21.3	54.6	74.4	25.7	10
6/30/2020		50.7			
8/6/2020		55.3			
10/8/2020	28.8		77.6	26.2	9.7 (J)
12/11/2020		65.9 (R)			
4/13/2021			69.6		
4/14/2021	22.2			33.6	14.3
6/11/2021		49.9 (R)			
10/14/2021	31.4	42.9	72	31.7	11.1
12/21/2021		36.4			
4/12/2022		32.5	72	32.7	
4/13/2022	28.7				10.5
10/26/2022		46.6	71.3		
10/27/2022	37.5			34.2	12.2
11/30/2022		49.3			
4/26/2023		50.8	57.5	23	
4/27/2023	20.1				10.3
6/29/2023		59.4			
10/9/2023		41.5	65.6	31	
10/11/2023	36.2				14
4/15/2024		38.7	65.2	30.9	
4/17/2024	24.9				11.9
10/1/2024		72.1	93.1	34	
10/2/2024	22.1				10.3
11/5/2024		72.3	78.4		

Calcium



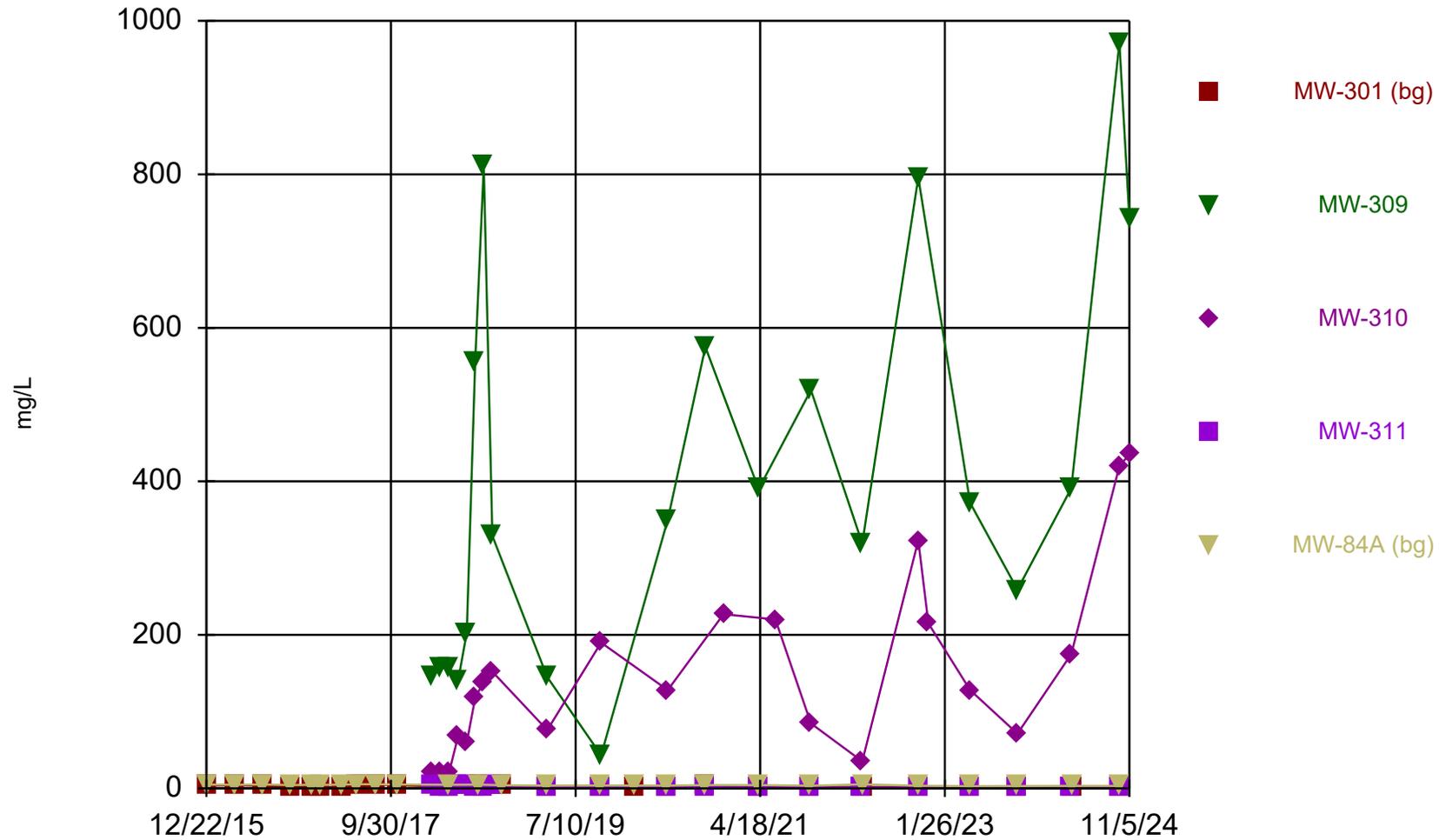
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Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Calcium (ug/L) Analysis Run 3/3/2025 7:07 AM View: COL MOD 4-6
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-311	MW-84A (bg)
12/22/2015	126000				74000
4/5/2016	115000				72200
7/8/2016	108000				67600
10/13/2016	118000				74000
12/29/2016	129000				76000
1/25/2017	124000				70800
4/11/2017	120000				73200
6/6/2017	111000				76100
8/8/2017	108000				74900
10/23/2017	87200				
10/24/2017					77500
2/21/2018		42700	32400	58000	
3/23/2018		41800	33400	61000	
4/23/2018		39600	32100	56600	
4/25/2018	112000				76600
5/24/2018		52700	32100	62500	
6/23/2018		67600	34300	70700	
7/23/2018		63800	39700	76800	
8/8/2018	105000				76000
8/22/2018		93600	38800	65700	
9/21/2018		55200	54100	75400	
10/24/2018	101000				74000
4/2/2019	126000	45300	38800	65600	
4/3/2019					80100
10/8/2019		46900	57600	63900	
10/9/2019	114000				73500
12/23/2019			55400		
2/3/2020	113000				72700
5/29/2020	112000	51600	41100	62200	77600
10/8/2020	93000	65300		73400	69200
12/11/2020			56800 (R)		
4/13/2021		62300	49300		
4/14/2021	117000			59000	69100
10/14/2021	67800	83100	38900	61000	75300
4/12/2022		80200	31900	61800	
4/13/2022	97300				75100
10/26/2022		162000	68900		
10/27/2022	62800			66300	78400
11/30/2022		153000	55500		
4/26/2023		35500	36800	52800	
4/27/2023	120000				68600
10/9/2023		66800	37500	60900	
10/11/2023	52300				65100
4/15/2024		82600	44600	59900	
4/17/2024	102000				73700
10/1/2024		105000	108000	64800	
10/2/2024	97000				73300
11/5/2024			99700		

Chloride



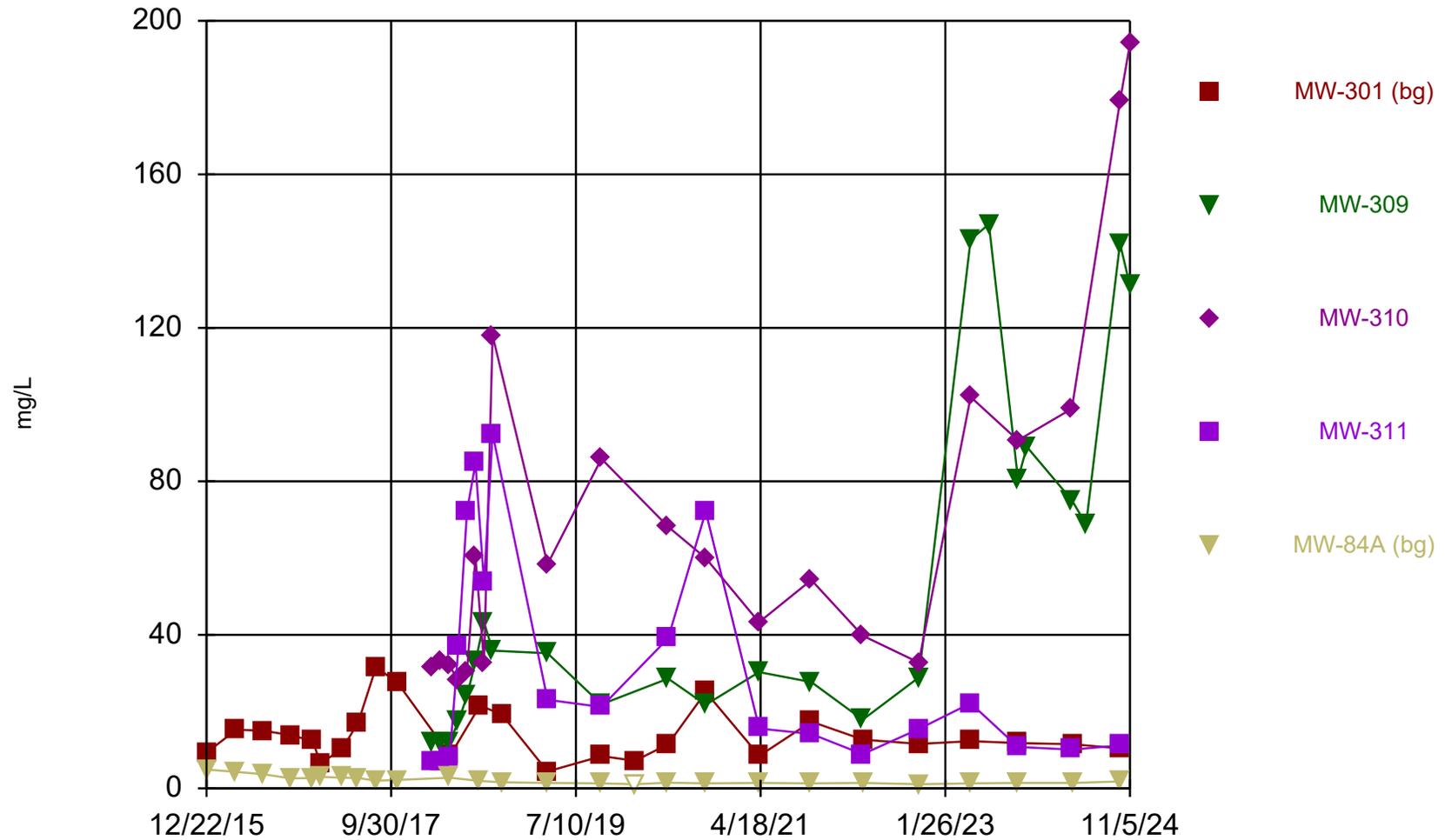
Time Series Analysis Run 3/3/2025 7:06 AM View: COL MOD 4-6
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Chloride (mg/L) Analysis Run 3/3/2025 7:07 AM View: COL MOD 4-6
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-311	MW-84A (bg)
12/22/2015	3.7 (J)				4.9
4/5/2016	4				4.7
7/8/2016	3.5 (J)				5.1
10/13/2016	2.2				4.3
12/29/2016	2 (J)				4.7
1/25/2017	1.5 (J)				4.6
4/11/2017	2				4.9
6/6/2017	3.5				5.5
8/8/2017	5.5				5.5
10/23/2017	4				
10/24/2017					5.1
2/21/2018		147	19.8	2.9	
3/23/2018		157	21.7	2.7	
4/23/2018		157	22.1	2.6	
4/25/2018	2.3				4.8
5/24/2018		141	68.6	3.5	
6/23/2018		203	59.8	3	
7/23/2018		557	118	2 (J)	
8/8/2018	5.2				4.9
8/22/2018		811	139	2 (J)	
9/21/2018		329	152	3.9	
10/24/2018	3.2				4.2
4/2/2019	0.79 (J)	145	76	1.9 (J)	
4/3/2019					3.6
10/8/2019		43.2	190	1.5 (J)	
10/9/2019	1.7 (J)				3.9
2/3/2020	1.3 (J)				3.7
5/29/2020	2 (J)	350	128	1.5 (J)	3.7
10/8/2020	3.4	575		1.4 (J)	4.3
12/11/2020			227 (R)		
4/13/2021		390			
4/14/2021	1.5 (J)			1.3 (J)	4.4
6/11/2021			220 (R)		
10/14/2021	2.7	519	84.6	1.3 (J)	3.5
4/12/2022		319	35.2	1 (J)	
4/13/2022	1.9 (J)				5.2
10/26/2022		796	323		
10/27/2022	2.3			1.2 (J)	3.4
11/30/2022			215		
4/26/2023		372	128	2.1	
4/27/2023	1.5 (J)				3
10/9/2023		259	71.3	2 (J)	
10/11/2023	2.1				3.1
4/15/2024		391	175	2.3	
4/17/2024	1.6 (J)				3.2
10/1/2024		971	420	2.6	
10/2/2024	1.5 (J)				3.3
11/5/2024		743	435		

Sulfate



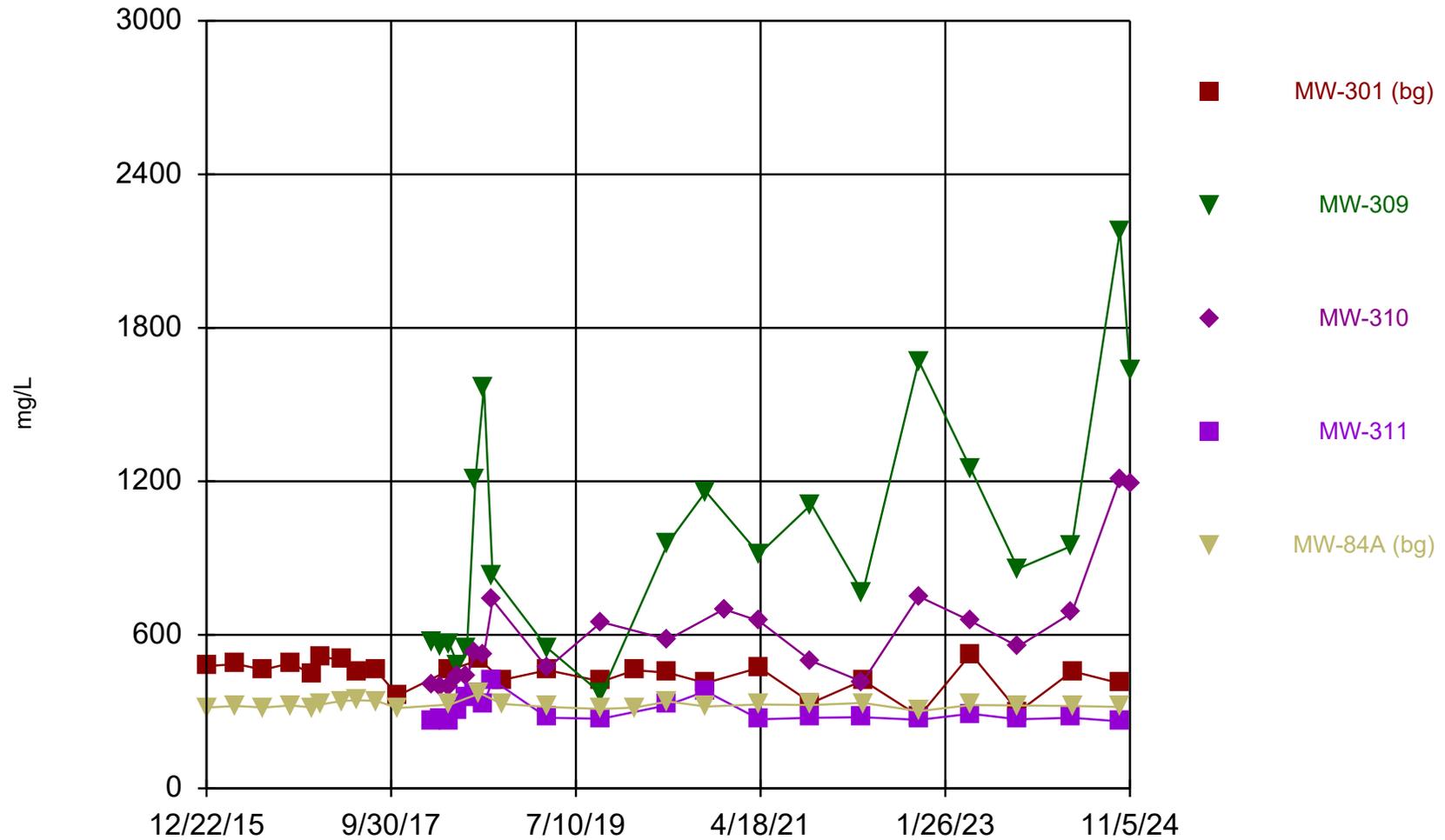
Time Series Analysis Run 3/3/2025 7:06 AM View: COL MOD 4-6
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Sulfate (mg/L) Analysis Run 3/3/2025 7:07 AM View: COL MOD 4-6
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-311	MW-84A (bg)
12/22/2015	9.3				4.9
4/5/2016	15.3				4.3
7/8/2016	15				3.7 (J)
10/13/2016	13.9				2.6 (J)
12/29/2016	12.3 (J)				2.7 (J)
1/25/2017	6.5				3
4/11/2017	10.3				2.8 (J)
6/6/2017	17.1				2.7 (J)
8/8/2017	31.6				2 (J)
10/23/2017	27.5				
10/24/2017					2.2 (J)
2/21/2018		12.2	31.6	7.1	
3/23/2018		12.2	33.1	7.2	
4/23/2018		12	32	7.9	
4/25/2018	8.6				2.8 (J)
5/24/2018		17.5	28	36.9	
6/23/2018		24.1	30.4	72.3	
7/23/2018		33.1	60.2	84.7	
8/8/2018	21.6				1.9 (J)
8/22/2018		43.3	32.8	53.6	
9/21/2018		35.9	118	92.4	
10/24/2018	19.2				1.6 (J)
4/2/2019	4.4	35.2	58.4	23.1	
4/3/2019					1.4 (J)
10/8/2019		21.9	85.9	21.2	
10/9/2019	8.4				1.3 (J)
2/3/2020	7.2				<2.2 (U)
5/29/2020	11.5	28.6	68.2	39.1	1.5 (J)
10/8/2020	25.1	21.8	60	72.1	1.3 (J)
4/13/2021		30.3	43.3		
4/14/2021	8.5			15.6	1.4 (J)
10/14/2021	17.4	27.7	54.3	14.2	1.3 (J)
4/12/2022		17.9	39.8	8.9	
4/13/2022	12.7				1.4 (J)
10/26/2022		28.9	32.8		
10/27/2022	11.6			15.5	1.1 (J)
4/26/2023		143 (X)	102	22.2	
4/27/2023	12.3				1.3 (J)
6/29/2023		147 (X)			
10/9/2023		80.6	90.7	10.8	
10/11/2023	11.8				1.4 (J)
11/9/2023		89			
4/15/2024		75.1	98.9	10.1	
4/17/2024	11.5				1.4 (J)
6/4/2024		68.8			
10/1/2024		142	179	11.2	
10/2/2024	10.4				1.8 (J)
11/5/2024		131	194		

Total Dissolved Solids

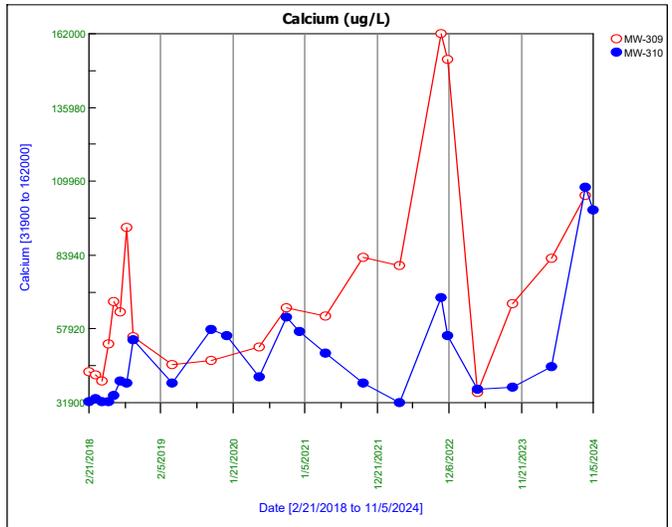
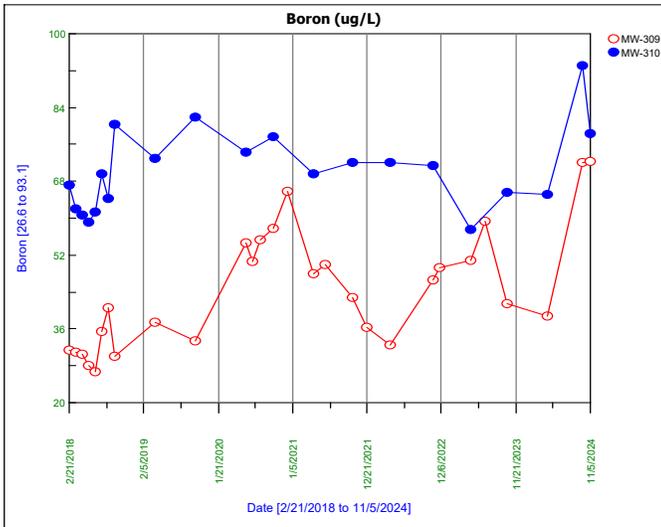


Time Series Analysis Run 3/3/2025 7:06 AM View: COL MOD 4-6
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

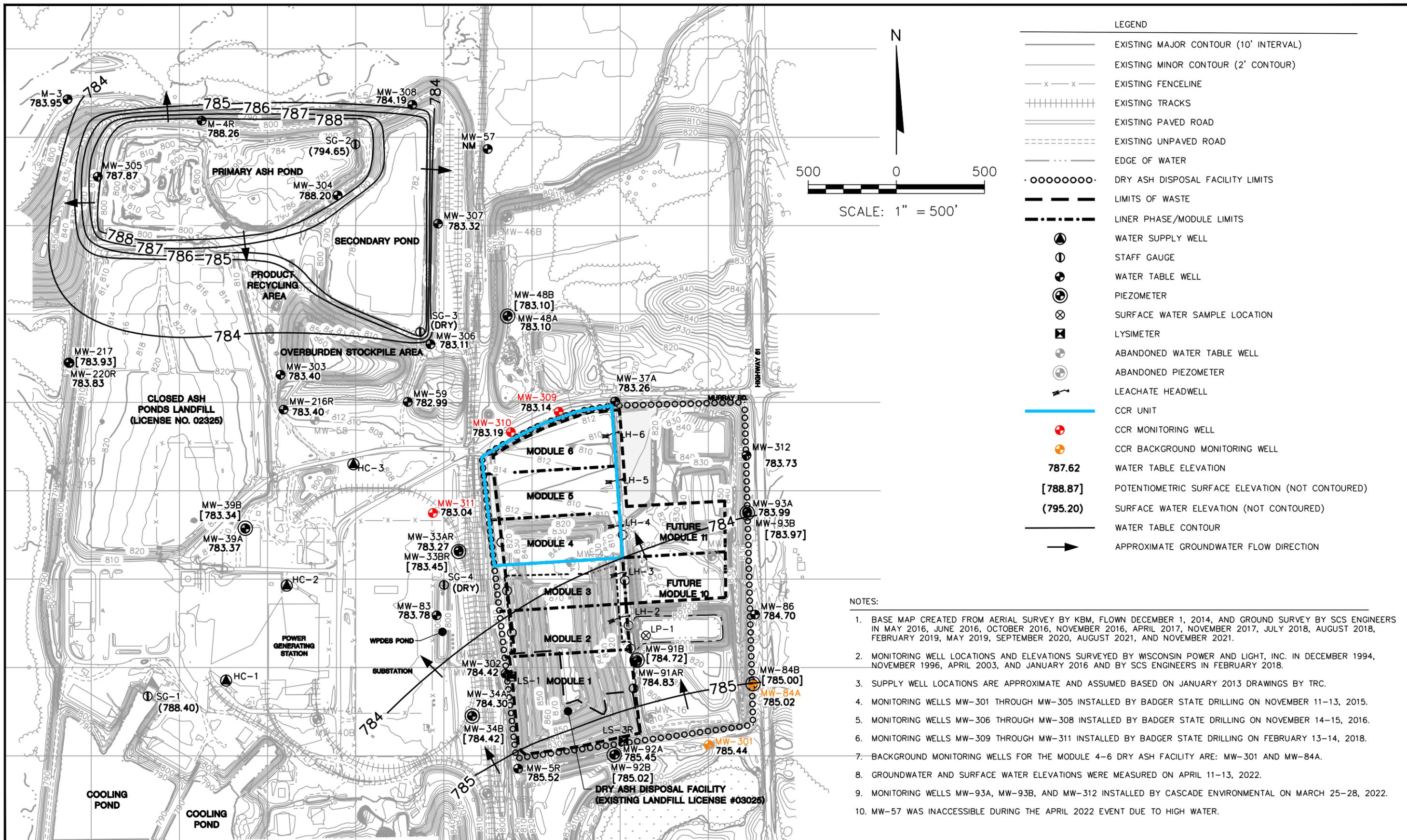
Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 3/3/2025 7:07 AM View: COL MOD 4-6
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-311	MW-84A (bg)
12/22/2015	478				316
4/5/2016	486				322
7/8/2016	464				316
10/13/2016	490				324
12/29/2016	444				316
1/25/2017	514				328
4/11/2017	502				342
6/6/2017	458				344
8/8/2017	462				342
10/23/2017	362				
10/24/2017					314
2/21/2018		576	406	260	
3/23/2018		552	398	274	
4/23/2018		562	396	262	
4/25/2018	464				328
5/24/2018		478	436	304	
6/23/2018		548	438	352	
7/23/2018		1210	532	372	
8/8/2018	502				372
8/22/2018		1570	526	332	
9/21/2018		830	736	424	
10/24/2018	424				330
4/2/2019	462	548	470	276	
4/3/2019					318
10/8/2019		370	650	272	
10/9/2019	418				310
2/3/2020	462				316
5/29/2020	452	960	582	326	340
10/8/2020	412	1160		380	320
12/11/2020			700 (R)		
4/13/2021		916	654		
4/14/2021	472			270	328
10/14/2021	334	1110	498	276	326
4/12/2022		764	416	278	
4/13/2022	422				334
10/26/2022		1670	750		
10/27/2022	282			268	302
4/26/2023		1250	654	292	
4/27/2023	526				326
10/9/2023		858	554	270	
10/11/2023	300				324
4/15/2024		948	686	276	
4/17/2024	458				322
10/1/2024		2180	1210	262	
10/2/2024	410				318
11/5/2024		1630	1190		



Appendix B
Historical Water Table Maps

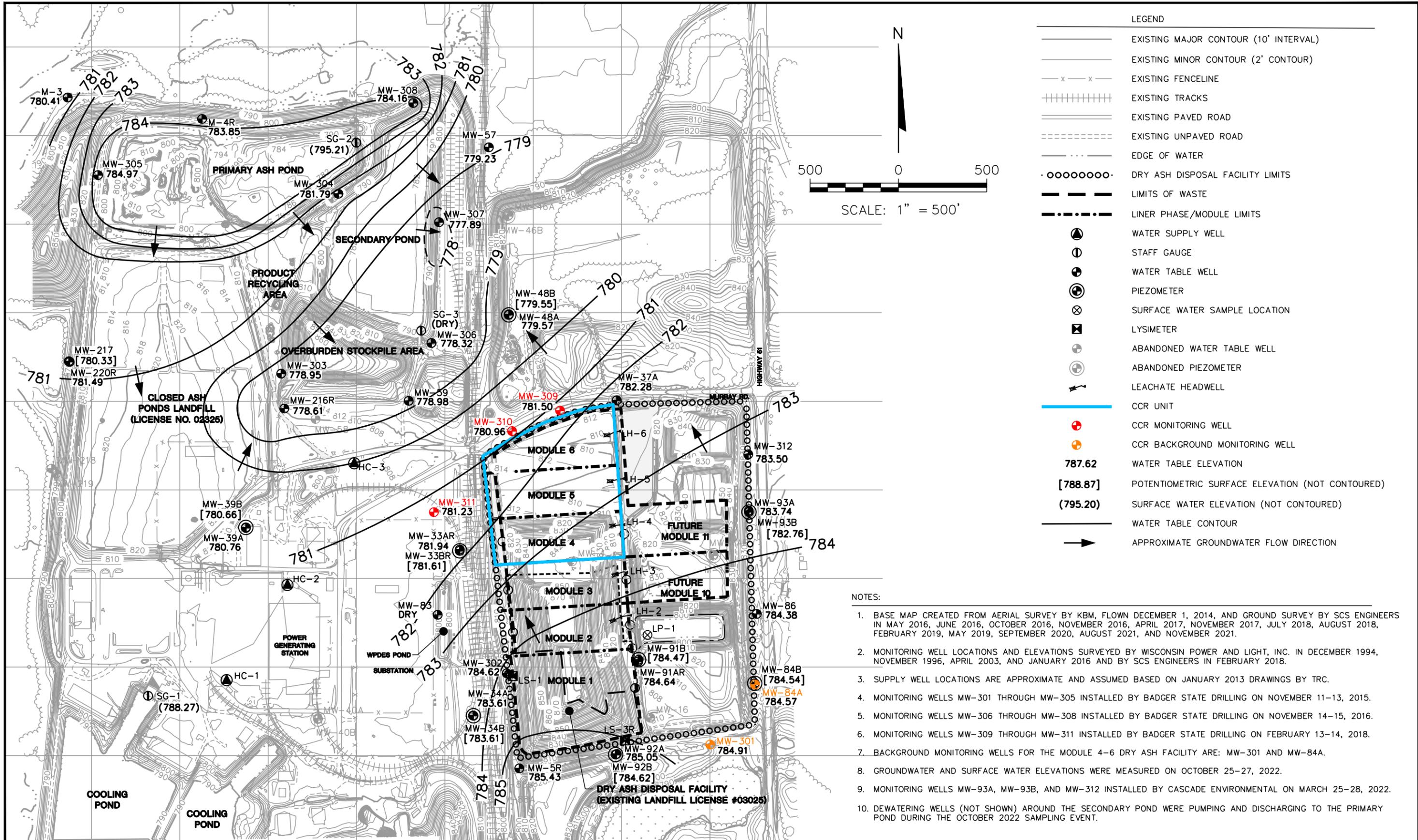


LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LIMITS OF WASTE
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	SURFACE WATER SAMPLE LOCATION
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	LEACHATE HEADWELL
	CCR UNIT
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	787.62 WATER TABLE ELEVATION
	[788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
	(795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
	WATER TABLE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, MAY 2019, SEPTEMBER 2020, AUGUST 2021, AND NOVEMBER 2021.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
 8. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 11-13, 2022.
 9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 10. MW-57 WAS INACCESSIBLE DURING THE APRIL 2022 EVENT DUE TO HIGH WATER.

PROJECT NO. 25224067.00	DRAWN BY: KP	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER MODULES 4-6 DRY ASH DISPOSAL FACILITY PARDEEVILLE, WI	WATER TABLE MAP APRIL 2022	FIGURE 3
DRAWN: 12/02/2019	CHECKED BY: MDB					
REVISED: 04/24/2024	APPROVED BY:					

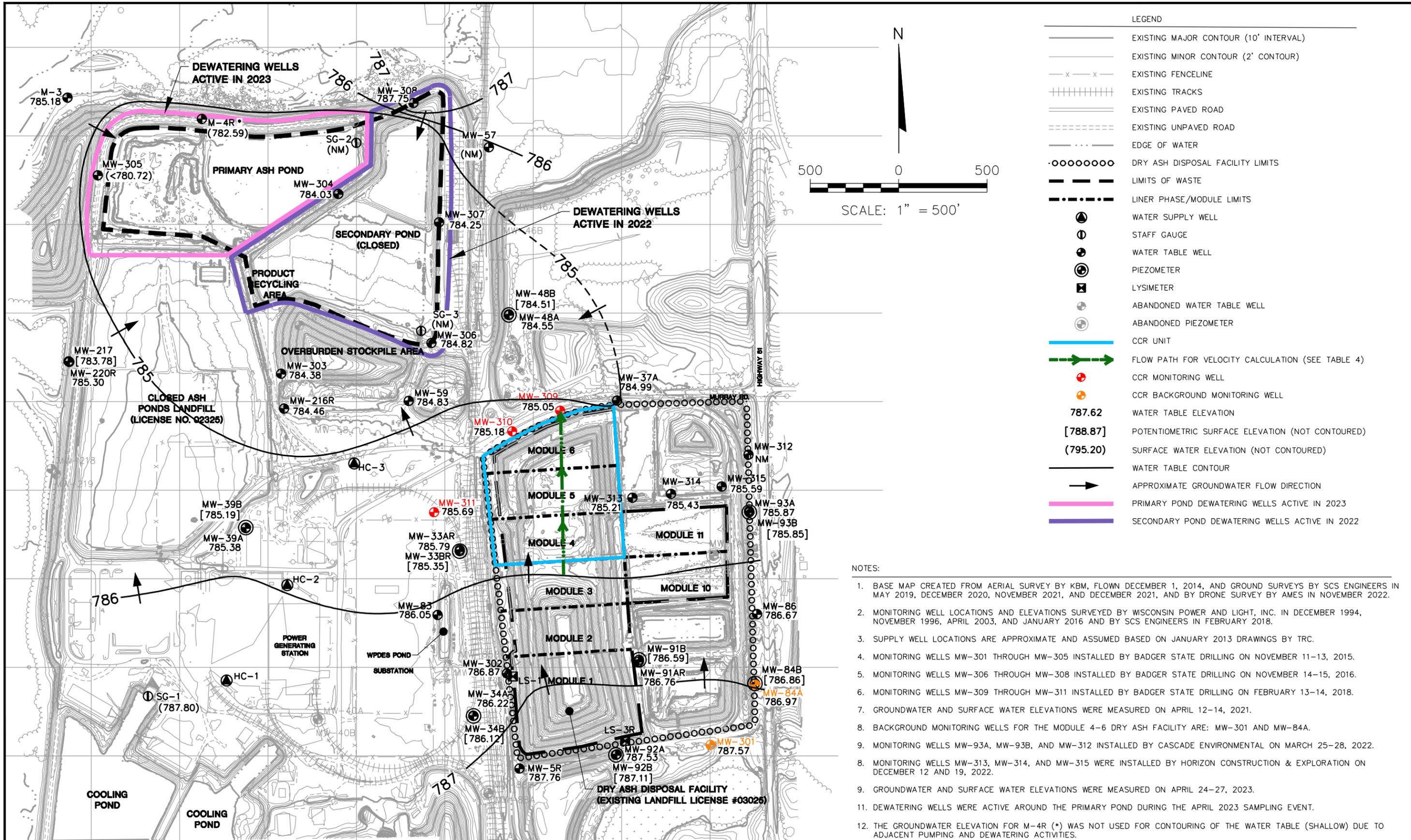
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- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, MAY 2019, SEPTEMBER 2020, AUGUST 2021, AND NOVEMBER 2021.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
 8. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON OCTOBER 25-27, 2022.
 9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 10. DEWATERING WELLS (NOT SHOWN) AROUND THE SECONDARY POND WERE PUMPING AND DISCHARGING TO THE PRIMARY POND DURING THE OCTOBER 2022 SAMPLING EVENT.

PROJECT NO. 25224067.00	DRAWN BY: KP	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER MODULES 4-6 DRY ASH DISPOSAL FACILITY PARDEEVILLE, WI	WATER TABLE MAP OCTOBER 2022	FIGURE
DRAWN: 12/15/2022	CHECKED BY: MDB					4
REVISED: 04/24/2024	APPROVED BY:					

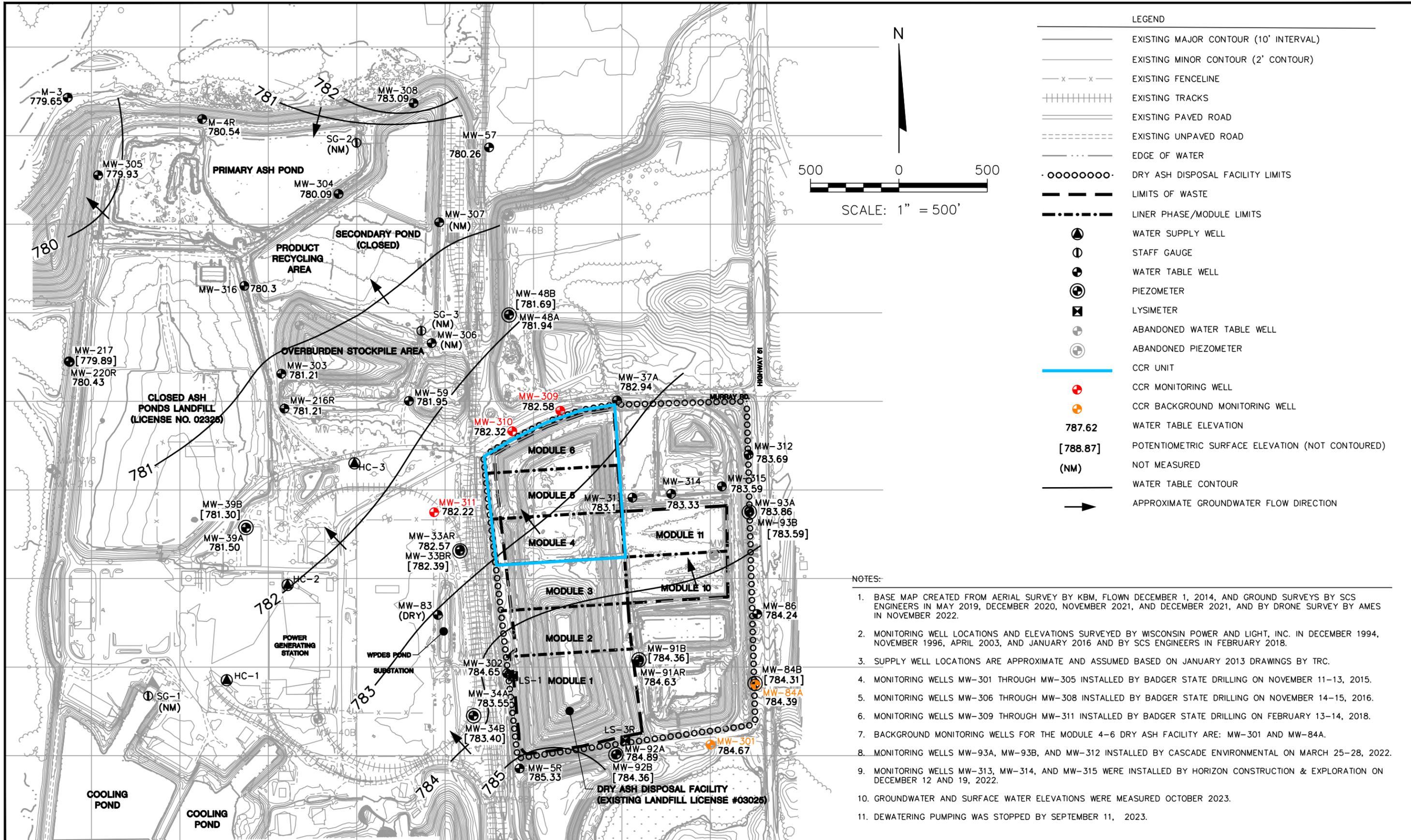
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- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
 8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
 9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
 9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 24-27, 2023.
 11. DEWATERING WELLS WERE ACTIVE AROUND THE PRIMARY POND DURING THE APRIL 2023 SAMPLING EVENT.
 12. THE GROUNDWATER ELEVATION FOR M-4R (*) WAS NOT USED FOR CONTOURING OF THE WATER TABLE (SHALLOW) DUE TO ADJACENT PUMPING AND DEWATERING ACTIVITIES.

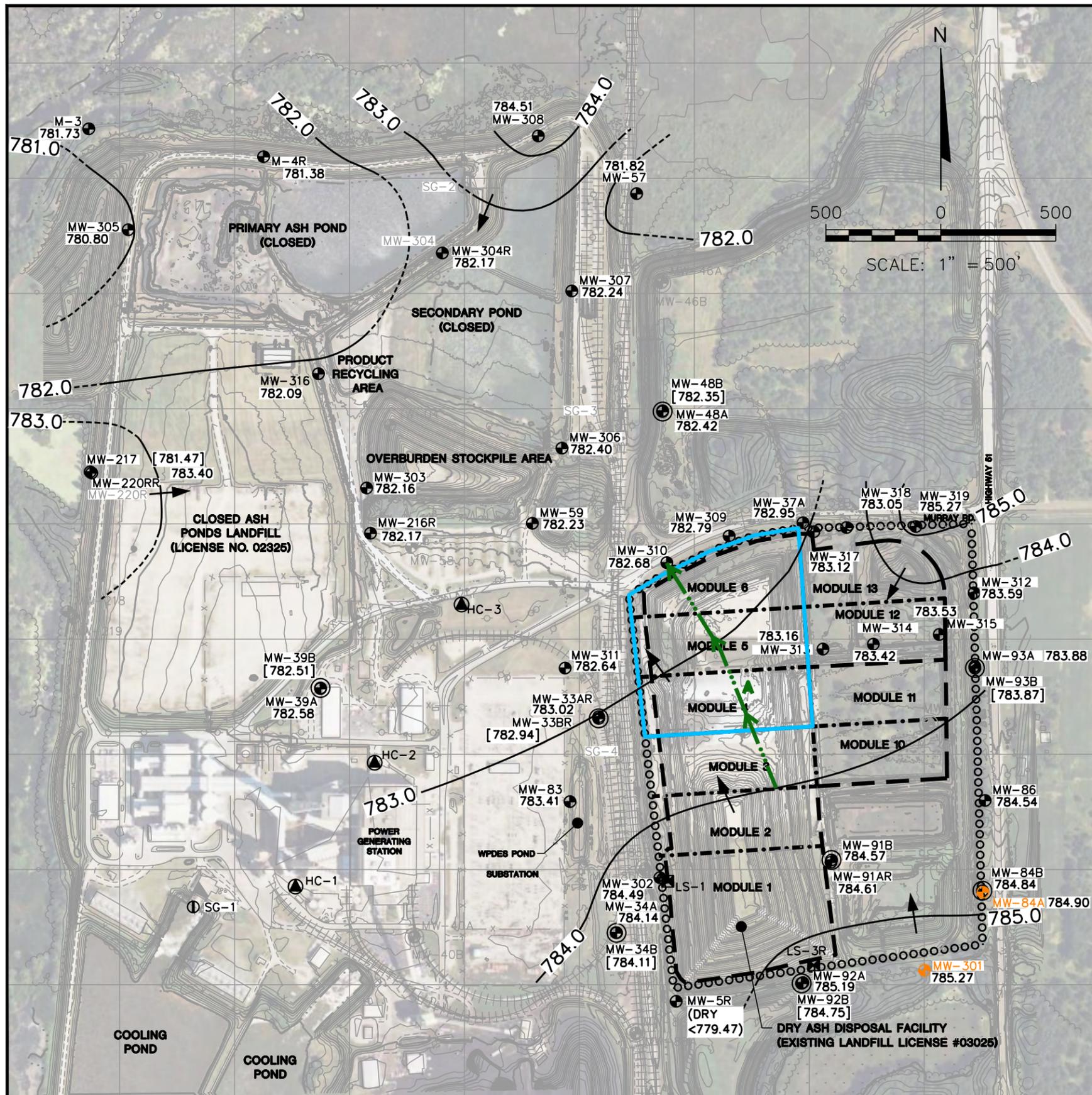
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DRAWN:	10/12/2023	CHECKED BY:	NLB					
REVISED:	01/22/2024	APPROVED BY:	TK 1/29/2024					

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PROJECT NO. 25224067.00	DRAWN BY: KP	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER MODULES 4-6 DRY ASH DISPOSAL FACILITY PARDEEVILLE, WI	WATER TABLE MAP OCTOBER 2023	FIGURE 3
DRAWN: 11/13/2023	CHECKED BY: TK					
REVISED: 04/24/2024	APPROVED BY: TK 05/10/2024					

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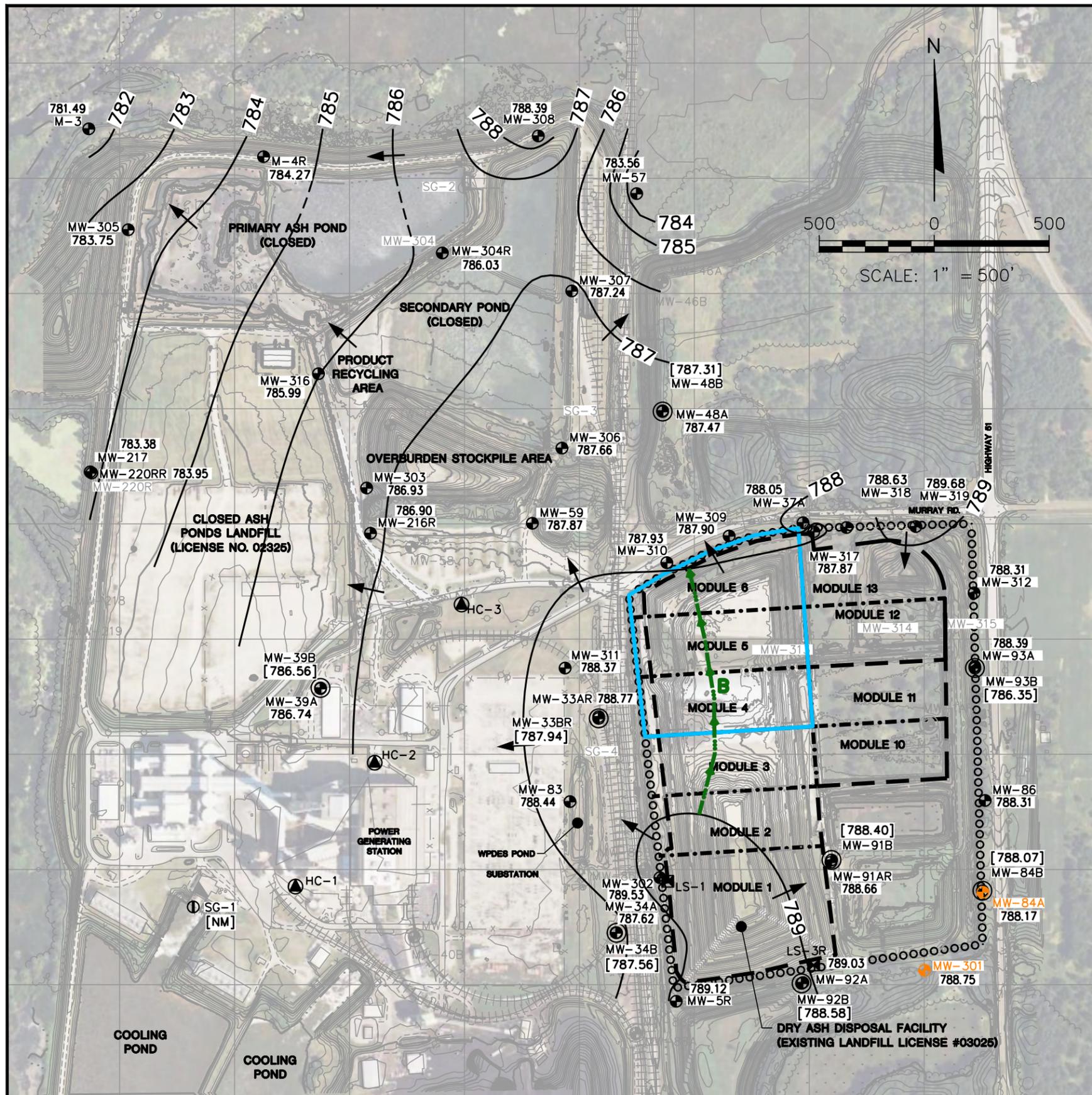


LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
783.88	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
(DRY)	SURFACE WATER ELEVATION (NOT CONTOURED)
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
	CCR UNIT

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
 9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.
 11. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP APRIL 15-17, 2024	FIGURE
DRAWN: 11/05/2024	CHECKED BY: NLB/BRK (01/21/2025)					3
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

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LEGEND	
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	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
788.75	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
[NM]	NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
	CCR UNIT

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

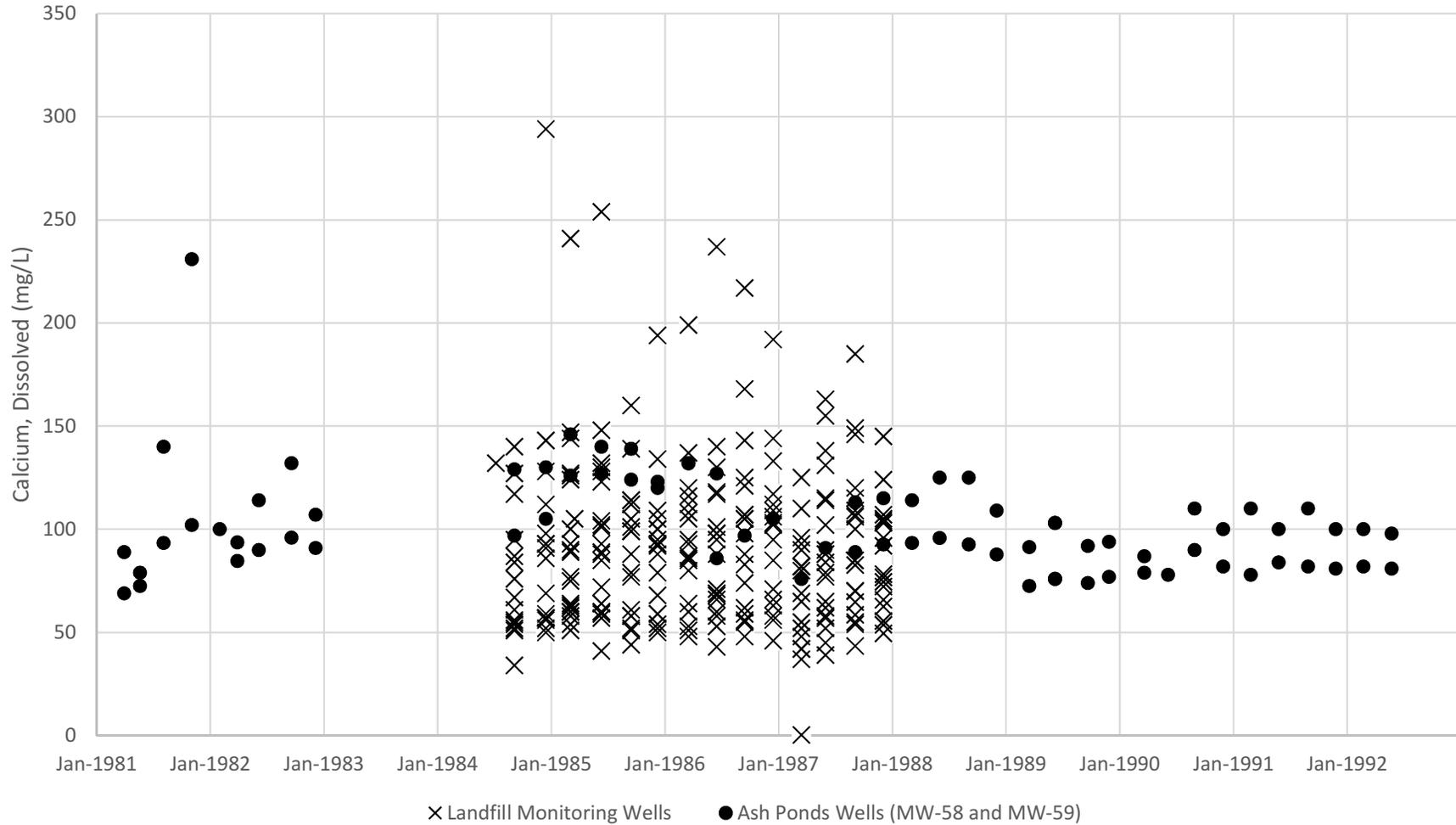
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DRAWN: 11/05/2024	CHECKED BY: NLB/BRK (01/21/2025)					4
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

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Appendix C

Historical Calcium Data

Historical Calcium Concentrations



Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	86	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	75	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	85	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	79	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	88	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	95	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	95	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	98	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	103	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	102	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	106	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	124	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	294	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	241	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	254	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	160	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	194	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	199	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	140	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	168	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	133	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	110	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	131	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	149	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	105	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	76	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	98	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	127	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	89	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	114	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	105	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	107	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	102	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	80	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	114	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	100	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	95.8	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	87	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	89	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	130	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	114	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	87	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	69	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	88	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	85	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	69	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	84	mg/L

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Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	82.6	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	76.6	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	55	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	58	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	60	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	52	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	54	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	51	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	53	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	55	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	56	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	42	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	58	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	54	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	55.6	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	54	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	56	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	60	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	59	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	58	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	68	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	60	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	53	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	56	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	58	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	42	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	57	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	58.6	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	62.6	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	67	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	69	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	77	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	88	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	101	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	105	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	120	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	118	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	121	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	117	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	90	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	115	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	85	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	92	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	7/9/1984	132	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	128	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	124	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	132	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	112	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	80	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	69	mg/L

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3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	74	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	71	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	0.32	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	77	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	70.2	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	74.5	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	91	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	90	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	93	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	9/7/1987	85	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	56	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	60	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	60	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	58	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	53	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	58	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	59	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	63	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	48	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	62	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	70	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	65.8	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	61	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	59	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	63	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	64	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	61	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	64	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	68	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	62	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	66	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	55	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	52	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	55	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	53.7	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	84	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	93	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	104	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	105	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	95	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	116	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	117	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	125	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	112	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L

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3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	88	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	115	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	104	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	140	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	144	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	148	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	139	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	134	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	137	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	130	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	143	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	144	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	125	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	138	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	146	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	145	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	34	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	50	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	62	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	72	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	60	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	39	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	51	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	64	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	64	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	66	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	65	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	112	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	51	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	41	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	44	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	79	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	85	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	71	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	83	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	65	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	155	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	64.7	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	78.3	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	127	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	147	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	128	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	77	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	50	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	86	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	237	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	217	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	192	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	96	mg/L

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3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	163	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	185	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	72.3	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/20/1985	105	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	102	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	99	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	112	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	101	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	105	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	106	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	52	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	79	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	107	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	107	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	117	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	126	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	123	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	112	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	109	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	108	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	105	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	95	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	90	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	109	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	103	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	95	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	100	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	101	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	99	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	92	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	107	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	109	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	120	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	54	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	57	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	51	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	48	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	43	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	48	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	46	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	37	mg/L

Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	45	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	43.4	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	49.5	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	3/30/1981	89	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	5/21/1981	72.5	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	8/4/1981	93.3	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	11/3/1981	102	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	2/1/1982	100	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	3/30/1982	84.6	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	6/7/1982	90	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	9/20/1982	96	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	12/7/1982	91	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	97	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	105	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	126	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	127	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	124	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	123	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	132	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	86	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	97	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	105	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	91	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	89	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	92.6	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/10/1988	93.4	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/7/1988	95.8	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/8/1988	92.7	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/7/1988	87.8	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/22/1989	91.4	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/13/1989	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1989	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/27/1989	74	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1989	77	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/28/1990	79	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/12/1990	78	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/5/1990	90	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/6/1990	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/5/1991	78	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/3/1991	84	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/6/1991	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1991	81	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/2/1992	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/1/1992	81	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	3/30/1981	69	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	5/21/1981	79	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	8/4/1981	140	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	11/3/1981	231	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	3/30/1982	93.6	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	6/7/1982	114	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	9/20/1982	132	mg/L

Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

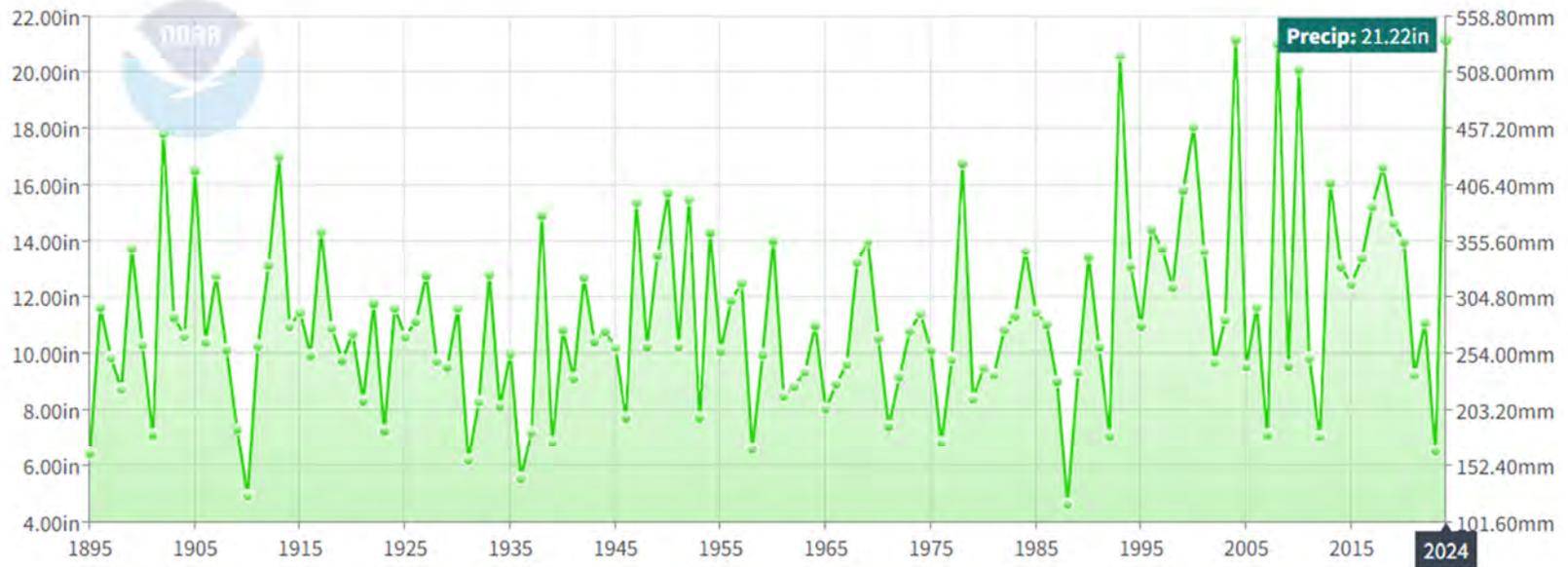
Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	12/7/1982	107	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	129	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	130	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	146	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	140	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	139	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	120	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	132	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	127	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	113	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	115	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/10/1988	114	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/7/1988	125	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/8/1988	125	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/7/1988	109	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/22/1989	72.5	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/13/1989	103	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1989	103	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/27/1989	92	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1989	94	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/28/1990	87	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/5/1990	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/6/1990	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/5/1991	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/3/1991	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/6/1991	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1991	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/2/1992	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/1/1992	98	mg/L

Appendix D

Precipitation Graph

Columbia County, Wisconsin Precipitation

May-July

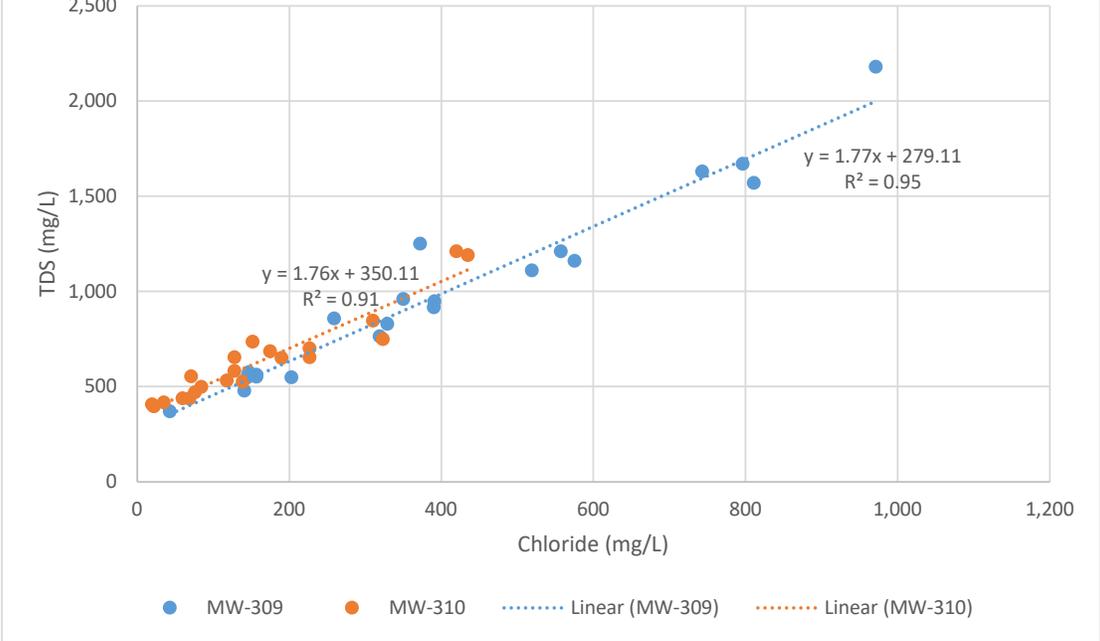


Powered by ZingChart

2024 3-month precipitation totals, Columbia County, Wisconsin. <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/country/time-series/WI-021/pcp/3/7/1895-2024>, accessed 1/16/2024.

Appendix E
TDS and Chloride Correlation Plot

MW-309 and MW-310, Comparison of TDS to Cl



F3 October 2024 Mod 10-11 Detection Monitoring Alternative
Source Demonstration

Alternative Source Demonstration October 2024 Detection Monitoring

Dry Ash Disposal Facility, Modules 10-13
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:



SCS ENGINEERS

25224067.00 | April 29, 2025

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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- Figure 2. Site Plan and Monitoring Well Locations
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- Appendix C Previous Water Table Maps
- Appendix D Precipitation Graphs

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PE CERTIFICATION

	<p>I, Sherren Clark, hereby certify that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	<p><i>SHC</i> <i>4-28-2025</i></p>
	<p>(signature) (date)</p>
	<p>Sherren Clark, PE</p>
	<p>(printed or typed name)</p> <p>License number E-29863</p> <p>My license renewal date is July 31, 2026.</p> <p>Pages or sheets covered by this seal: Alternative Source Demonstration, October 2024 Detection Monitoring, Dry Ash Disposal Facility, Modules 10-13 Columbia Energy Center, Pardeeville, Wisconsin (Entire Document)</p>

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1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs for chloride, sulfate, and total dissolved solids (TDS) observed in the statistical evaluation of the October 2024 detection monitoring event at the Columbia Energy Center (COL) Dry Ash Disposal Facility, Modules 10-13 CCR Unit (Mod 10-13). The October 2024 event included the original sampling on October 1-2 and resampling on October 31.

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the Dry Ash Disposal Facility (ADF) and the Ash Ponds Facility. This ASD evaluates the conditions at the site for Mod 10-13 of the ADF only. Modules 10-11 of the ADF became operational in 2023. Modules 12-13 were under construction in 2024 and will become operational in the spring of 2025. The ADF is operated under the Wisconsin Department of Natural Resources (DNR) License No. 3025.

The groundwater monitoring system at the COL Mod 10-13 facility monitors a single CCR Unit:

- COL Dry Ash Disposal Facility – Modules 10-13

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided on **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL. As of October 2024, the other CCR Units included Modules 1-3 of the COL ADF, Modules 4-6 of the COL ADF, the Primary Ash Pond, and the Secondary Ash Pond.

On January 31, 2025, the monitoring network for the COL ADF was recertified as a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13. The October 2024 samples were collected and data evaluation was in progress prior to the recertification, therefore, results for these events were reported separately and separate ASDs were prepared. Future reporting will be combined for the multiunit monitoring system.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

The statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3) using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the Upper Prediction Limit (UPL) to evaluate whether an SSI has occurred. The evaluation was based on an interwell UPL with 1-of-2 retesting, calculated using Sanitas software. The retesting approach results in a slightly lower UPL, but only 1 of 2 samples collected for the event (original and retest) must meet the UPL to demonstrate compliance. The interwell UPLs, the October 1 and 2, 2024 sampling results, and the October 31, 2024 resampling results, are summarized in the attached **Table 1**.

The October 2024 SSIs include the following parameters and wells:

- Chloride: MW-318, MW-319
- Sulfate: MW-318, MW-319
- TDS: MW-318, MW-319

Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**).
- ASD conclusions (**Section 5.0**).
- Monitoring recommendations (**Section 6.0**).

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with an SSI are provided in **Table 2**. The laboratory reports for the October 2024 detection monitoring event and the late October 2024 combination background and resampling event will be included in the 2025 Annual Groundwater Monitoring and Corrective Action Report to be submitted in January 2026. Complete laboratory reports for the background monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the 2023 Annual Groundwater Monitoring and Corrective Action Report for the Modules 10-11 CCR Unit (SCS, 2024) and the 2024 Annual Groundwater Monitoring and Correction Action Report for the Modules 10-13 CCR Unit (SCS, 2025a).

2.1.2 Site Information and Groundwater Flow

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR wells MW-301, MW-317, MW-318, MW-319, and former wells MW-313, MW-314, and MW-315, the unconsolidated materials were identified as consisting primarily of silty sand and sand. The boring log for previously installed monitoring well MW-84A shows silty sand and sand as the primary unconsolidated materials at these locations. CCR monitoring wells MW-84A and MW-301 are screened within the unconsolidated sand unit.

Shallow groundwater at the site generally flows to the northwest across the existing landfill area, then generally flows west toward the Wisconsin River. A groundwater flow map for October 2024 is shown on **Figure 3**. The October 2024 groundwater monitoring event was the second semi-annual monitoring event including water level measurements from new monitoring wells MW-317, MW-318, and MW-319. Flow in the vicinity of the new monitoring wells is to the west and southwest. The groundwater elevation data for the state and CCR monitoring program wells are provided in **Table 3**. A time series plot of groundwater elevations at the Mod 10-13 wells since installation and the background wells since October 2023 is provided in **Appendix A**.

Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash ponds area changed in 2022 and 2023 as the ponds were closed and CCR was removed. In 2022, dewatering wells located around the Secondary Ash Pond lowered the water table near the Secondary Ash Pond and discharged groundwater to the Primary Ash Pond. Beginning in spring 2023, dewatering activities switched to the Primary Ash Pond area, and groundwater pumped from dewatering wells around the Primary Ash Pond was discharged to the large cooling pond south of the generating station. Groundwater dewatering in the Primary Ash Pond was completed in September 2023.

Dewatering for ash pond closures may have affected water levels and groundwater flow directions in the Mod 10-13 area. Groundwater flow may also have been affected by high precipitation in the summer of 2024. Dewatering and precipitation are discussed further in **Section 4.2.3**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells. The background wells include MW-301 and MW-84A. The downgradient wells include MW-317, MW-318, and MW-319. Wells MW-314, MW-315, and MW-316 previously monitored Modules 10 and 11, but were abandoned in May 2024 to accommodate the construction of new Modules 12 and 13. The background wells are shared with the other COL CCR Units. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths of MW-317, MW-318, and MW-319 range from approximately 43 to 47.6 feet, measured from the top of the well casing.

Background monitoring for monitoring wells MW-317, MW-318, and MW-319 was initiated in June 2024 and the eighth round was completed in February 2025. The fourth round of background monitoring coincided with the October detection monitoring event for Modules 10-11.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers.

SCS collected samples on October 1 and 2, 2024. Monthly sampling events were ongoing as part of the background monitoring at the new wells MW-317, MW-318, and MW-319; therefore, data from a background monitoring event conducted on October 31, 2024, was used in lieu of a formal resampling event for parameters that exceeded the Mod 10-13 wells during the detection monitoring event earlier in October. Field parameter results were compiled by SCS and provided to the

laboratory for inclusion in the laboratory report. SCS did not identify issues with the sample collection based on review of the data and field notes.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the October 2024 detection monitoring events were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to observed SSIs for chloride, sulfate, and TDS. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Following the sampling event on October 1 and 2, 2024, SCS sampled MW-317, MW-318, and MW-319 again on October 31, 2024, for Appendix III and IV parameters as part of the background sampling program for the new wells. Based on the review of the laboratory reports, SCS did not identify any laboratory quality control flags or issues in the laboratory reports that affect the usability of the data for detection monitoring; however, some results were flagged by the laboratory as follows:

- Sampling results for background well MW-301 included a P6 flag for calcium, indicating the matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level. The sample result is consistent with historical concentrations.
- Sampling results for MW-319 included a D3 flag for fluoride, indicating that the sample was diluted due to the presence of high levels of non-target analytes or other matrix interference. The limit of detection for this sample was elevated, and the result was non-detect, which is consistent with the short history of results since this well was installed in May 2024.

Based on this review of the laboratory flags, the laboratory results were accepted as usable data.

Time series plots of the chloride, sulfate, and TDS analytical data were also reviewed for any anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plots are provided in **Appendix A**. The chloride, sulfate, and TDS concentrations observed are generally similar to previous results and no anomalous results were identified.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the October 2024 sampling results, SSIs for chloride, sulfate, and TDS occurred for MW-318 and MW-319 for the October 2024 semiannual event.

Based on the review of the statistical evaluation, SCS did not identify any errors in the statistical evaluation that caused or contributed to the determination of interwell SSIs for chloride, sulfate, and TDS.

Although no errors identified, the use of interwell rather than intrawell statistical evaluation likely contributed to the determination of SSIs. Due to variability in background concentrations of Appendix III parameters in groundwater at the ADF, the use of intrawell statistical evaluation is preferred and has been used for evaluation of the Modules 4-6 CCR Unit. Interwell statistical analysis was used for the October 2024 monitoring event because background monitoring for the three new downgradient wells was still in progress and there was not enough background data yet to calculate intrawell UPLs.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the October 2024 monitoring event based on the methodology and analysis review, and no errors caused or contributed to the reported SSIs.

4.0 ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the calcium, sulfate, and TDS SSIs at downgradient monitoring wells MW-318 and MW-319, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an interwell approach, comparing the October 2024 detection monitoring results to the UPLs calculated based on background sampling of the upgradient wells (MW-301 and MW-84A). If concentrations of a constituent that is present in the aquifer vary spatially, then the potential exists that the compliance sampling concentrations may be higher than background concentrations due to natural variation.

In addition to spatial variation, temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Background sampling at the three new Mod 10-13 compliance wells was in progress during the October 2024 detection monitoring event for Mod 10-11. The October event was completed prior to disposal of CCR in the adjacent Modules 12 and 13. Because the background sampling at the three compliance wells was performed after other potential man-made sources of chloride, sulfate, and TDS had been in operation for many years, it is difficult to determine how much of the spatial variability in chloride, sulfate, and TDS concentrations is due to natural sources versus man-made alternative sources associated with the long-term use of the property, as discussed in **Section 4.1.2**. Based on comparison to the two upgradient wells, it appears likely that chloride, sulfate, and TDS may reflect man-made sources. Regardless of the source, natural spatial variations may have contributed to the SSIs for chloride, sulfate, and TDS at MW-318 and MW-319.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the chloride, sulfate, and TDS SSIs could include the closed ash pond landfill, the former ash pond operations, the surface water/leachate collection pond for the ADF, the former ash pond effluent ditch, the coal storage

area, railroad operations, road salt use, storm water runoff from the plant entrance road, and/or other plant operations.

Historically, groundwater flow directions have varied significantly at the site due to changes in water and ash management, making it difficult to identify a specific source for chloride, sulfate, and TDS in the area of the Mod 10-13 compliance monitoring wells. Nevertheless, there are several lines of evidence indicating that the October 2024 SSIs for chloride, sulfate, and TDS are not due to a release from the Mod 10-13 CCR unit.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for chloride, sulfate, and TDS in compliance wells MW-318 and MW-319, relative to the background sampling, are due to one or more alternative sources including:

1. The Mod 10-13 CCR Unit was constructed with a composite liner system and leachate collection system. Modules 10-11 have only been receiving CCR since mid-2023 and Modules 12-13 had not started receiving CCR at the time of the October 2024 event; therefore, it is very unlikely that a release from Modules 10-11 could have reached MW-318 and MW-319 by October 2024. More information about the composite liner is presented in **Section 4.2.1**.
2. Based on the October 2024 water table map, MW-318 and MW-319 were not downgradient from Modules 10-11 in October 2024. More information about groundwater flow directions is presented in **Section 4.2.2**.
3. MW-318 and MW-319 are shallow wells located near the plant entrance road, where elevated chloride and TDS concentrations due to road salt applications are likely. Influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a deicing material) may be accentuated. More information about the effects of road salt on the chloride, sulfate, and TDS concentrations is discussed in **Section 4.2.3**.
4. The chloride and TDS concentrations at MW-318 and MW-319 are below the intrawell UPLs established at nearby CCR well MW-309. More information on background concentrations for these parameters is provided in **Section 4.2.4**.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Mod 10-13 Composite Liner

The Mod 10-13 CCR Unit was constructed with a composite liner system and a leachate collection system, and has only been receiving CCR since June 2023. Given the short active timeframe, it is very unlikely that a release from Mod 10-13 could have reached MW-318 or MW-319 by October 2024. The liner system includes the following:

- Two feet of compacted clay
- Geosynthetic clay liner (GCL)
- Sixty-mil high density polyethylene (HDPE) geomembrane
- Leachate collection drainage layer
- Leachate collection piping

The Modules 10-11 liner construction was completed in 2023, and CCR placement in Modules 10-11 began in June 2023. The Modules 12-13 liner construction was completed in 2024 and Modules 12 and 13 were not receiving waste at the time of the October or November 2024 sampling events. Extensive testing was performed as part of the DNR-approved construction documentation (SCS, 2023 and SCS, 2025b) to document the proper construction of the liner.

Given the liner system in place, a release from Modules 10 or 11 would have to penetrate the HDPE liner at a flaw, flow vertically through the GCL and compacted clay liner, and travel approximately 600 feet north to MW-318 and MW-319 from Module 11 in less than 2 years. Based on the hydraulic conductivity of the liner clay (less than 10^{-7} centimeters/second) and the lack of any evidence of a flaw in the HDPE liner, it is very unlikely that changes in chloride, sulfate, and TDS concentrations at MW-318 and MW-319 reflect a release from Mod 10-13.

4.2.2 Groundwater Flow Direction

Based on the October 2024 water table map (**Figure 3**), MW-318 and MW-319 were not downgradient from Modules 10-11 in October 2024. Compliance wells MW-318 and MW-319 were installed for the purpose of monitoring groundwater downgradient from Modules 10-13, based on a northerly flow direction as observed in previous monitoring of the ADF. However, groundwater levels monitored since well installation indicate a groundwater high in the area of MW-319. The October 2024 water table map shows MW-319 as upgradient from Modules 10-13 due to local groundwater mounding in the area of MW-319. Compliance well MW-318 appears to be sidegradient from Modules 10-13 and downgradient from the MW-319 area. For comparison with the October 2024 water table map (**Figure 3**), the October 2023, April 2024, and August 2024 water table maps are provided in **Appendix C**.

Groundwater flow at the site in summer and fall 2024 was likely influenced by unusually high overall precipitation and several intense rain events. During 2024, Columbia County experienced the highest total precipitation in a May through July 3-month period on record (**Appendix D**). Site-specific rain measurements were recorded as part of landfill construction oversight activities in 2024 and include unusually heavy rain events of 5.5 inches on June 2, 5.5 inches on June 21 and 22, 3.75 inches over the weekend preceding July 15, and 4.75 inches on September 22. The overall high precipitation and numerous intense rain events led to substantial surface runoff and subsequent infiltration. These precipitation events and subsequent infiltration may have had a short-term effect on groundwater flow at the site. Future monitoring will determine whether the upgradient position of MW-319 observed for October 2024 was a temporary effect of high infiltration or representative of long-term conditions.

The change in apparent flow directions following installation of the three new compliance wells for Modules 10-13 was part of the motivation for changing to a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13 for future monitoring events (beginning April 2025).

4.2.3 Surface Water Infiltration

MW-318 and MW-319 are shallow wells located near the plant entrance road, where elevated chloride and TDS concentrations due to road salt impacts are likely. Additionally, influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a deicing material) may be accentuated. In order to be located as close as possible to the waste boundary of the CCR Unit, MW-318 and MW-319 are installed between the entrance road and the storm water ditch on the south side of the road.

While chloride provides the strongest indication of impacts from surface water infiltration, concentrations of other parameters can also vary due to the surface water impacts. Sulfate can be present as an impurity in rock salt used for deicing. Surface water infiltration can also affect seasonal water levels and local flow directions.

A temporary increase in chloride concentrations was previously observed at other wells in the CCR network, such as at MW-309 in August 2018, prior to CCR disposal in Modules 4-6. These fluctuations indicate that the increased concentrations are at least partly attributable to a seasonal or impermanent source such as road salt application.

4.2.4 Background Concentrations at Other Wells

The concentrations of chloride and TDS during the October 1 and 2 and 31, 2024 sampling events are within the range of background results for other CCR program wells at the ADF. The chloride and TDS concentrations at MW-318 and MW-319 are below the intrawell UPLs established at nearby CCR well MW-309, which monitors Modules 4-6 (see Mod 4-6 results table in **Appendix B**), Background monitoring for MW-309 was performed before CCR placement in Modules 4-6.

Chloride results for monitoring wells MW-318 and MW-319 were below the intrawell UPL established for MW-309. The intrawell chloride UPL for MW-309 is 772 mg/L and the October results for MW-318 and MW-319 ranged from 63.7 to 647 mg/L.

TDS results for monitoring wells MW-318 and MW-319 were below the intrawell UPL established for well MW-309. The intrawell TDS UPL for MW-309 is 1600 mg/L and the October results for MW-318 and MW-319 ranged from 676 to 1,440 mg/L.

Sulfate results for monitoring well MW-319 were below the intrawell UPL established for MW-309. The intrawell UPL for MW-309 is 64.6 mg/L and the October results for MW-319 ranged from 38.5 to 62 mg/L. Sulfate results for MW-318 exceeded the MW-309 intrawell UPL.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for chloride, sulfate, and TDS at wells MW-318 and MW-319 demonstrate that the SSIs are likely due to sources other than the Mod 10-13 CCR Unit.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL Mod 10-13 CCR Unit may continue with detection monitoring based on this ASD. The ASD report will be included in the 2025 Annual Report due January 31, 2026.

7.0 REFERENCES

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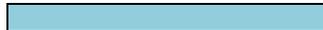
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Tables

- 1 Groundwater Analytical Results Summary
- 2 Historical Analytical Results for Parameters with SSIs
- 3 Groundwater Elevation – State Monitoring Program and CCR Well Network

**Table 1. Groundwater Analytical Results Summary - Detection Monitoring
Columbia Generating Station - Modules 10-13 / SCS Engineers Project #25224067.00**

Parameter Name	UPL Method	UPL	Background Wells		Compliance Wells					
			MW-84A	MW-301	MW-317		MW-318		MW-319	
			10/2/2024	10/2/2024	10/1/2024	10/31/2024	10/1/2024	10/31/2024	10/1/2024	10/31/2024
Groundwater Elevation, ft amsl			787.14	787.92	786.41	785.73	786.71	785.92	788.22	787.88
Appendix III										
Boron, ug/L	NP	36.2	10.3	22.1	32.1	39.4	13.6	12.9	23.7	18.3
Calcium, ug/L	NP	126,000	73,300	97,000 P6	48,700	48,100	106,000	105,000	110,000	48,600
Chloride, mg/L	P	5.76	3.3	1.5 J	3.2	4.6	63.7	74.3	647	237
Fluoride, mg/L	DQ	DQ	<0.095	0.13 J	0.17 J	0.22 J	<0.095	<0.95 D3	<1.9 D3	<0.95 D3
Field pH, Std. Units	P	7.71	7.36	6.85	7.84	7.56	7.45	7.29	7.61	7.70
Sulfate, mg/L	NP	27.5	1.8 J	10.4	5.2	5.0	224	203	62	38.5
Total Dissolved Solids, mg/L	NP	514	318	410	242	272	684	676	1,440	753

 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ.

Abbreviations:

mg/L = milligrams per liter	UPL = Upper Prediction Limit	ft amsl = feet above mean sea level
µg/L = micrograms per liter	LOD = Limit of Detection	Std. Units = Standard Units
SSI = Statistically Significant Increase	LOQ = Limit of Quantitation	P = Parametric
	DQ = Double Quantitation	NP = Nonparametric

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in August 2024 based on background well results through October 2023.

Created by: <u>RM</u>	Date: <u>8/15/2022</u>
Last revision by: <u>RM</u>	Date: <u>2/26/2025</u>
Checked by: <u>EMS</u>	Date: <u>2/27/2025</u>

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-13**

Well Group	Well	Collection Date	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Background	MW-301	12/22/2015	3.7 J	9.3	478
		4/5/2016	4.0	15.3	486
		7/8/2016	3.5 J	15.0	464
		10/13/2016	2.2	13.9	490
		12/29/2016	2.0 J	12.3 J	444
		1/25/2017	1.5 J	6.5	514
		4/11/2017	2.0	10.3	502
		6/6/2017	3.5	17.1	458
		8/8/2017	5.5	31.6	462
		10/23/2017	4.0	27.5	362
		4/25/2018	2.3	8.6	464
		8/8/2018	5.2	21.6	502
		10/24/2018	3.2	19.2	424
		4/2/2019	0.79 J	4.4	462
		10/9/2019	1.7 J	8.4	418
		2/3/2020	1.3 J	7.2	462
		5/29/2020	2.0 J	11.5	452
		10/8/2020	3.4	25.1	412
		4/14/2021	1.5 J	8.5	472
		10/14/2021	2.7	17.4	334
		4/13/2022	1.9 J	12.7	422
		10/27/2022	2.3	11.6	282
		4/27/2023	1.5 J	12.3	526
		10/11/2023	2.1	11.8	300
	4/17/2024	1.6 J	11.5	458	
	10/2/2024	1.5 J	10.4	410	
	MW-84A	12/22/2015	4.9	4.9	316
		4/5/2016	4.7	4.3	322
		7/8/2016	5.1	3.7 J	316
		10/13/2016	4.3	2.6 J	324
		12/29/2016	4.7	2.7 J	316
		1/25/2017	4.6	3.0	328
		4/11/2017	4.9	2.8 J	342
		6/6/2017	5.5	2.7 J	344
		8/8/2017	5.5	2.0 J	342
		10/24/2017	5.1	2.2 J	314
		4/25/2018	4.8	2.8 J	328
		8/8/2018	4.9	1.9 J	372
		10/24/2018	4.2	1.6 J	330
		4/3/2019	3.6	1.4 J	318
		10/9/2019	3.9	1.3 J	310
		2/3/2020	3.7	<2.2	316
5/29/2020		3.7	1.5 J	340	
10/8/2020		4.3	1.3 J	320	
4/14/2021		4.4	1.4 J	328	
10/14/2021		3.5	1.3 J	326	
4/13/2022	5.2	1.4 J	334		
10/27/2022	3.4	1.1 J	302		
4/27/2023	3.0	1.3 J	326		
10/11/2023	3.1	1.4 J	324		
4/17/2024	3.2	1.4 J	322		
10/2/2024	3.3	1.8 J	318		

**Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-13**

Well Group	Well	Collection Date	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	MW-317	6/27/2024	5.1	26.4	318
		7/31/2024	7.0	23.5	328
		8/30/2024	6.1	13.5	334
		10/1/2024	3.2	5.2	242
		10/31/2024	4.6	5.0	272
	MW-318	6/27/2024	44.9	276	804
		7/31/2024	19.7	290	712
		8/30/2024	31.8	272	694
		10/1/2024	63.7	224	684
		10/31/2024	74.3	203	676
	MW-319	6/27/2024	486	26.1	1140
		7/31/2024	712	43.6	1530
		8/30/2024	802	70.9 J	1700
		10/1/2024	647	62	1440
		10/31/2024	237	38.5	753

Abbreviations:

µg/L = micrograms per liter or parts per billion (ppb)

mg/L = milligrams per liter or parts per million (ppm)

J = The reported result is an estimated value.

Note:

(1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by: RM
 Last revision by: RM
 Checked by: NLB

Date: 5/31/2024
 Date: 3/5/2025
 Date: 3/26/2025

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00**

Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
Screen Length (ft)																	10	5	10
Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
Measurement Date																			
October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 ⁽⁶⁾	NM	NM	NM	NM	NM	NM	NI	NI	NI
February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NI	NI	NI
March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
July 29, 2024	aband	aband	NM	NM	NM	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
November 5, 2024	aband	aband	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Dry Ash Facility (Facility ID #03025)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00**

Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
Screen Length (ft)											
Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94
Measurement Date											
October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55
April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02
October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36
October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM
April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87
October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03
April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42
October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26
April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36
October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09
April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09
October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61
April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45
October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52
April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46
October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42
May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89
October 7-8 & 17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49
April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49
October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66
April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83
June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM
October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49
March 27-28, 2023	NM	NM	NM								
April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30
May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03
October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43
April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40
April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48
August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95
October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50
October 4, 2024	--	783.57	--	--	--	--	--	--	--	--	--
Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94

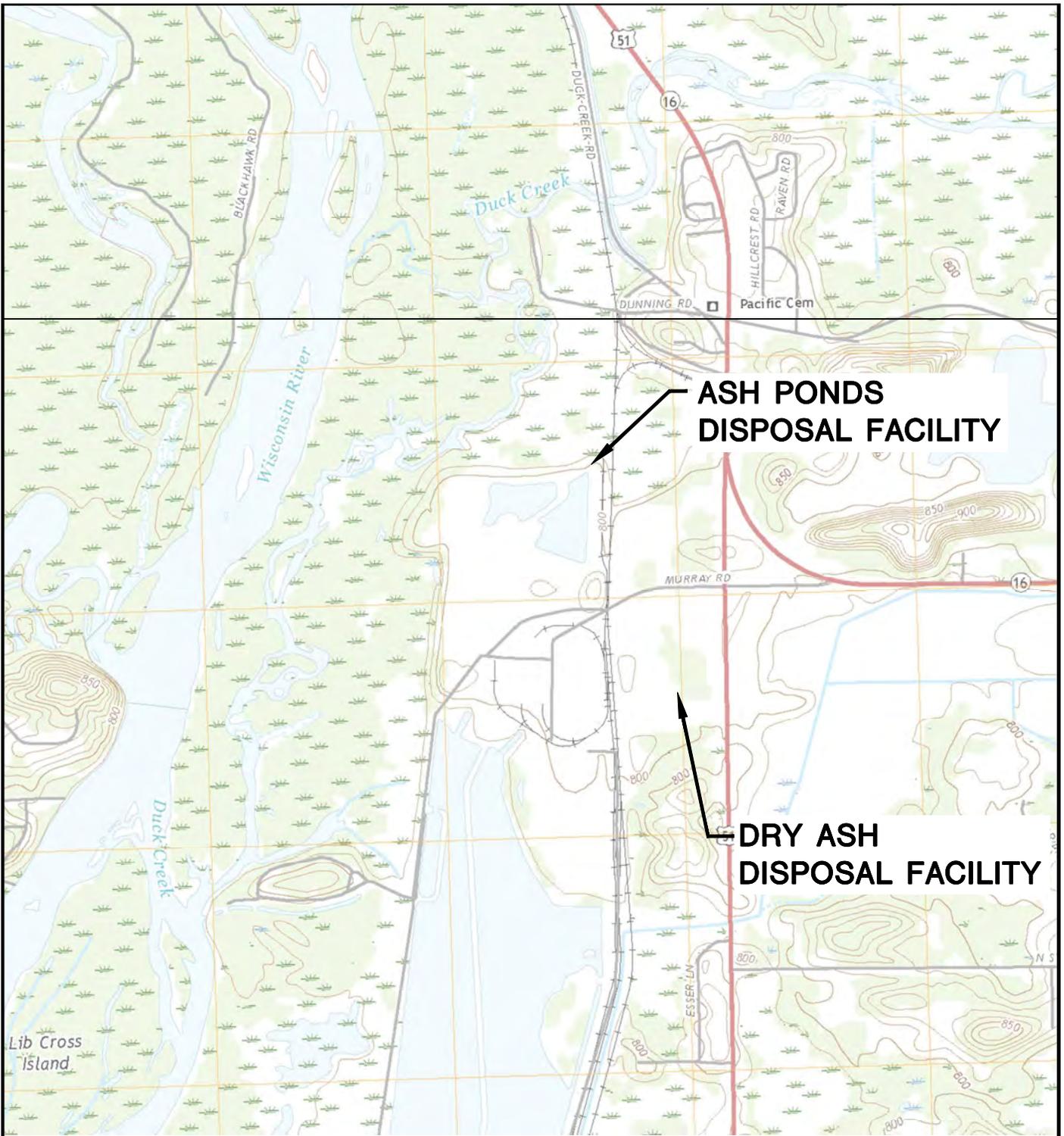
Ash Pond Facility (Facility ID #02325)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00**

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
Measurement Date																								
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI						
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.00	NI						
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI						
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NI						
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI						
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NI	NI	NI	NI	NI	NI	NI	NI						
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM</										

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – October 2024

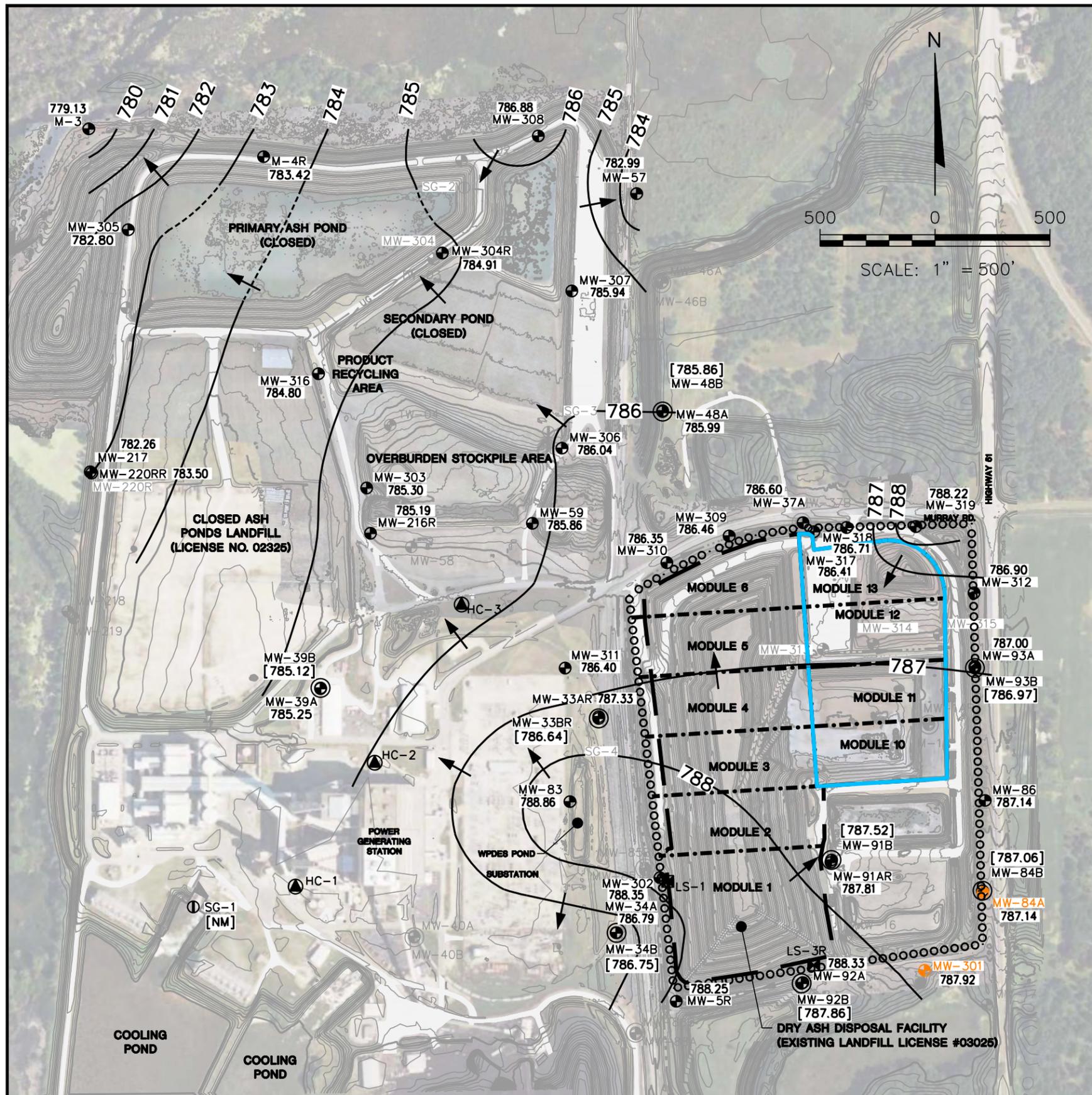


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830		FIGURE
	PROJECT NO.	25219067.00		DRAWN BY:	BSS		1		
	DRAWN:	12/02/2019		CHECKED BY:	MDB				
REVISED:	01/10/2020	APPROVED BY:	TK 01/30/2020						

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LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED STAFF GAUGE
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
788.75	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
[NM]	NOT MEASURED
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	CCR UNIT

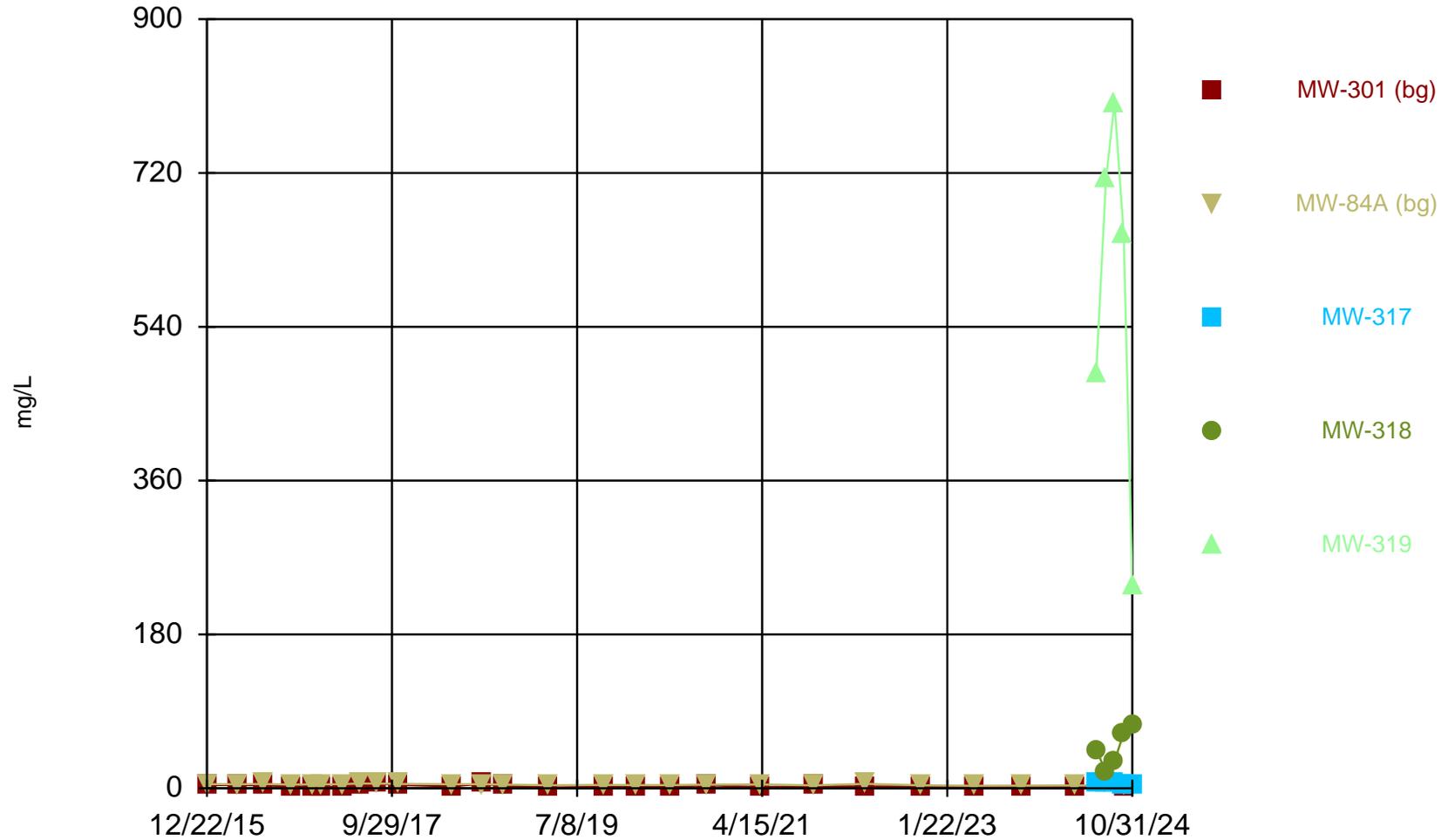
- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP OCTOBER 1-3, 2024	FIGURE
DRAWN: 12/23/2024	CHECKED BY: NLB/BRK (01/21/2025)					3
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

I:\25224067.00\Drawings\C01 October 2024 WTBL CCR Units.dwg, 1/21/2025 2:13:12 PM

Appendix A
Time Series Plots for CCR Wells

Chloride



Time Series Analysis Run 2/26/2025 12:32 PM View: Mod 10-13

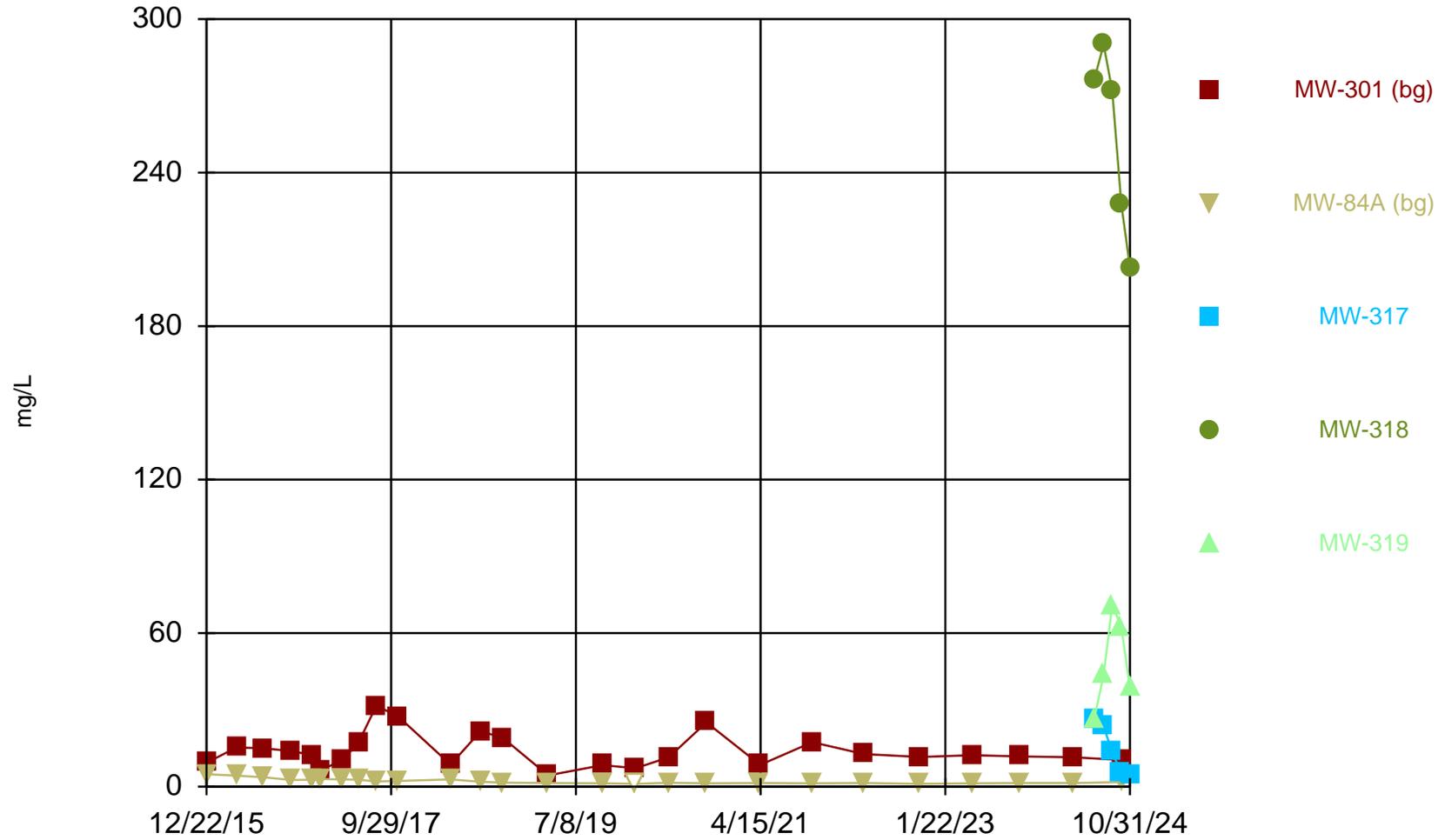
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Chloride (mg/L) Analysis Run 2/26/2025 12:33 PM View: Mod 10-13
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-317	MW-318	MW-319
12/22/2015	3.7 (J)	4.9			
4/5/2016	4	4.7			
7/8/2016	3.5 (J)	5.1			
10/13/2016	2.2	4.3			
12/29/2016	2 (J)	4.7			
1/25/2017	1.5 (J)	4.6			
4/11/2017	2	4.9			
6/6/2017	3.5	5.5			
8/8/2017	5.5	5.5			
10/23/2017	4				
10/24/2017		5.1			
4/25/2018	2.3	4.8			
8/8/2018	5.2	4.9			
10/24/2018	3.2	4.2			
4/2/2019	0.79 (J)				
4/3/2019		3.6			
10/9/2019	1.7 (J)	3.9			
2/3/2020	1.3 (J)	3.7			
5/29/2020	2 (J)	3.7			
10/8/2020	3.4	4.3			
4/14/2021	1.5 (J)	4.4			
10/14/2021	2.7	3.5			
4/13/2022	1.9 (J)	5.2			
10/27/2022	2.3	3.4			
4/27/2023	1.5 (J)	3			
10/11/2023	2.1	3.1			
4/17/2024	1.6 (J)	3.2			
6/27/2024			5.1	44.9	486
7/31/2024			7	19.7	712
8/30/2024			6.1	31.8	802
10/1/2024			3.2 (D)	64.6 (D)	648 (D)
10/2/2024	1.5 (J)	3.3			
10/31/2024			4.6	74.3	237

Sulfate



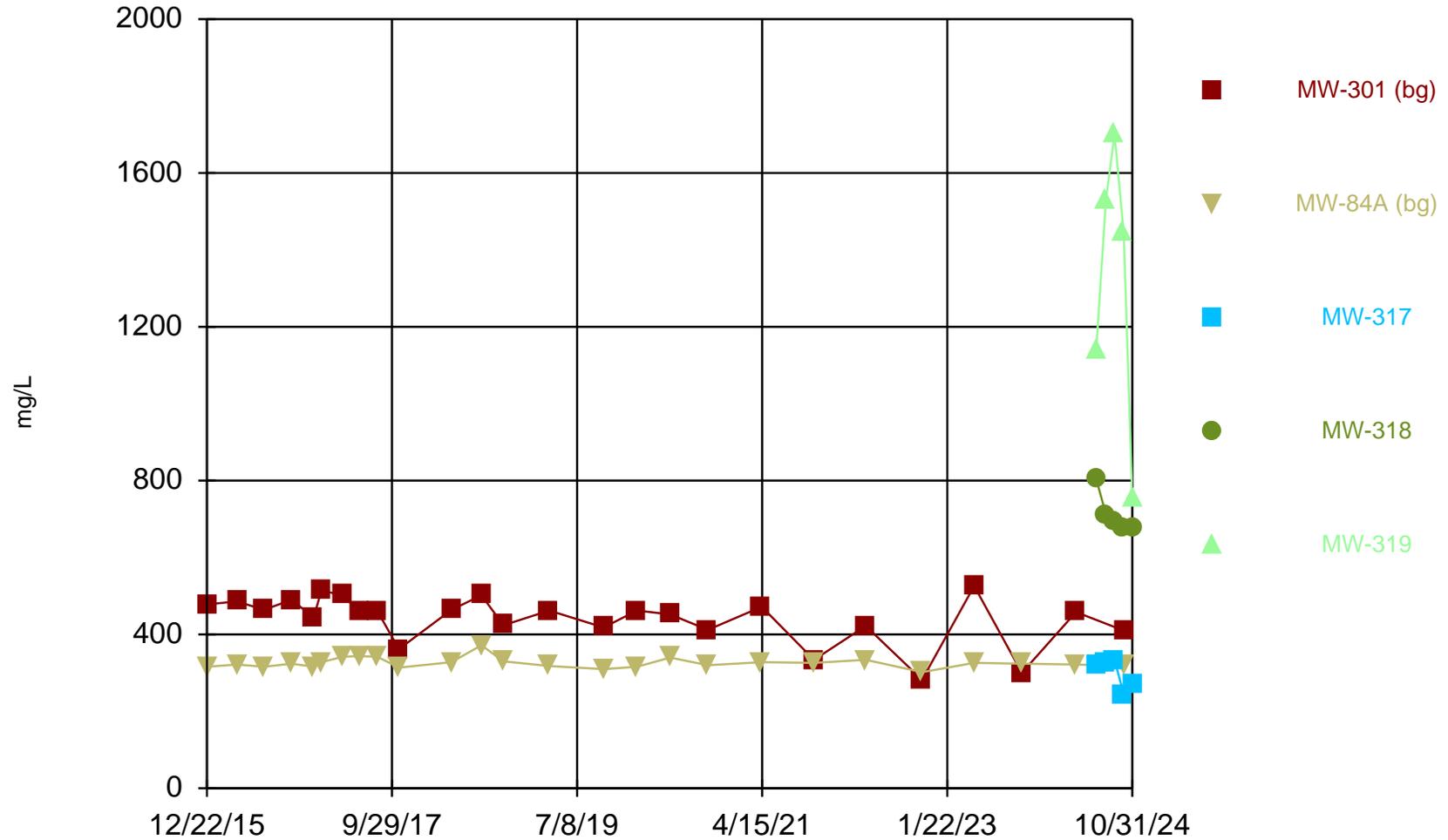
Time Series Analysis Run 2/26/2025 12:32 PM View: Mod 10-13
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Sulfate (mg/L) Analysis Run 2/26/2025 12:33 PM View: Mod 10-13
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-317	MW-318	MW-319
12/22/2015	9.3	4.9			
4/5/2016	15.3	4.3			
7/8/2016	15	3.7 (J)			
10/13/2016	13.9	2.6 (J)			
12/29/2016	12.3 (J)	2.7 (J)			
1/25/2017	6.5	3			
4/11/2017	10.3	2.8 (J)			
6/6/2017	17.1	2.7 (J)			
8/8/2017	31.6	2 (J)			
10/23/2017	27.5				
10/24/2017		2.2 (J)			
4/25/2018	8.6	2.8 (J)			
8/8/2018	21.6	1.9 (J)			
10/24/2018	19.2	1.6 (J)			
4/2/2019	4.4				
4/3/2019		1.4 (J)			
10/9/2019	8.4	1.3 (J)			
2/3/2020	7.2	<2.2 (U)			
5/29/2020	11.5	1.5 (J)			
10/8/2020	25.1	1.3 (J)			
4/14/2021	8.5	1.4 (J)			
10/14/2021	17.4	1.3 (J)			
4/13/2022	12.7	1.4 (J)			
10/27/2022	11.6	1.1 (J)			
4/27/2023	12.3	1.3 (J)			
10/11/2023	11.8	1.4 (J)			
4/17/2024	11.5	1.4 (J)			
6/27/2024			26.4	276	26.1
7/31/2024			23.5	290	43.6
8/30/2024			13.5	272	70.9 (J)
10/1/2024			5.2 (D)	227.5 (D)	62.45 (D)
10/2/2024	10.4	1.8 (J)			
10/31/2024			5	203	38.5

Total Dissolved Solids



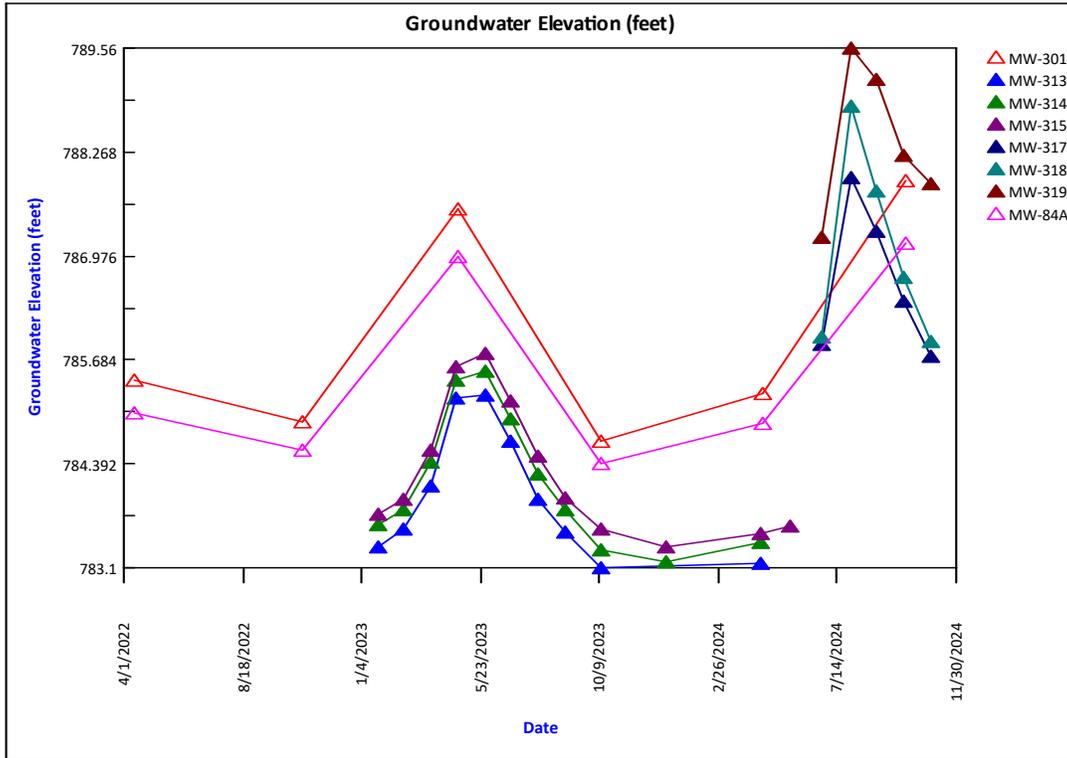
Time Series Analysis Run 2/26/2025 12:32 PM View: Mod 10-13
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 2/26/2025 12:33 PM View: Mod 10-13

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-317	MW-318	MW-319
12/22/2015	478	316			
4/5/2016	486	322			
7/8/2016	464	316			
10/13/2016	490	324			
12/29/2016	444	316			
1/25/2017	514	328			
4/11/2017	502	342			
6/6/2017	458	344			
8/8/2017	462	342			
10/23/2017	362				
10/24/2017		314			
4/25/2018	464	328			
8/8/2018	502	372			
10/24/2018	424	330			
4/2/2019	462				
4/3/2019		318			
10/9/2019	418	310			
2/3/2020	462	316			
5/29/2020	452	340			
10/8/2020	412	320			
4/14/2021	472	328			
10/14/2021	334	326			
4/13/2022	422	334			
10/27/2022	282	302			
4/27/2023	526	326			
10/11/2023	300	324			
4/17/2024	458	322			
6/27/2024			318	804	1140
7/31/2024			328	712	1530
8/30/2024			334	694	1700
10/1/2024			245 (D)	679 (D)	1445 (D)
10/2/2024	410	318			
10/31/2024			272	676	753



Appendix B

Selected UPLs and Results for Other Wells

Table 1. Groundwater Analytical Results Summary
Columbia Dry Ash Disposal Facility - Module 4-6 / SCS Engineers Project #25224067.00

Parameter Name	Background Wells		Compliance Wells							
	MW-84A	MW-301	MW-309			MW-310			MW-311	
	10/2/2024	10/2/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024	11/5/2024	Intrawell UPL	10/1/2024
Groundwater Elevation, ft amsl	787.14	787.92		786.46	785.66		786.35	785.45		786.40
Appendix III										
Boron, µg/L	10.3	22.1	61.9	72.1	72.3	82.4	93.1	78.4	43.1	34.0
Calcium, µg/L	73,300	97,000 P6	137,000	105,000	--	65,700	108,000	99,700	76,300	64,800
Chloride, mg/L	3.3	1.5 J	772	971	743	277	420	435	3.67	2.6
Fluoride, mg/L	<0.095	0.13 J	DQ	<4.8 D3	--	DQ	<0.095	--	DQ	0.10 J
Field pH, Std. Units	7.36	6.85	7.94	7.64	7.77	8.02	7.65	7.70	7.95	7.71
Sulfate, mg/L	1.8 J	10.4	64.6	142	131	107	179	194	124	11.2
Total Dissolved Solids, mg/L	318	410	1,600	2,180	1,630	773	1,210	1,190	380	262

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
DQ = Double Quantification
-- = Not Analyzed

LOQ = Limit of Quantitation
LOD = Limit of Detection

mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

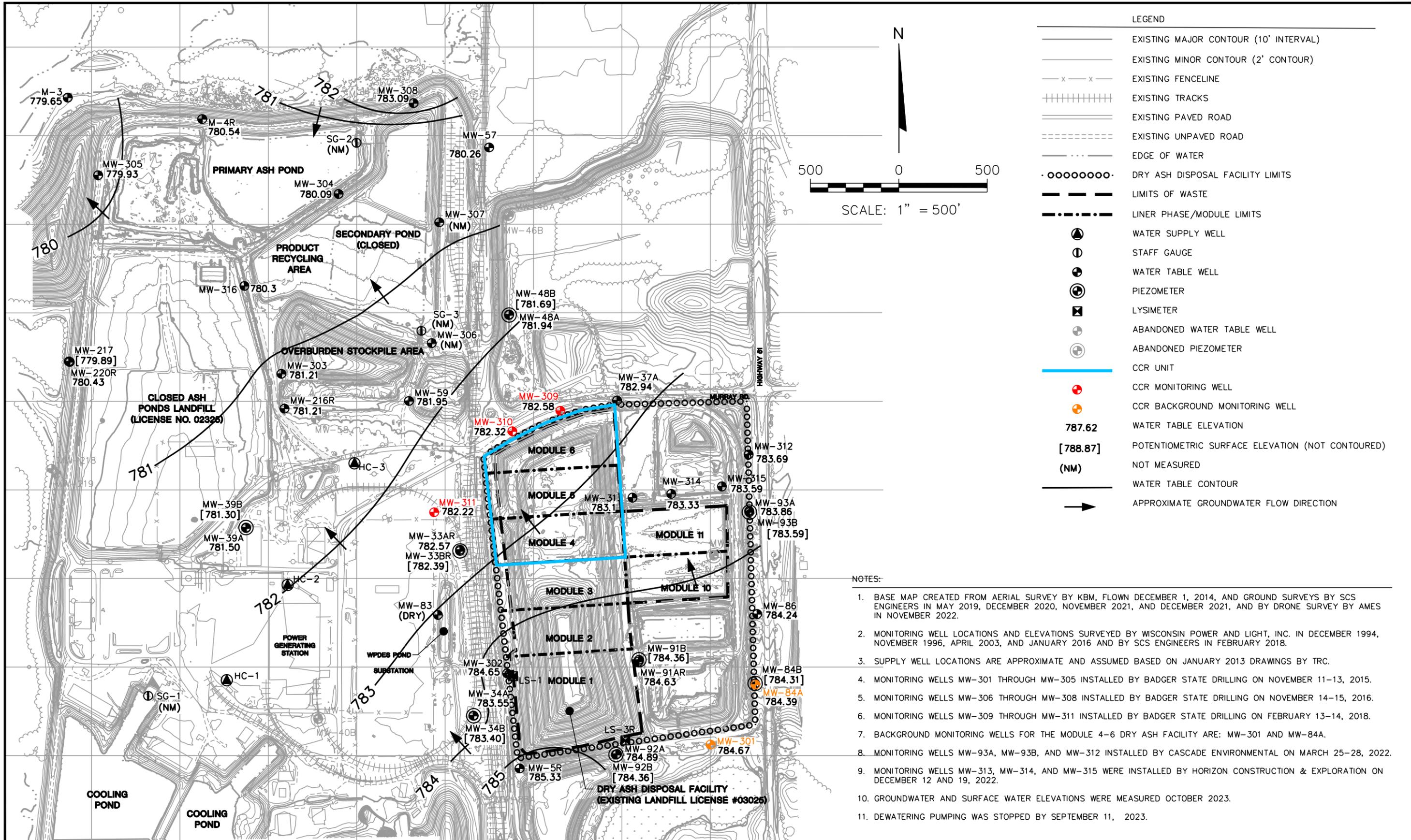
Notes:

- Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
- Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
- Intrawell UPLs were calculated from background sampling results for the compliance wells from February 2018 through October 2023.

Created by: RM
Last revision by: RM
Checked by: KMV
Scientist/PM QA/QC: TK

Date: 5/24/2024
Date: 11/20/2024
Date: 12/3/2024
Date: 1/11/2025

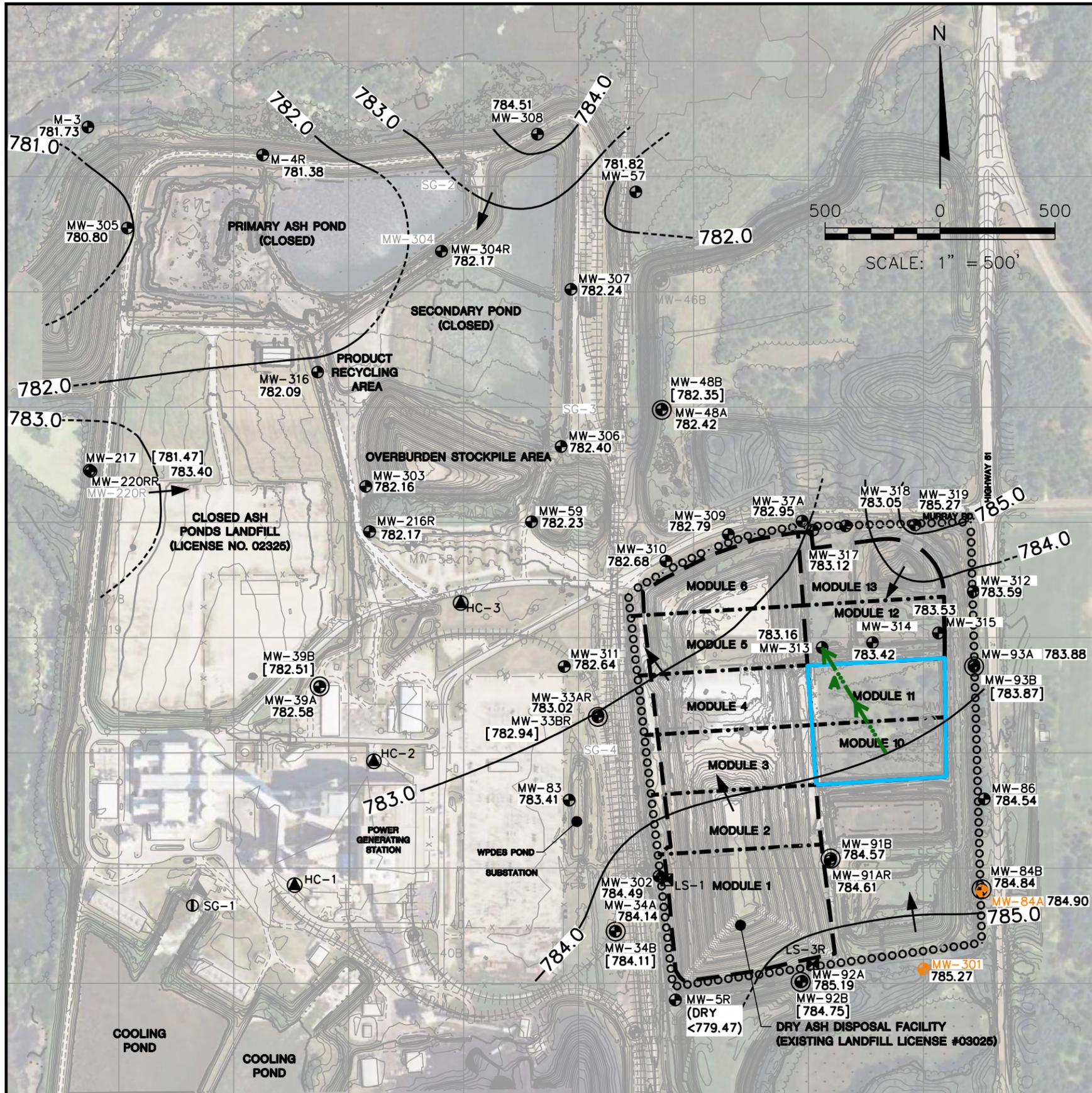
Appendix C
Previous Water Table Maps



- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
 8. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 9. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
 10. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.
 11. DEWATERING PUMPING WAS STOPPED BY SEPTEMBER 11, 2023.

PROJECT NO.	25224067.00	DRAWN BY:	KP	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER MODULES 4-6 DRY ASH DISPOSAL FACILITY PARDEEVILLE, WI	WATER TABLE MAP OCTOBER 2023	FIGURE
DRAWN:	11/13/2023	CHECKED BY:	TK					3
REVISED:	04/24/2024	APPROVED BY:	TK 05/10/2024					

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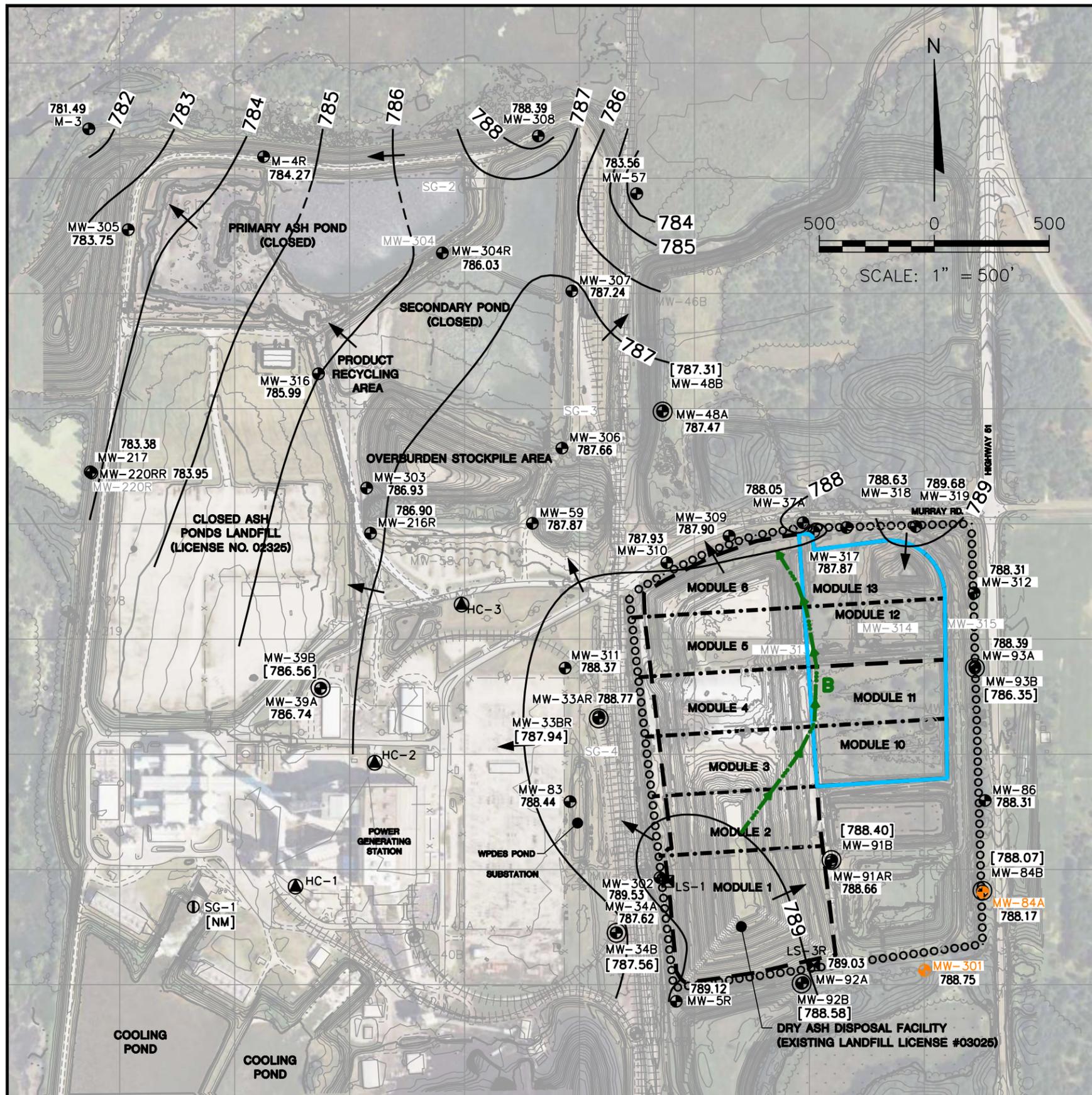
LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
783.88	WATER TABLE ELEVATION
[781.47]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
(DRY)	SURFACE WATER ELEVATION (NOT CONTOURED)
	WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
	APPROXIMATE GROUNDWATER FLOW DIRECTION
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
	CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
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10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.
11. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP APRIL 15-17, 2024	FIGURE 3
DRAWN: 11/05/2024	CHECKED BY: NLB/BRK (01/21/2025)					
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

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LEGEND	
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	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LINER PHASE/MODULE LIMITS
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788.75	WATER TABLE ELEVATION
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	APPROXIMATE GROUNDWATER FLOW DIRECTION
	FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
	CCR UNIT

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
 10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO. 25224067.00	DRAWN BY: SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	WATER TABLE CONTOUR MAP AUGUST 15, 2024	FIGURE
DRAWN: 12/23/2024	CHECKED BY: NLB/BRK (01/21/2025)					4
REVISED: 01/21/2025	APPROVED BY: TK (01/21/2025)					

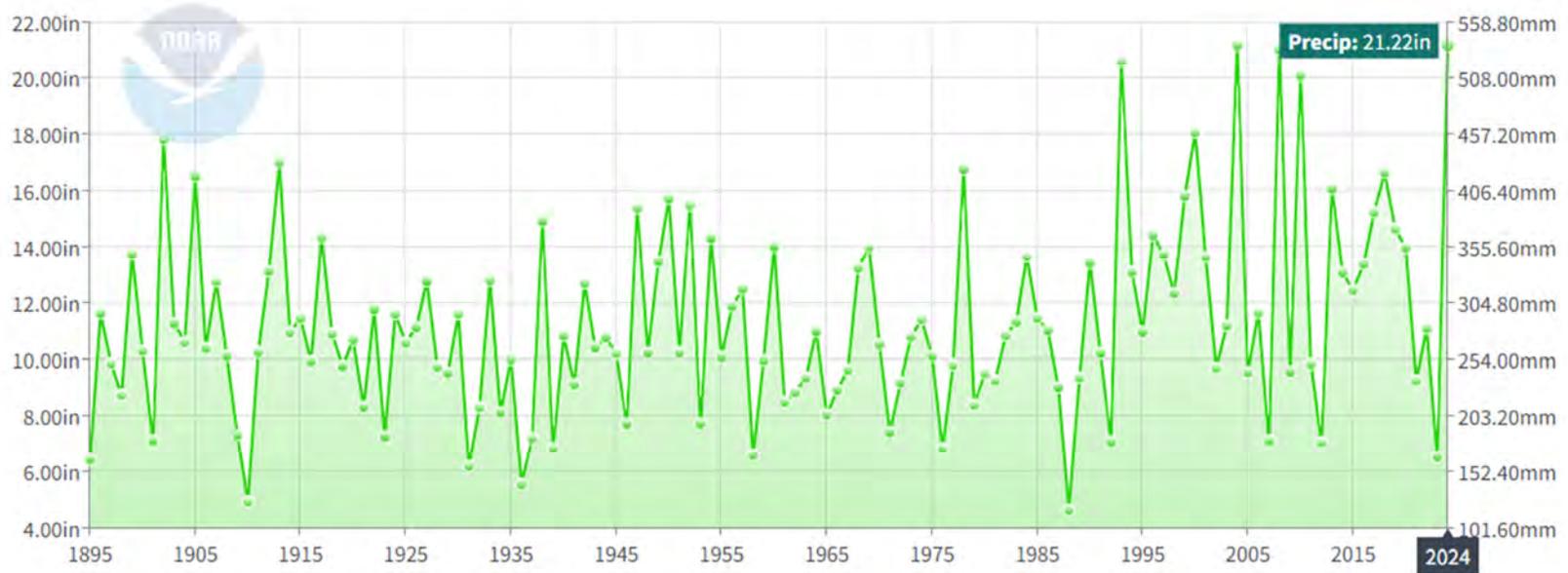
I:\25224067.00\Drawings\COL August 2024 WTBL CCR Units.dwg, 1/21/2025 2:10:18 PM

Appendix D

Precipitation Graphs

Columbia County, Wisconsin Precipitation

May-July



Powered by ZingChart

2024 3-month precipitation totals, Columbia County, Wisconsin. <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series/WI-021/pcp/3/7/1895-2024>, accessed 1/16/2024.

F4 April 2025 Ash Disposal Facility Detection Monitoring
Alternative Source Demonstration

Alternative Source Demonstration April 2025 Detection Monitoring

Dry Ash Disposal Facility
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:



SCS ENGINEERS

25225067.10 | November 13, 2025

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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- Appendix C Trend Analysis

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PE CERTIFICATION

	<p>I, Sherren Clark, hereby certify that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p> <p style="text-align: center;"></p>
	<p>(signature) 11/13/2025 (date)</p>
	<p>Sherren Clark, PE (printed or typed name)</p> <p>License number E-29863</p> <p>My license renewal date is July 31, 2026.</p>
	<p>Pages or sheets covered by this seal: Alternative Source Demonstration, April 2025 Detection Monitoring, Dry Ash Disposal Facility Columbia Energy Center, Pardeeville, Wisconsin (Entire Document)</p>

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1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs for boron observed in the statistical evaluation of the April 2025 detection monitoring event at the Columbia Energy Center (COL) Dry Ash Disposal Facility (ADF). The April 2025 event included the original sampling on April 21 to 26 and resampling on July 16 and 17.

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the Dry ADF and the Ash Ponds Facility. This ASD evaluates the conditions at the site for the ADF only. The ADF is operated under the Wisconsin Department of Natural Resources (DNR) License No. 3025.

The groundwater monitoring system at the COL ADF monitors the following CCR units:

- COL Dry Ash Disposal Facility – Modules 1-3 (existing landfill)
- COL Dry Ash Disposal Facility – Modules 4-6 (new landfill)
- COL Dry Ash Disposal Facility – Modules 10-13 (lateral expansion of new landfill)

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided on **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL. As of April 2025, the other CCR Units included the Primary Ash Pond and the Secondary Ash Pond.

On January 31, 2025, the monitoring network for the COL ADF was recertified as a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

To evaluate whether a SSI had occurred for any Appendix III parameter, a statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3). The evaluation used a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the Upper Prediction Limit (UPL) to evaluate whether an SSI has occurred. The evaluation was based on an intrawell UPL with 1-of-2 retesting, calculated using Sanitas software. The retesting approach results in a slightly lower UPL, but only 1 of 2 samples collected for the event (original and retest) must meet the UPL to demonstrate compliance. Following the January 31, 2025 monitoring network recertification, and as part of the evaluation of the April 2025 data, the intrawell UPLs were updated based on a review of compliance well monitoring data collected from May 2016 through March 2025 (intrawell). The UPLs and results for the April and July 2025 monitoring events are summarized in the attached **Table 1**.

The April 2025 SSIs include the following parameters and wells:

- Boron: MW-309, MW-310

SSIs for boron have previously been reported at one or more CCR well in the COL ADF and the SSIs were attributed to alternative sources in previous ASDs. Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**).
- ASD conclusions (**Section 5.0**).
- Monitoring recommendations (**Section 6.0**).

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with SSIs are provided in **Table 2**. The laboratory reports for the April 2025 detection monitoring event and the July 2025 resampling event will be included in the 2025 Annual Groundwater Monitoring and Corrective Action Report to be submitted in January 2026. Complete laboratory reports for the historical monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the October 2017 Detection Monitoring ASD for Modules 1-3 CCR Unit (SCS, 2018), May 2020 Detection Monitoring ASD for Module 4 CCR Unit (SCS, 2020), 2023 Annual Groundwater Monitoring and Corrective Action Report for the Modules 10-11 CCR Unit (SCS, 2024), and the 2024 Annual Groundwater Monitoring and Correction Action Report for the Modules 10-13 CCR Unit (SCS, 2025a).

2.1.2 Site Information and Groundwater Flow

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR wells MW-301, MW-309, MW-310, MW-311, MW-317, MW-318, MW-319, and former wells MW-313, MW-314, and MW-315, the unconsolidated materials were identified as consisting primarily of silty sand, sand, and gravel. Boring logs for previously installed monitoring wells MW-33AR, MW-34A, MW-84A, and M-4R show silty sand and sand as the primary unconsolidated materials at these locations.

Shallow groundwater at the site generally flows to the northwest across the existing landfill area, then generally flows west toward the Wisconsin River. A groundwater flow map for April 2025 is shown on **Figure 3**. Flow in the vicinity of the ADF is primarily to the north and west. Directly west of the ADF, water levels measured at the water table monitoring wells were more variable than typically observed, which may reflect intermittent precipitation during the monitoring event. The groundwater elevation data for the state and CCR monitoring program wells are provided in **Table 3**. A time series plot of groundwater elevations at the ADF wells is provided in **Appendix A**.

Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash ponds area changed in 2022 and 2023 as the ponds were closed and CCR was removed. In 2022, dewatering wells located around the Secondary Ash Pond lowered the water table near the Secondary Ash Pond and discharged groundwater to the Primary Ash Pond. Beginning in spring 2023, dewatering activities switched to the Primary Ash Pond area, and groundwater pumped from dewatering wells around the Primary Ash Pond was discharged to the large cooling pond south of the generating station. Groundwater dewatering in the Primary Ash Pond was completed in September 2023.

Dewatering for ash pond closures may have affected water levels and groundwater flow directions in the ADF area.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and nine downgradient monitoring wells. The background wells include MW-301 and MW-84A. The downgradient wells include MW-33AR, MW-34A, MW-302, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319. Wells MW-313, MW-314, and MW-315 previously monitored Modules 10 and 11, but were abandoned in May 2024 to accommodate the construction of new Modules 12 and 13. The background wells are shared with the other COL CCR Units, including the Primary Pond and Secondary Pond units. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths of the nine downgradient wells in the ADF unit range from approximately 31.1 to 47.6 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers.

SCS collected samples on April 21, 22, and 26, 2025. SCS collected resamples on July 16 and 17, 2025. Field parameter results were compiled by SCS and provided to the laboratory for inclusion in the laboratory reports. SCS did not identify issues with the sample collection based on review of the data and field notes.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the April 2025 detection monitoring event were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to observed SSIs for boron.

The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Following the sampling event on April 21 to 26, 2025, SCS sampled MW-33AR, MW-309, and MW-310 again on July 16 and 17, 2025, for select Appendix III parameters that exceeded their respective intrawell UPLs. Based on the review of the laboratory reports, SCS did not identify any laboratory quality control flags or issues in the laboratory reports that affect the usability of the data for detection monitoring; however, some results were flagged by the laboratory as follows:

- Sampling results for MW-309 included an MO flag for chloride, indicating that the matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits. The matrix spike and matrix spike duplicate percent recoveries for this parameter were slightly outside the recommended percent recovery limits. The percent recoveries for the laboratory control sample and the other matrix spike and matrix spike duplicate analyzed with the sample batch were all within the control limits.
- Sampling results for fluoride at multiple compliance wells included D3 flags, indicating the samples were diluted due to the presence of high levels of non-target analytes or other matrix interference. The sample results were consistent with historical results (non-detect) and the limit of detection (LOD) for these samples was below the groundwater protection standard (GPS) of 4 milligrams per liter (mg/L).

Based on this review of the laboratory flags, the laboratory results were accepted as usable data.

Time series plots of the boron analytical data were also reviewed for any anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plots are provided in **Appendix A**. The boron concentrations observed are generally similar to previous results and no anomalous results were identified.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the April and July 2025 sampling results, SSIs for boron occurred for MW-309 and MW-310 for the April 2025 semiannual event. Sulfate was detected in the April sample for MW-33AR at a concentration exceeding the UPL but did not exceed the UPL in the July resample event; therefore, it is not an SSI under the 1-of-2 resampling approach.

Based on the review of the statistical evaluation, SCS did not identify any errors in the statistical evaluation that caused or contributed to the determination of intrawell SSIs for boron.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the April 2025 monitoring event based on the methodology and analysis review, and no errors caused or contributed to the reported SSIs.

4.0 ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the boron SSIs at downgradient monitoring wells MW-309 and MW-310, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an intrawell approach, comparing the April 2025 detection monitoring results to the UPLs calculated based on background sampling of the compliance wells. If concentrations of a constituent that is present in the aquifer vary with time, then the potential exists that the compliance sampling concentrations may be higher than background concentrations due to natural temporal variation.

Temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Background sampling at compliance wells MW-309 and MW-310 was performed prior to disposal of CCR in Mod 4. Because the background sampling at these compliance wells was performed after other potential man-made sources of boron had been in operation for many years, it is difficult to determine how much of the variation in boron concentrations is due to natural sources versus man-made alternative sources associated with the long-term use of the property, as discussed in **Section 4.1.2**. Based on comparison to the two upgradient wells, it appears likely that boron may reflect man-made sources. Regardless of the source, natural temporal variations in infiltration and groundwater flow direction may have contributed to the SSIs for boron at MW-309 and MW-310.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the boron SSIs could include the closed ash pond landfill, the former ash pond operations, the surface water/leachate collection pond for the ADF, the former ash pond effluent ditch, the coal storage area, railroad operations, storm water runoff from the plant entrance road, and/or other plant operations.

Historically, groundwater flow directions have varied significantly at the site due to changes in water and ash management, making it difficult to identify a specific source for low levels of boron in the area of the ADF compliance monitoring wells. Furthermore, recent dewatering activities around the Secondary Ash Pond (2022) and the Primary Ash Pond (2023) likely also affected groundwater flow, further complicating the evaluation of historic sources. Nevertheless, there are several lines of evidence indicating that the April 2025 SSIs at MW-309 and MW-310 are not due to a release from the ADF CCR unit.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for boron in compliance wells MW-309 and MW-310, relative to the background sampling, are due to one or more alternative sources include the following:

1. Modules 4-6 of the ADF, which are immediately upgradient of MW-309 and MW-310, were constructed with a composite liner system and leachate collection system. Module 4 has only been receiving CCR since late 2018, and Modules 5 and 6 started receiving CCR in 2022; therefore, it is unlikely that a release from Modules 4-6 could have reached MW-309 or MW-310 by April 2025. More information about the composite liner is presented in **Section 4.2.1**.
2. The boron concentrations at MW-309 and MW-310 in April and July 2025 were within the range of results observed historically at other CCR wells and attributed to non-landfill sources. More information on historical concentrations of boron at the ADF is provided in **Section 4.2.2**.
3. Although the April and July 2025 boron concentrations exceeded the intrawell UPL, evaluation of the boron results since detection monitoring began in April 2019 does not indicate a statistically significant increasing trend in boron concentrations, as discussed in **Section 4.2.3**.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Modules 4-6 Composite Liner

Modules 4-6 of the ADF are closest to wells MW-309 and MW-310. These wells were part of the monitoring program for Modules 4-6 prior to the recertification of the COL ADF as a single multiunit monitoring system for Modules 1-3, Modules 4-6, and Modules 10-13.

Modules 4-6 and 10-13 of the ADF were constructed with a composite liner system and a leachate collection system. In the area of MW-309 and MW-310, Module 4 has only been receiving CCR since late 2018 and Modules 5 and 6 have only been receiving CCR since 2022. Given the short active timeframe, it is very unlikely that a release from Modules 4-6 could have reached MW-309 or MW-310 by April 2025. The liner system includes the following:

- Two feet of compacted clay
- Geosynthetic clay liner (GCL)
- Sixty-mil high density polyethylene (HDPE) geomembrane
- Leachate collection drainage layer
- Leachate collection piping

Given the liner system in place, a release from Modules 4-6 would have to penetrate the HDPE liner at a flaw, flow vertically through the GCL and compacted clay liner, and travel with the groundwater approximately 600 feet north to MW-309 and 500 feet north to MW-310 from Module 4 in less than 7 years, or travel to the wells from Modules 5 and 6 in 3 years. Based on the hydraulic conductivity of the liner clay (less than 10^{-7} centimeters/second), the lack of any evidence of a flaw in the HDPE liner, and the very low estimated average groundwater velocity (0.7 to 1.1 feet per year [SCS, 2025b]), it is very unlikely that changes in boron concentrations at MW-309 and MW-310 reflect a release from adjacent Modules 4-6. Extensive testing was performed as part of the DNR-approved construction documentation (SCS, 2021) to document the proper construction of the liner.

4.2.2 Boron Concentrations at Other Wells

The concentrations of boron observed for the April 2025 sampling and July 2025 resampling events are within the range of historical results at CCR program wells at Columbia. Higher boron concentrations at other wells have been attributed to historical impacts from sources other than the ADF.

The historical boron concentrations from the ADF compliance wells and the two background wells are shown on the time series plots and data summaries in **Appendix A**.

Boron results for monitoring wells located west of the ADF have historically exceeded the upgradient background boron concentrations and were not attributed to releases from the CCR units. As documented in ASDs previously prepared for the Mods 1-3 CCR Unit, multiple lines of evidence indicate that previous interwell SSIs for boron in compliance wells MW-33AR, MW-34A, and MW-302 were due to sources other than the ADF. The lines of evidence include:

1. Elevated levels of boron were present in the area west of the landfill, where the three compliance wells are located before the landfill was constructed.
2. Monitoring performed under the state program documents that the concentration of boron was elevated before CCR disposal in the landfill began and has decreased since the landfill has been in operation.
3. Groundwater flow directions have changed through time due to changes in water management at the plant, so that groundwater impacted by the effluent ditch formerly flowed to the east, under the landfill, and is now flowing west and/or north.

In January 2025, the groundwater monitoring system was modified to be a single multiunit system, monitoring ADF Modules 1-3 (existing landfill), 4-6 (new landfill), and 10-13 (lateral expansions of a new landfill). Prior to combining the separate systems, a combination of interwell and intrawell statistics had been used to evaluate detection monitoring data. With the combined system, intrawell statistics were used for all wells. With intrawell statistics, the boron UPLs vary spatially and incorporate both natural background concentrations and historical background influenced by man-made sources other than the ADF. Therefore, although higher concentrations of boron were observed for the samples from monitoring wells MW-33AR, MW-34A, and MW-302 than for MW-309 and MW-310, the levels for the wells on the west side of the site did not represent SSIs.

The historical boron sources and changes in flow directions that appear to have affected boron concentrations west of the ADF could also affect concentrations on the north side of the ADF at MW-309 and MW-310. These wells are located further from the non-ADF historical sources, such as the former effluent ditch, but could have been affected by these sources based on current and historical flow directions. As noted above, groundwater impacted by the effluent ditch formerly flowed to the east, under the landfill, and is now flowing west and/or north. Historical flow maps also show flow toward the MW-309/MW-310 area from the former fly ash pond area in 1981 and from the effluent ditch and Wisconsin Pollutant Discharge Elimination System (WPDES) pond in 2002. More recently, flow directions were variable in 2022 and 2023 due to dewatering associated with the Primary and Secondary Ash Pond closures. Selected historical groundwater flow maps are included in **Appendix B**.

The results from other wells indicate that, while the boron concentrations have increased at MW-309 and MW-310 relative to the intrawell UPL, they are within the range of values that have been identified as non-ADF historical impacts at other ADF monitoring wells.

4.2.3 Boron Trend Analysis

Although the April and July 2025 boron concentrations exceeded the intrawell UPLs at MW-309 and MW-310, evaluation of the boron results since detection monitoring began in April 2019 does not indicate a statistically significant increasing trend. The trend analysis is included in **Appendix C**. The

trend plot for MW-309 shows increasing concentrations but not at a statistically significant level. The trend plot for MW-310 shows a slight decreasing trend but was also not statistically significant. The lack of trend indicates that the April and July results may reflect temporal variability in background concentrations rather than impacts from the landfill.

Changes in background concentrations can occur in response to site activities without indicating a release from the CCR unit. For example, changes in storm water runoff and infiltration patterns following liner construction can result in increasing or decreasing background concentrations.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron at wells MW-309 and MW-310 demonstrate that the SSIs are likely due to sources other than the COL ADF CCR Unit.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL ADF CCR Unit may continue with detection monitoring based on this ASD. The ASD report will be included in the 2025 Annual Report due January 31, 2026.

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Tables

- 1 Groundwater Analytical Results Summary
- 2 Historical Analytical Results for Parameters and Wells with SSIs
- 3 Groundwater Elevation – State Monitoring Program and CCR Well Network

**Table 1. Groundwater Analytical Results Summary -
Columbia Ash Disposal Facility Landfill Modules / SCS Engineers Project #25225067.10**

Parameter Name	Background Wells		Compliance Wells																				
	MW-84A	MW-301	MW-33AR		MW-34A		MW-302		MW-309		MW-310		MW-311		MW-317		MW-318		MW-319				
	4/22/2025	4/22/2025	4/21/2025	7/16/2025	4/21/2025	4/22/2025	4/21/2025	7/17/2025	4/21/2025	7/17/2025	4/21/2025	7/16/2025	4/21/2025	4/21/2025	4/26/2025	4/26/2025	4/26/2025	4/26/2025	4/26/2025				
Groundwater Elevation, ft amsl	786.33	787.41	Intrawell UPL	783.71	786.07	Intrawell UPL	783.15	Intrawell UPL	787.05	Intrawell UPL	785.17	785.46	Intrawell UPL	785.09	785.45	Intrawell UPL	785.23	Intrawell UPL	784.94 ⁽³⁾	Intrawell UPL	785.06 ⁽³⁾	Intrawell UPL	786.31 ⁽³⁾
Appendix III																							
Boron, µg/L	10.0	25.5	927	468	--	265	224	841	379	69.4	102	93.6	85.2	86.4	97.9	44.4	24.8	63.3	29.1	30	18.3	49.9	18.8
Calcium, µg/L	70,000	108,000	130,000	85,300	--	82,500	59,400	106,000	66,700	164,000	35,900	--	84,000	45,900	--	77,800	51,300	60,100	57,900	131,000	99,900	181,000	76,000
Chloride, mg/L	3.0	1.4 J	255	47.7	--	35.5	8.7	15.0	0.83 J	887	386 M0	--	373	110	--	3.92	2.1	8.7	4.5	98.8	23.7	1090	242
Fluoride, mg/L	<0.095	<0.095	DQ	<0.48 D3	--	DQ	<0.095	0.2	<0.095	DQ	<0.95 D3	--	DQ	<0.48 D3	--	0.1	<0.095	0.394	<0.095	DQ	<0.48 D3	DQ	<0.48 D3
Field pH, Std. Units	7.07	6.59	8.62	7.81	7.45	8.23	7.80	8.23	7.18	8.00	7.55	7.75	8.06	7.69	7.71	8.00	7.54	8.21	7.67	7.71	7.46	7.99	7.56
Sulfate, mg/L	1.7 J	8.2	231	236	231	186	78.7	99.7	30	145	75.7	--	190	170	--	153	10.5	74.2	5.2	345	156	87.3	31.6
Total Dissolved Solids, mg/L	324	468	726	542	--	446	300	531	338	1810	1160	--	1050	692	--	424	254	449	288	832	544	2240	700

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ.

Abbreviations:

UPL = Upper Prediction Limit NP = Nonparametric UPL with 1-of-2 retesting Std. Units = Standard Units
 DQ = Double Quantitation P = Parametric UPL with 1-of-2 retesting ft amsl = feet above mean sea level
 SSI = Statistically Significant Increase LOQ = Limit of Quantitation mg/L = milligrams per liter
 -- = Not Analyzed LOD = Limit of Detection µg/L = micrograms per liter

J = Estimated concentration at or above the LOD and below the LOQ.
 M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
 D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Intrawell UPLs calculated based on results from compliance wells UPLs calculated in July 2025 based on compliance well results through March 2025.
3. Groundwater elevations displayed for wells MW-317, MW-318, and MW-319 were collected April 22, 2025.

Created by: RM Date: 5/7/2025
 Last revision by: SCC Date: 8/8/2025
 Checked by: RM Date: 8/11/2025

**Table 2. Historical Analytical Results for Wells and Parameters with SSIs
Columbia Dry ADF**

Well Group	Well	Collection Date	Boron (µg/L)
Compliance	MW-309	2/21/2018	31.4
		3/23/2018	31.0
		4/23/2018	30.4
		5/24/2018	28.0
		6/23/2018	26.6
		7/23/2018	35.5
		8/22/2018	40.5
		9/21/2018	30.0
		4/2/2019	37.4
		10/8/2019	33.4
		5/29/2020	54.6
		6/30/2020	50.7
		8/6/2020	55.3
		10/8/2020	57.7
		12/11/2020	65.9
		4/13/2021	48.0
		6/11/2021	49.9
		10/14/2021	42.9
		12/21/2021	36.4
		4/12/2022	32.5
		10/26/2022	46.6
		11/30/2022	49.3
		4/26/2023	50.8
		6/29/2023	59.4
		10/9/2023	41.5
		4/15/2024	38.7
	10/1/2024	72.1	
	11/5/2024	72.3	
	4/21/2025	102	
	7/17/2025	93.6	
	MW-310	2/21/2018	67.1
		3/23/2018	62.1
		4/23/2018	60.7
		5/24/2018	59.2
6/23/2018		61.4	
7/23/2018		69.5	
8/22/2018		64.2	
9/21/2018		80.3	
4/2/2019		73.0	
10/8/2019		81.8	
5/29/2020		74.4	
10/8/2020		77.6	
4/13/2021		69.6	
10/14/2021		72.0	
4/12/2022		72.0	
10/26/2022		71.3	
4/26/2023		57.5	
10/9/2023		65.6	
4/15/2024	65.2		
10/1/2024	93.1		
11/5/2024	78.4		
4/21/2025	86.4		
7/17/2025	97.9		

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)

Note:
(1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by:	RM	3/4/2025
Last revision by:	RM	9/19/2025
Checked by:	NLB	9/22/2025

I:\25225067.00\Deliverables\2025 April - COL ADF ASD\Tables\Table 2 - Historical Analytical Results with SSIs.xlsx|Table 2. Analy. RsIts- CCR

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00**

Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
Screen Length (ft)	10.00	10.00	10.00	10.00	5.00	10.00	3.00	12	10	10	5	10	10	5	10	5	10	5	10
Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
Top of Well Screen Elevation (ft)	788.15	790.16	789.47	787.21	755.89	780.52	752.10	793.24	792.54	784.07	767.24	789.36	786.13	761.07	789.53	761.66	787.19	750.21	784.29
Measurement Date																			
October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
October 8, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI
October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI
April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 ⁽⁶⁾	NM	NM	NM	NM	NM	NM	NI	NI	NI
February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NI	NI	NI
April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	784.34	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
July 29, 2024	aband	aband	NM	NM	aband	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
November 5, 2024	aband	aband	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
January 10, 2025	aband	aband	NM	785.35	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
April 21-23, 2025	aband	aband	787.47	783.71	785.07	783.15	785.86	785.00	785.70	786.33	786.69	786.54	786.84	786.64	787.43	787.00	786.03	786.00	785.65
July 16, 2025	aband	aband	NM	786.07	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Dry Ash Facility
(Facility ID #03025)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00**

	Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
	Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
	Screen Length (ft)		10	10	3	10	3	10	10	10	5	10
	Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
	Top of Well Screen Elevation (ft)		790.55	784.82	736.43	786.98	756.04	781.89	786.98	786.36	759.18	783.94
Measurement Date												
October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55	
April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02	
October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36	
October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM	
April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87	
October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03	
April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42	
October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26	
April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36	
October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09	
April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09	
October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61	
April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45	
October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52	
April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46	
October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42	
May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89	
October 7-8 & 17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49	
April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49	
October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66	
April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83	
June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM	
October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49	
March 27-28, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30	
May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03	
October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43	
April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40	
April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48	
August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95	
October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50	
October 4, 2024	NM	783.57	NM	NM	NM	NM	NM	NM	NM	NM	NM	
April 21-23, 2025	779.71	783.61	784.43	784.40	784.70	784.66	782.78	784.67	784.39	782.95	783.61	
Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94	

Ash Pond Facility
(Facility ID #02325)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00**

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
Measurement Date																								
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI						
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	NI	NI	NI	NI	NI	NI	NI	NI						
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	NI	NI	NI	NI	NI	NI	NI	NI						
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	784.86	785.61	NI	NI	NI	NI	NI	NI	NI	NI							
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	NI	NI	NI	NI	NI	NI	NI	NI						
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	NI	NI	NI	NI	NI	NI	NI	NI						
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	NI	NI	NI	NI	NI	NI	NI	NI	NI
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
December 13, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	787.03	785.68	786.43	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
December 23, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	775.22	NM	NI	NI	NI	NI	NI	NI	NI	NI
January 17, 2020	NM	NM	785.58	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NI	NI	NI	NI	NI	NI	NI	NI						
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	78																				

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25225067.00**

February 25, 2025	NM	NM	NM	aband	NM	aband	aband	aband	NM	784.36	784.53	786.59													
March 27, 2025	NM	NM	NM	aband	NM	aband	aband	aband	NM	784.26	784.44	786.25													
April 21-23, 2025	787.41	787.05	784.37	aband	784.21	783.18	783.61	783.71	783.15	786.33	784.75	784.83	786.43	785.17	785.09	785.23	785.65	aband	aband	aband	784.27	784.94	785.06	786.31	
April 26, 2025	NM	NM	NM	aband	NM	aband	aband	aband	NM	784.94	785.06	786.30													
July 16, 2025	NM	NM	NM	aband	NM	785.46	785.45	NM	NM	aband	aband	aband	NM	NM	785.45	787.04									
July 30, 2025	NM	NM	NM	aband	NM	784.97	NM	NM	NM	aband	aband	aband	NM	NM	NM	NM									
Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	773.61	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	774.10	776.61	774.18	764.79	774.58	777.37	780.68	

Notes:

NM = not measured

NI = not installed

aband = abandoned

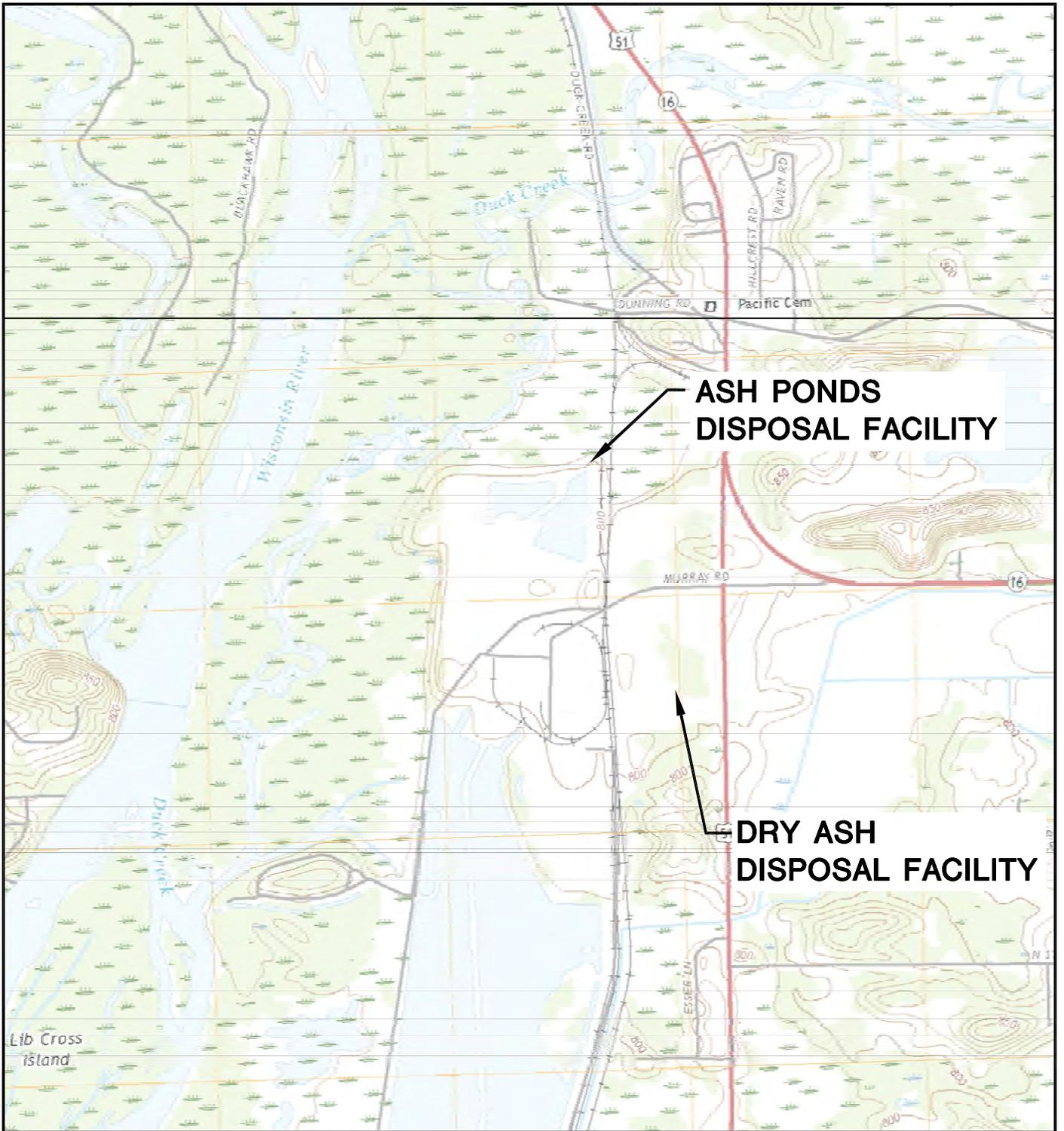
(1) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5, 2017 sampling event. The level was allowed to return to static and was measured on October 10, 2017.

(2) MW-303 was extended in 2022 due to regrading. Prior to October 2022, the TOC elevation was 811.52'. For events in October 2022 and later, the TOC elevation is 815.72'.

Created by: MDB Date: 5/6/2013
 Last revision by: RM Date: 7/30/2025
 Checked by: CG Date: 8/1/2025

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – April 2025

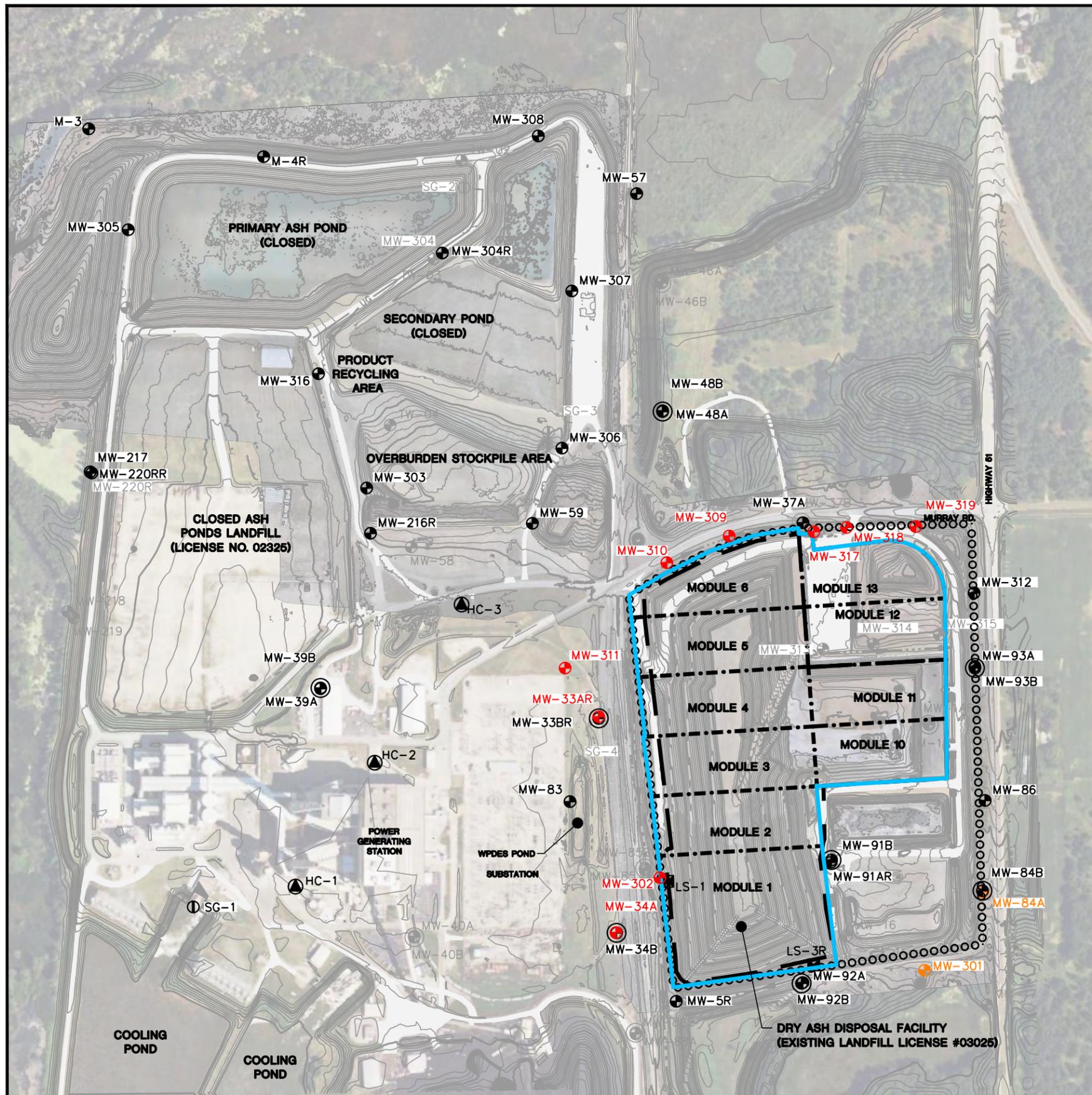


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER WB375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220067.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
	DRAWN:	12/02/2019		CHECKED BY:	MDB			1
REVISED:	01/10/2020	APPROVED BY:	TK 04/10/2020					

I:\25220067.00\Drawings\ASD Mod 1-3 LF\Site Location Map.dwg, 4/12/2020 7:05:09 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- x - x - EXISTING FENCELINE
- ||||| EXISTING TRACKS
- ==== EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- CCR UNIT
- ▲ WATER SUPPLY WELL
- Ⓜ STAFF GAUGE
- Ⓢ PIEZOMETER
- Ⓧ LYSIMETER
- Ⓜ ABANDONED STAFF GAUGE
- Ⓢ ABANDONED WATER TABLE WELL
- Ⓢ ABANDONED PIEZOMETER
- Ⓢ NON-CCR MONITORING WELL
- Ⓢ CCR MONITORING WELL
- Ⓢ UPGRADIENT MONITORING WELL

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22-23, 2024.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024.
11. BACKGROUND MONITORING WELLS FOR THE CCR NETWORK ARE: MW-301 AND MW-84A.

SCALE: 1" = 500'

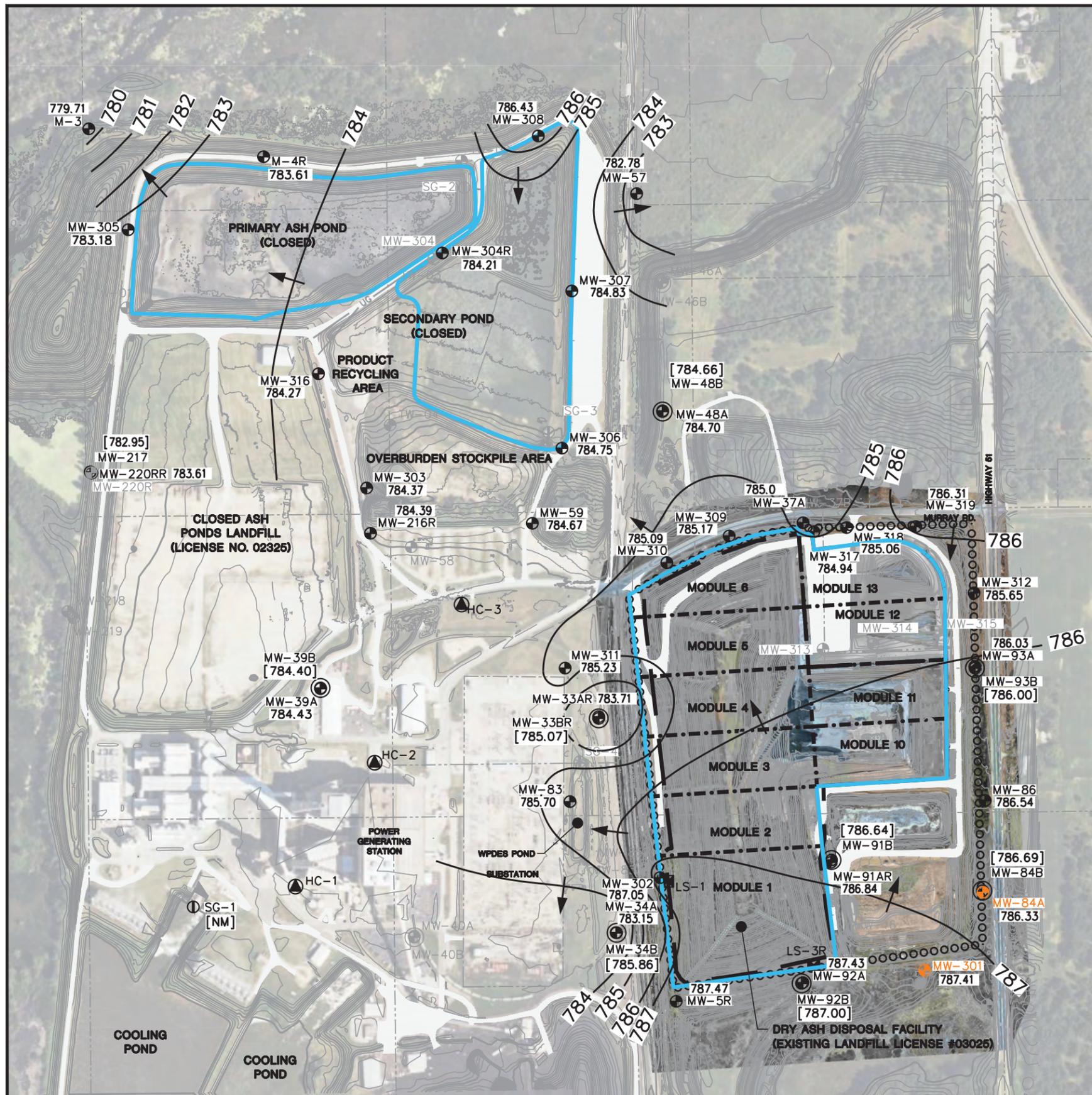
PROJECT NO. 25224067.00 **DRAWN BY:** SB
DRAWN: 01/13/2025 **CHECKED BY:** RM
REVISED: 01/13/2025 **APPROVED BY:** TK (11/12/2025)

ENGINEER SCS ENGINEERS
 2830 DAIRY DRIVE MADISON, WI 53718-6751
 PHONE: (608) 224-2830

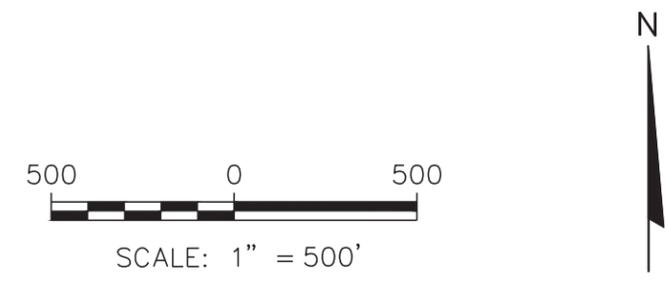
CLIENT ALLIANT ENERGY
 COLUMBIA ENERGY CENTER
 W8375 MURRAY ROAD
 PARDEEVILLE, WI 53954

SITE ALLIANT ENERGY
 COLUMBIA ENERGY CENTER
 PARDEEVILLE, WI

FIGURE SITE PLAN AND MONITORING WELL LOCATIONS
 COLUMBIA DRY ASH DISPOSAL FACILITY
 2



- LEGEND**
- EXISTING MAJOR CONTOUR (10' INTERVAL)
 - EXISTING MINOR CONTOUR (2' CONTOUR)
 - x - x - EXISTING FENCELINE
 - + + + + + EXISTING TRACKS
 - ==== EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - - - - - EDGE OF WATER
 - ⊙⊙⊙⊙⊙⊙ DRY ASH DISPOSAL FACILITY LIMITS
 - - - - - LINER PHASE/MODULE LIMITS
 - ⊕ WATER SUPPLY WELL
 - ⊖ STAFF GAUGE
 - ⊕ WATER TABLE WELL
 - ⊕⊕ PIEZOMETER
 - ⊕⊕ LYSIMETER
 - ⊖ ABANDONED STAFF GAUGE
 - ⊕ ABANDONED WATER TABLE WELL
 - ⊕⊕ ABANDONED PIEZOMETER
 - ⊕ CCR MONITORING WELL
 - ⊕ CCR BACKGROUND MONITORING WELL
 - 788.75 WATER TABLE ELEVATION
 - [781.47] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
 - [NM] NOT MEASURED
 - - - - - WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
 - ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION
 - CCR UNITS
 - APPROXIMATE PROPERTY LINE



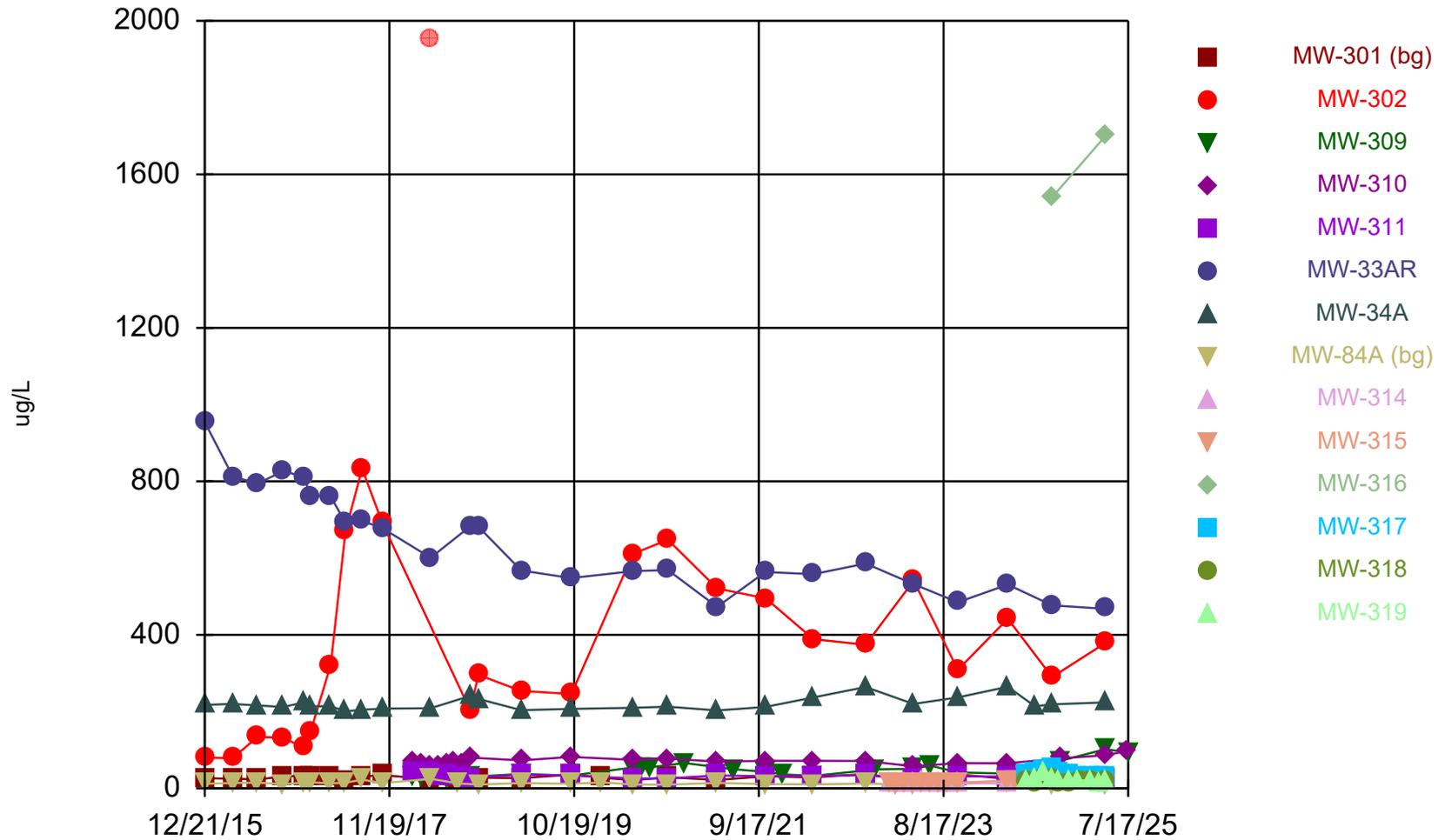
- NOTES:**
1. WATER LEVELS WERE MEASURED ON APRIL 21-23, 2025.
 2. WELL INSTALLATION AND SURVEY INFORMATION, SEE SITE PLAN FIGURE 2 NOTES.
 3. STATE MONITORING WELLS M-3, M-4R, MW-5R, MW-33AR, MW-33BR, MW-34A, MW-34B, MW-37A, MW-39A, MW-39B, MW-48A, MW-48B, MW-57, MW-59, MW-83, MW-84A, MW-84B, MW-91AR, MW-91B, MW-92A, MW-92B, MW-93A, MW-93B, MW-86, MW-216R, MW-217 and MW-220RR.
 4. CCR BACKGROUND MONITORING WELLS: MW-301 & MW-84A.
 5. CCR MONITORING WELLS: MW-33AR, MW-34A, MW-302, MW-302A, MW-303, MW-304R, MW-305, MW-306, MW-307, MW-308, MW-309, MW-310, MW-311, MW-312, MW-316, MW-317, MW-318, MW-31 and MW-319.
 6. SURFACE WATER MONITORING POINTS: STAFF GAUGE SG-1.
 7. OTHER MONITORING POINTS: SUPPLY WELLS HC-1, HC-2 AND HC-3. LYSIMETERS L-1 AND LS-3R.
 8. THERE WERE NO DRY MONITORING WELLS OR LEACHATE HEADWELLS IN APRIL 2025.
 9. VERTICAL DATUM IS REFERENCED TO THE USGS MEAN SEA LEVEL (MSL).
 10. BACKGROUND AERIAL IMAGE IS A COMPOSITE OF AN AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL AND DRONE PHOTO BY SCS ENGINEERS DATED JANUARY 20th, 2025.

PROJECT NO. 25225067.00	DRAWN BY: RVG/SB	<p>SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830</p>	<p>CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954</p>	<p>SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI</p>	<p>FIGURE 3</p>
DRAWN: 05/15/2025	CHECKED BY: NLB				
REVISED: 11/05/2025	APPROVED BY: SC (11/05/2025)				

I:\Client\Alliant\PROJECT SITES\Columbia\CAD Master References COL\Water Table Maps\COL April 2025 GW Master Map.dwg, 11/7/2025 11:05:00 AM

Appendix A
Time Series Plots for CCR Wells

Time Series



Constituent: Boron Analysis Run 9/19/2025 3:43 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Boron (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						954	217.5 (D)		
12/22/2015	26.5	80						11.9	
4/5/2016	25.2	78.8				813	220	14	
7/7/2016		134				794	216		
7/8/2016	23.6							14.7	
10/13/2016	30.6	132				827	212	11.1	
12/29/2016	32.8	106				812	224	14.7	
1/25/2017	32.6	149				763	214	16.1	
4/11/2017	28.8	322				760	214	12.9	
6/6/2017	21.3	671				692	201	14.8	
8/7/2017						697	205		
8/8/2017	30.6	833						22.9	
10/23/2017	34.3								
10/24/2017		691				678	208	13.8	
2/21/2018			31.4	67.1	43.7				
3/23/2018			31	62.1	42.7				
4/23/2018			30.4	60.7	40.1				
4/24/2018		1950 (X)				601	209		
4/25/2018	24.3							25	
5/24/2018			28	59.2	31.7				
6/23/2018			26.6	61.4	33.6				
7/23/2018			35.5	69.5	30.1				
8/8/2018	22.8							12.8	
8/22/2018			40.5	64.2	32.4				
9/21/2018		203	30	80.3	27.5	683	241		
10/22/2018		296				682	233		
10/24/2018	27.8							10.1 (J)	
4/2/2019	26.9	254	37.4	73	35.7	568	204		
4/3/2019								13.6	
10/8/2019			33.4	81.8	33.5	548	207		
10/9/2019	35.9	246						12	
2/3/2020	27.9							15.7	
5/28/2020						566	210		
5/29/2020	21.3	611	54.6	74.4	25.7			10	
6/30/2020			50.7						
8/6/2020			55.3						
10/8/2020	28.8	648		77.6	26.2	569	213	9.7 (J)	
12/11/2020			65.9 (R)						
4/13/2021		521		69.6		473	203		
4/14/2021	22.2				33.6			14.3	
6/11/2021			49.9 (R)						
10/12/2021						564	212		
10/14/2021	31.4	495	42.9	72	31.7			11.1	
12/21/2021			36.4						
4/12/2022		389	32.5	72	32.7	558	237		
4/13/2022	28.7							10.5	
10/26/2022			46.6	71.3					
10/27/2022	37.5	374			34.2	586	264	12.2	
11/30/2022			49.3						
1/24/2023									14.2
2/23/2023									13
3/27/2023									15.2

Time Series

Constituent: Boron (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
4/26/2023			50.8	57.5	23		220		15.5
4/27/2023	20.1	541				532		10.3	
5/30/2023									16.9
6/29/2023			59.4						15.4
7/31/2023									12.4
8/31/2023									13
10/9/2023			41.5	65.6	31				
10/11/2023	36.2	309				485	237	14	12.4
4/15/2024			38.7	65.2	30.9				13.5
4/17/2024	24.9	442				531	265	11.9	
5/20/2024									
6/27/2024									
7/29/2024							214		
7/31/2024									
8/30/2024									
10/1/2024					34				
10/2/2024	22.1	290				477	219	10.3	
10/31/2024									
11/5/2024			72.3 (R)	78.4 (R)					
12/9/2024									
1/10/2025									
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			102	86.4	24.8	468	224		
4/22/2025	25.5	379						10	
4/26/2025									
7/16/2025				97.9					
7/17/2025			93.6						

Time Series

Constituent: Boron (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

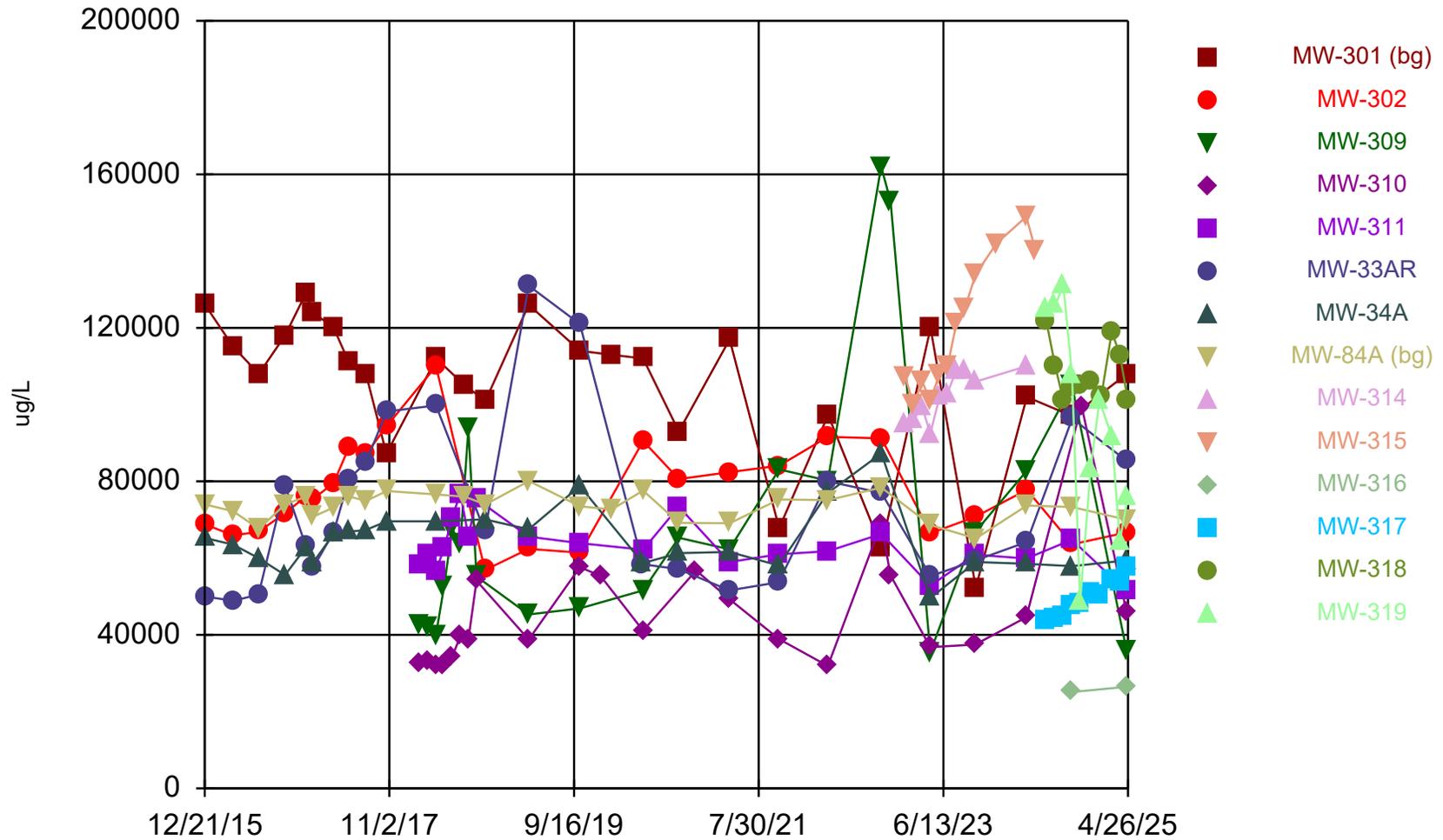
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
2/3/2020					
5/28/2020					
5/29/2020					
6/30/2020					
8/6/2020					
10/8/2020					
12/11/2020					
4/13/2021					
4/14/2021					
6/11/2021					
10/12/2021					
10/14/2021					
12/21/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
11/30/2022					
1/24/2023	11.7				
2/23/2023	9.3 (J)				
3/27/2023	11.9				

Time Series

Constituent: Boron (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
4/26/2023	12				
4/27/2023					
5/30/2023	13.6				
6/29/2023	13.3				
7/31/2023	12.3				
8/31/2023	12.6				
10/9/2023					
10/11/2023	15				
4/15/2024	20.2				
4/17/2024					
5/20/2024	17.7				
6/27/2024			33.8	17.2	20.4
7/29/2024					
7/31/2024			41.7	14.5	22.5
8/30/2024			49.3	23.5	42.2
10/1/2024			53.85 (D)	25.6 (D)	27.25 (D)
10/2/2024		1540			
10/31/2024			39.4	12.9	18.3
11/5/2024					
12/9/2024			37.9	16.7	21.7
1/10/2025			31		21.2
1/17/2025				18.2	
2/25/2025			30	18.6	19.9
3/27/2025			30.6	15.9	16.4
4/21/2025					
4/22/2025		1700			
4/26/2025			29.1	18.1 (D)	18.8
7/16/2025					
7/17/2025					

Time Series



Constituent: Calcium Analysis Run 9/19/2025 3:44 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Calcium (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						50000	65250 (D)		
12/22/2015	126000	68800						74000	
4/5/2016	115000	65900				48900	63500	72200	
7/7/2016		66900				50500	60000		
7/8/2016	108000							67600	
10/13/2016	118000	71700				79000	55600	74000	
12/29/2016	129000	76100				63100	62800	76000	
1/25/2017	124000	75400				57500	58900	70800	
4/11/2017	120000	79600				66800	66300	73200	
6/6/2017	111000	88900				80700	66900	76100	
8/7/2017						84800	67300		
8/8/2017	108000	87100						74900	
10/23/2017	87200								
10/24/2017		94400				98200	69600	77500	
2/21/2018			42700	32400	58000				
3/23/2018			41800	33400	61000				
4/23/2018			39600	32100	56600				
4/24/2018		110000				99800	69600		
4/25/2018	112000							76600	
5/24/2018			52700	32100	62500				
6/23/2018			67600	34300	70700				
7/23/2018			63800	39700	76800				
8/8/2018	105000							76000	
8/22/2018			93600	38800	65700				
9/21/2018			55200	54100	75400				
10/22/2018		56900				66900	70100		
10/24/2018	101000							74000	
4/2/2019	126000	62400	45300	38800	65600	131000	67500		
4/3/2019								80100	
10/8/2019			46900	57600	63900	121000	78800		
10/9/2019	114000	61400						73500	
12/23/2019				55400					
2/3/2020	113000							72700	
5/28/2020						58400	58700		
5/29/2020	112000	90500	51600	41100	62200			77600	
10/8/2020	93000	80600	65300		73400	57100	61300	69200	
12/11/2020				56800 (R)					
4/13/2021		82400	62300	49300		51600	61600		
4/14/2021	117000				59000			69100	
10/12/2021						53700	58100		
10/14/2021	67800	84100	83100	38900	61000			75300	
4/12/2022		91600	80200	31900	61800	80000	77000		
4/13/2022	97300							75100	
10/26/2022			162000	68900					
10/27/2022	62800	91200			66300	77000	87300	78400	
11/30/2022			153000	55500					
1/24/2023									95000
2/23/2023									96200
3/27/2023									99300
4/26/2023			35500	36800	52800		49600		92400
4/27/2023	120000	66500				55300		68600	
5/30/2023									102000

Time Series

Constituent: Calcium (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
6/29/2023									103000
7/31/2023									109000
8/31/2023									109000
10/9/2023			66800	37500	60900				
10/11/2023	52300	70800				59400	59000	65100	106000
12/27/2023									
4/15/2024			82600	44600	59900				110000
4/17/2024	102000	77800				64200	58500	73700	
5/20/2024									
6/27/2024									
7/31/2024									
8/30/2024									
10/1/2024			105000		64800				
10/2/2024	97000	63600				96400	57900	73300	
10/31/2024									
11/5/2024				99700 (R)					
12/9/2024									
1/10/2025									
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			35900	45900	51300	85300	59400		
4/22/2025	108000	66700						70000	
4/26/2025									

Time Series

Constituent: Calcium (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

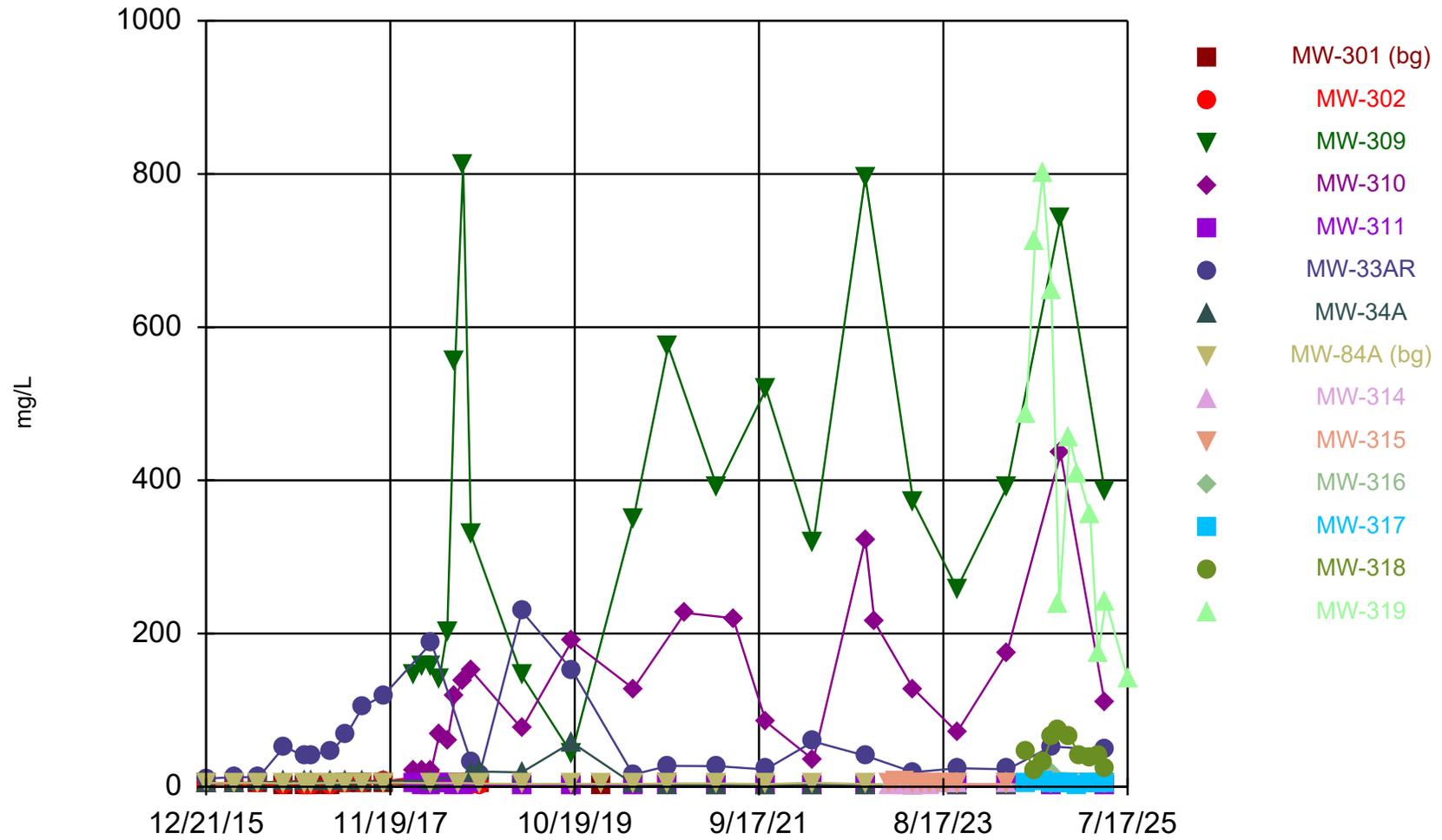
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
12/23/2019					
2/3/2020					
5/28/2020					
5/29/2020					
10/8/2020					
12/11/2020					
4/13/2021					
4/14/2021					
10/12/2021					
10/14/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
11/30/2022					
1/24/2023	107000				
2/23/2023	100000				
3/27/2023	106000				
4/26/2023	101000				
4/27/2023					
5/30/2023	108000				

Time Series

Constituent: Calcium (ug/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
6/29/2023	110000				
7/31/2023	121000				
8/31/2023	125000				
10/9/2023					
10/11/2023	134000				
12/27/2023	142000				
4/15/2024	149000				
4/17/2024					
5/20/2024	140000				
6/27/2024			43800	122000	125000
7/31/2024			44300	110000	126000
8/30/2024			44600	101000	131000
10/1/2024			47550 (D)	104500 (D)	108000 (D)
10/2/2024		25100			
10/31/2024			48100	105000	48600
11/5/2024					
12/9/2024			50900	106000	83300
1/10/2025			50500		101000
1/17/2025				102000	
2/25/2025			54200	119000	91700
3/27/2025			53700	113000	64600
4/21/2025					
4/22/2025		26500			
4/26/2025			57900	100950 (D)	76000

Time Series



Constituent: Chloride Analysis Run 9/19/2025 3:44 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						10.6	4.85 (D)		
12/22/2015	3.7 (J)	4.2						4.9	
4/5/2016	4	4.1				12.5	5.1	4.7	
7/7/2016		3.1 (J)				12.5	5.6		
7/8/2016	3.5 (J)							5.1	
10/13/2016	2.2	1.1 (J)				52.5	6.8	4.3	
12/29/2016	2 (J)	1.2 (J)				39.6	7.1	4.7	
1/25/2017	1.5 (J)	1.6 (J)				41.4	7.2	4.6	
4/11/2017	2	1.6 (J)				47.1	6.2	4.9	
6/6/2017	3.5	3.5				68.1	7.8	5.5	
8/7/2017						105	7.4		
8/8/2017	5.5	4.5						5.5	
10/23/2017	4								
10/24/2017		6.9				119	7.6	5.1	
2/21/2018			147	19.8	2.9				
3/23/2018			157	21.7	2.7				
4/23/2018			157	22.1	2.6				
4/24/2018		15				188	8.2		
4/25/2018	2.3							4.8	
5/24/2018			141	68.6	3.5				
6/23/2018			203	59.8	3				
7/23/2018			557	118	2 (J)				
8/8/2018	5.2							4.9	
8/22/2018			811	139	2 (J)				
9/21/2018		1.7 (J)	329	152	3.9	32.6	17.1		
10/22/2018		1.8 (J)				14.4	19.9		
10/24/2018	3.2							4.2	
4/2/2019	0.79 (J)	1.5 (J)	145	76	1.9 (J)	229	18.7		
4/3/2019								3.6	
10/8/2019			43.2	190	1.5 (J)	153	57.9		
10/9/2019	1.7 (J)	1.1 (J)						3.9	
2/3/2020	1.3 (J)							3.7	
5/28/2020						15.9	3.9		
5/29/2020	2 (J)	1.2 (J)	350	128	1.5 (J)			3.7	
10/8/2020	3.4	1.1 (J)	575		1.4 (J)	27.3	2.1	4.3	
12/11/2020				227 (R)					
4/13/2021		1.4 (J)	390			26.9	2.3		
4/14/2021	1.5 (J)				1.3 (J)			4.4	
6/11/2021				220 (R)					
10/12/2021						22.6	1.9 (J)		
10/14/2021	2.7	1.3 (J)	519	84.6	1.3 (J)			3.5	
4/12/2022		0.79 (J)	319	35.2	1 (J)	59	2.2		
4/13/2022	1.9 (J)							5.2	
10/26/2022			796	323					
10/27/2022	2.3	2.1			1.2 (J)	40.5	2.2	3.4	
11/30/2022				215					
1/24/2023									1.8 (J)
2/23/2023									2.2
3/27/2023									2.6
4/26/2023			372	128	2.1		2		3.2
4/27/2023	1.5 (J)	1.3 (J)				19		3	
5/30/2023									2.3

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
6/29/2023									2.4
7/31/2023									3
8/31/2023									3.1
10/9/2023			259	71.3	2 (J)				
10/11/2023	2.1	1.6 (J)				24.2	2.7	3.1	3.2
4/15/2024			391	175	2.3				3.2
4/17/2024	1.6 (J)	1.1 (J)				22.8	2.2	3.2	
6/27/2024									
7/31/2024									
8/30/2024									
10/1/2024					2.6				
10/2/2024	1.5 (J)	1.9 (J)				52.7	5.4	3.3	
10/31/2024									
11/5/2024			743 (R)	435 (R)					
12/9/2024									
1/10/2025									
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			386	110	2.1	47.7	8.7		
4/22/2025	1.4 (J)	0.83 (J)						3	
4/26/2025									
7/17/2025									

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

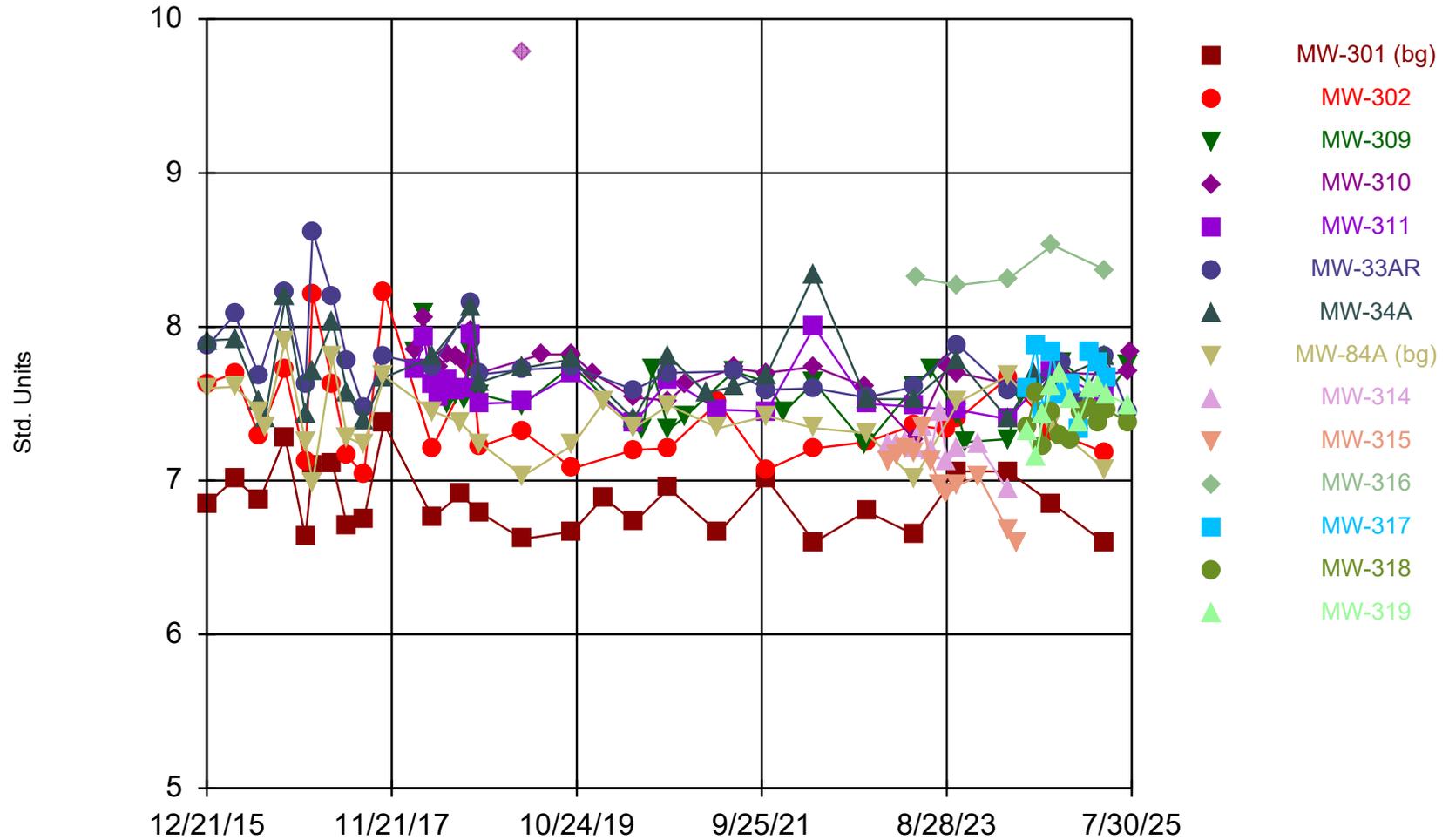
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
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4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
2/3/2020					
5/28/2020					
5/29/2020					
10/8/2020					
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4/13/2021					
4/14/2021					
6/11/2021					
10/12/2021					
10/14/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
11/30/2022					
1/24/2023	4.9				
2/23/2023	5.6				
3/27/2023	6				
4/26/2023	5.3				
4/27/2023					
5/30/2023	3.9				

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
6/29/2023	3.3				
7/31/2023	3.2				
8/31/2023	3.1				
10/9/2023					
10/11/2023	3.1				
4/15/2024	2.9				
4/17/2024					
6/27/2024			5.1	44.9	486
7/31/2024			7	19.7	712
8/30/2024			6.1	31.8	802
10/1/2024			3.2 (D)	64.6 (D)	648 (D)
10/2/2024		18.5			
10/31/2024			4.6	74.3	237
11/5/2024					
12/9/2024			3.6	65.9	455
1/10/2025			2.7		409
1/17/2025				39.4	
2/25/2025			3.1	37	355
3/27/2025			3	39.3	173
4/21/2025					
4/22/2025		16			
4/26/2025			4.5	23.45 (D)	242
7/17/2025					141

Time Series



Constituent: Field pH Analysis Run 9/19/2025 3:44 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Field pH (Std. Units) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						7.87	7.91		
12/22/2015	6.85	7.63						7.6	
4/5/2016	7.01	7.7				8.08	7.92	7.61	
7/7/2016		7.29				7.68	7.52		
7/8/2016	6.87							7.45	
7/28/2016							7.4	7.34	
10/13/2016	7.28	7.72				8.23	8.19	7.91	
12/29/2016	6.63	7.12				7.63	7.43	7.25	
1/25/2017	7.1	8.21				8.62	7.71	6.99	
4/11/2017	7.11	7.63				8.19	8.03	7.8	
6/6/2017	6.7	7.16				7.78	7.57	7.28	
8/7/2017						7.47	7.39		
8/8/2017	6.75	7.04						7.23	
10/23/2017	7.37								
10/24/2017		8.23				7.81	7.67	7.68	
2/21/2018			7.84	7.85	7.72				
3/23/2018			8.08	8.06	7.93				
4/23/2018			7.71	7.75	7.62				
4/24/2018		7.21				7.74	7.8		
4/25/2018	6.76							7.45	
5/24/2018			7.59	7.74	7.54				
6/23/2018			7.5	7.82	7.65				
7/23/2018			7.55	7.81	7.59				
8/8/2018	6.91							7.38	
8/22/2018			7.53	7.77	7.6				
9/21/2018		7.74	7.83	7.98	7.95	8.16	8.12		
10/22/2018		7.22	7.56	7.7	7.5	7.69	7.64		
10/24/2018	6.79							7.24	
4/2/2019	6.62	7.32	7.49	9.79 (X)	7.51	7.72	7.73		
4/3/2019								7.03	
6/12/2019				7.82					
10/8/2019			7.75	7.82	7.69	7.74	7.79		
10/9/2019	6.67	7.08						7.23	
12/23/2019				7.7					
2/3/2020	6.89							7.51	
5/28/2020						7.59	7.4		
5/29/2020	6.73	7.2	7.35	7.54	7.37			7.34	
6/30/2020			7.33						
8/6/2020			7.72						
10/8/2020	6.95	7.21	7.33	7.52	7.66	7.7	7.81	7.49	
12/11/2020			7.42	7.62					
2/25/2021							7.57		
4/13/2021		7.51							
4/14/2021	6.66				7.46			7.34	
6/11/2021			7.71 (R)	7.73 (R)		7.71 (R)	7.61 (R)		
10/12/2021						7.59	7.68		
10/14/2021	7.01	7.07	7.64	7.7	7.45			7.42	
12/21/2021			7.45						
4/12/2022		7.21	7.64	7.74	8	7.6	8.34		
4/13/2022	6.6							7.34	
10/26/2022			7.23	7.61					
10/27/2022	6.8	7.25			7.5	7.54	7.53	7.31	

Time Series

Constituent: Field pH (Std. Units) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
1/24/2023									7.23
2/23/2023									7.23
3/27/2023									7.25
4/26/2023			7.61	7.27	7.48		7.53		7.21
4/27/2023	6.65	7.36				7.61		7.01	
5/5/2023									
5/30/2023									7.34
6/29/2023			7.72						7.2
7/31/2023									7.45
8/31/2023		7.33		7.75					7.12
10/9/2023			7.43	7.7	7.46				
10/11/2023	7.06	7.4				7.88	7.78	7.51	7.21
11/9/2023			7.25						
12/27/2023									7.23
4/15/2024			7.27	7.63	7.4				6.94
4/17/2024	7.06	7.67				7.58	7.4	7.68	
5/20/2024									
6/4/2024			7.55						
6/27/2024									
7/29/2024							7.69		
7/31/2024									
8/30/2024									
10/1/2024					7.71				
10/2/2024	6.85	7.32					7.64	7.36	
10/31/2024									
11/5/2024			7.77 (R)	7.7 (R)		7.76 (R)			
12/9/2024									
1/10/2025						7.51			
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			7.55	7.69	7.54	7.81	7.8		
4/22/2025	6.59	7.18						7.07	
4/26/2025									
7/16/2025				7.71		7.45			
7/17/2025			7.75						
7/30/2025				7.84					

Time Series

Constituent: Field pH (Std. Units) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

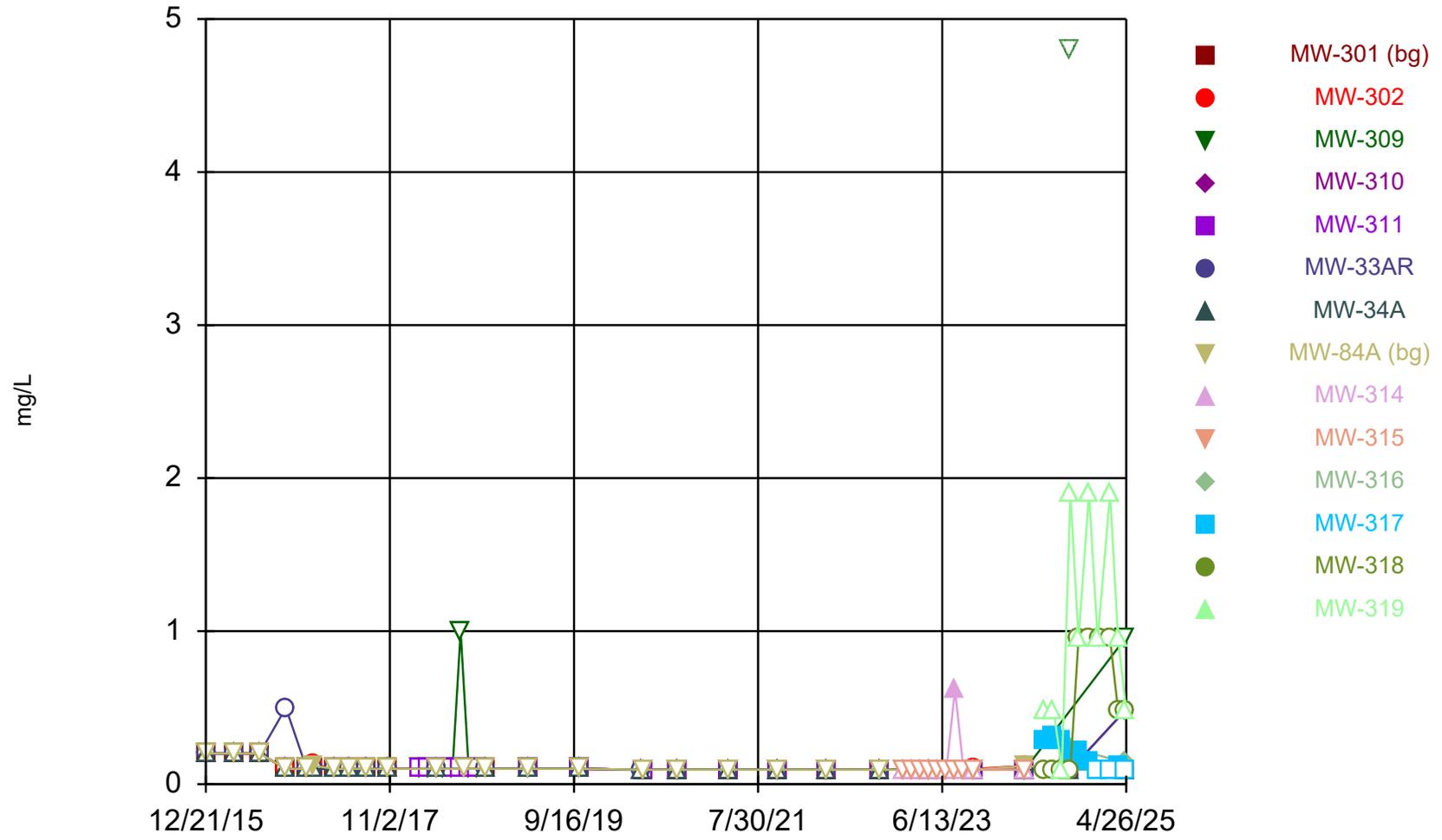
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
7/28/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
6/12/2019					
10/8/2019					
10/9/2019					
12/23/2019					
2/3/2020					
5/28/2020					
5/29/2020					
6/30/2020					
8/6/2020					
10/8/2020					
12/11/2020					
2/25/2021					
4/13/2021					
4/14/2021					
6/11/2021					
10/12/2021					
10/14/2021					
12/21/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					

Time Series

Constituent: Field pH (Std. Units) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
1/24/2023	7.13				
2/23/2023	7.16				
3/27/2023	7.21				
4/26/2023	7.18				
4/27/2023					
5/5/2023		8.32			
5/30/2023	7.34				
6/29/2023	7.13				
7/31/2023	6.97				
8/31/2023	6.91				
10/9/2023		8.27			
10/11/2023	6.97				
11/9/2023					
12/27/2023	7.03				
4/15/2024	6.68				
4/17/2024		8.31			
5/20/2024	6.6				
6/4/2024					
6/27/2024			7.6	7.34	7.32
7/29/2024					
7/31/2024			7.88	7.57	7.15
8/30/2024			7.44	7.22	7.43
10/1/2024			7.84 (D)	7.45 (D)	7.61 (D)
10/2/2024		8.53			
10/31/2024			7.56	7.29	7.7
11/5/2024					
12/9/2024			7.62	7.27	7.53
1/10/2025			7.33		7.38
1/17/2025				7.45	
2/25/2025			7.83	7.47	7.6
3/27/2025			7.77	7.37	7.61
4/21/2025					
4/22/2025		8.37			
4/26/2025			7.67	7.46 (D)	7.56
7/16/2025				7.38	
7/17/2025					7.49
7/30/2025					

Time Series



Constituent: Fluoride Analysis Run 9/19/2025 3:44 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						<0.2 (U)	<0.2 (UD)		
12/22/2015	<0.2 (U)	<0.2 (U)						<0.2 (U)	
4/5/2016	<0.2 (U)	<0.2 (U)				<0.2 (U)	<0.2 (U)	<0.2 (U)	
7/7/2016		<0.2 (U)				<0.2 (U)	<0.2 (U)		
7/8/2016	<0.2 (U)							<0.2 (U)	
10/13/2016	<0.1 (U)	<0.1 (U)				<0.5 (U)	<0.1 (U)	<0.1 (U)	
12/29/2016	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
1/25/2017	<0.1 (U)	0.13 (J)				<0.1 (U)	<0.1 (U)	0.12 (J)	
4/11/2017	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
6/6/2017	<0.1 (U)	<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
8/7/2017						<0.1 (U)	<0.1 (U)		
8/8/2017	<0.1 (U)	<0.1 (U)						<0.1 (U)	
10/23/2017	<0.1 (U)								
10/24/2017		<0.1 (U)				<0.1 (U)	<0.1 (U)	<0.1 (U)	
2/21/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
3/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
4/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
4/24/2018		<0.1 (U)				<0.1 (U)	<0.1 (U)		
4/25/2018	<0.1 (U)							<0.1 (U)	
5/24/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
6/23/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
7/23/2018			<1 (U)	<0.1 (U)	<0.1 (U)				
8/8/2018	<0.1 (U)							<0.1 (U)	
8/22/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
9/21/2018			<0.1 (U)	<0.1 (U)	<0.1 (U)				
10/22/2018		<0.1 (U)				<0.1 (U)	<0.1 (U)		
10/24/2018	<0.1 (U)							<0.1 (U)	
4/2/2019	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)	<0.1 (U)		
4/3/2019								<0.1 (U)	
10/8/2019			<0.1 (U)						
10/9/2019	<0.1 (U)	<0.1 (U)						<0.1 (U)	
5/28/2020						<0.095 (U)	<0.095 (U)		
5/29/2020	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)			<0.095 (U)	
10/8/2020	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	
4/13/2021		<0.095 (U)	<0.095 (U)	<0.095 (U)		<0.095 (U)	<0.095 (U)		
4/14/2021	<0.095 (U)				<0.095 (U)			<0.095 (U)	
10/12/2021						<0.095 (U)	<0.095 (U)		
10/14/2021	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)			<0.095 (U)	
4/12/2022		<0.095 (U)							
4/13/2022	<0.095 (U)							<0.095 (U)	
10/26/2022			<0.095 (U)	<0.095 (U)					
10/27/2022	<0.095 (U)	<0.095 (U)			<0.095 (U)	<0.095 (U)	<0.095 (U)	<0.095 (U)	
1/24/2023									<0.095 (U)
2/23/2023									<0.095 (U)
3/27/2023									<0.095 (U)
4/26/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)		<0.095 (U)		<0.095 (U)
4/27/2023	<0.095 (U)	<0.095 (U)				<0.095 (U)		<0.095 (U)	
5/30/2023									<0.095 (U)
6/29/2023									<0.095 (U)
7/31/2023									0.62
8/31/2023									<0.095 (U)
10/9/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)				

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
10/11/2023	<0.095 (U)	0.1 (J)							
4/15/2024			<0.095 (U)	<0.095	<0.095				<0.095 (U)
4/17/2024	<0.095	0.12 (J)				<0.095	<0.095	0.12 (J)	
6/27/2024									
7/31/2024									
8/30/2024									
10/1/2024			<4.8 (UX)	<0.095	0.1 (J)				
10/2/2024	0.13 (J)	<0.095				<0.095	<0.095	<0.095	
10/31/2024									
12/9/2024									
1/10/2025									
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			<0.95 (U)	<0.48	<0.095	<0.48	<0.095		
4/22/2025	<0.095	<0.095						<0.095	
4/26/2025									

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

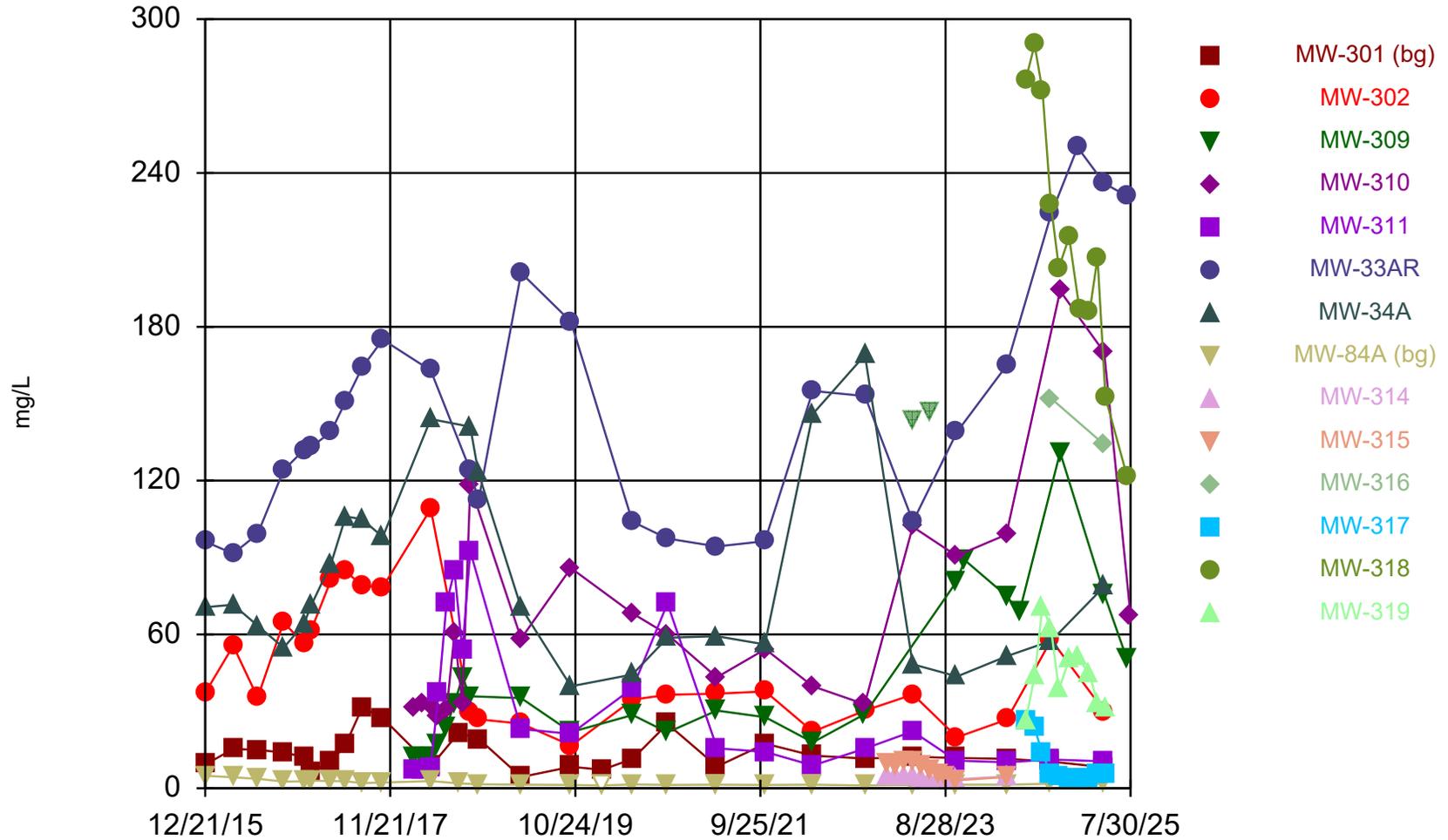
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
5/28/2020					
5/29/2020					
10/8/2020					
4/13/2021					
4/14/2021					
10/12/2021					
10/14/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
1/24/2023	<0.095 (U)				
2/23/2023	<0.095 (U)				
3/27/2023	<0.095 (U)				
4/26/2023	<0.095 (U)				
4/27/2023					
5/30/2023	<0.095 (U)				
6/29/2023	<0.095 (U)				
7/31/2023	<0.095 (U)				
8/31/2023	<0.095 (U)				
10/9/2023					

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
 Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
10/11/2023	<0.095 (U)				
4/15/2024	<0.095				
4/17/2024					
6/27/2024			0.28 (J)	<0.095	<0.48
7/31/2024			0.31 (J)	<0.095	<0.48
8/30/2024			0.28 (J)	<0.095	<0.095
10/1/2024			0.17 (JD)	<0.095 (D)	<1.9 (D)
10/2/2024		0.24 (J)			
10/31/2024			0.22 (J)	<0.95	<0.95
12/9/2024			0.15 (J)	<0.95	<1.9
1/10/2025			<0.095		<0.95
1/17/2025				<0.95	
2/25/2025			<0.095	<0.95	<1.9
3/27/2025			0.12 (J)	<0.48 (U)	<0.95 (U)
4/21/2025					
4/22/2025		0.14 (J)			
4/26/2025			<0.095 (U)	<0.48 (UD)	<0.48 (U)

Time Series



Constituent: Sulfate Analysis Run 9/19/2025 3:45 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						96.2	70.6 (D)		
12/22/2015	9.3	37.4						4.9	
4/5/2016	15.3	55.6				91.5	71.6	4.3	
7/7/2016		35.4				99.2	63.4		
7/8/2016	15							3.7 (J)	
10/13/2016	13.9	64.7				124	54.8	2.6 (J)	
12/29/2016	12.3 (J)	56.4				132	63.9	2.7 (J)	
1/25/2017	6.5	61.6				133	71.2	3	
4/11/2017	10.3	81.3				139	87.6	2.8 (J)	
6/6/2017	17.1	84.6				151	106	2.7 (J)	
8/7/2017						164	105		
8/8/2017	31.6	79						2 (J)	
10/23/2017	27.5								
10/24/2017		78.4				175	98	2.2 (J)	
2/21/2018			12.2	31.6	7.1				
3/23/2018			12.2	33.1	7.2				
4/23/2018			12	32	7.9				
4/24/2018		109				163	144		
4/25/2018	8.6							2.8 (J)	
5/24/2018			17.5	28	36.9				
6/23/2018			24.1	30.4	72.3				
7/23/2018			33.1	60.2	84.7				
8/8/2018	21.6							1.9 (J)	
8/22/2018			43.3	32.8	53.6				
9/21/2018		30	35.9	118	92.4	124	141		
10/22/2018		26.9				112	123		
10/24/2018	19.2							1.6 (J)	
4/2/2019	4.4	25.2	35.2	58.4	23.1	201	70.4		
4/3/2019								1.4 (J)	
10/8/2019			21.9	85.9	21.2	182	39.8		
10/9/2019	8.4	16.7						1.3 (J)	
2/3/2020	7.2							<2.2 (U)	
5/28/2020						104	44.4		
5/29/2020	11.5	34.6	28.6	68.2	39.1			1.5 (J)	
10/8/2020	25.1	36.5	21.8	60	72.1	97.4	58.7	1.3 (J)	
4/13/2021		36.9	30.3	43.3		94.3	59.3		
4/14/2021	8.5				15.6			1.4 (J)	
10/12/2021						96.4	56.1		
10/14/2021	17.4	37.8	27.7	54.3	14.2			1.3 (J)	
4/12/2022		22.1	17.9	39.8	8.9	155	146		
4/13/2022	12.7							1.4 (J)	
10/26/2022			28.9	32.8					
10/27/2022	11.6	30.3			15.5	153	169	1.1 (J)	
1/24/2023									4.2
2/23/2023									4.2
3/27/2023									5
4/26/2023			143 (X)	102	22.2		48.4		4.6
4/27/2023	12.3	36.6				104		1.3 (J)	
5/30/2023									3.4
6/29/2023			147 (X)						3.2
7/31/2023									3.9
8/31/2023									4

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
10/9/2023			80.6	90.7	10.8				
10/11/2023	11.8	19.9				139	43.6	1.4 (J)	3.5
11/9/2023			89						
4/15/2024			75.1	98.9	10.1				4.6
4/17/2024	11.5	26.8				165	51.5	1.4 (J)	
6/4/2024			68.8						
6/27/2024									
7/31/2024									
8/30/2024									
10/1/2024					11.2				
10/2/2024	10.4	57.9				224	57.5	1.8 (J)	
10/31/2024									
11/5/2024			131 (R)	194 (R)					
12/9/2024									
1/10/2025						250			
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			75.7	170	10.5	236	78.7		
4/22/2025	8.2	30						1.7 (J)	
4/26/2025									
7/16/2025						231			
7/17/2025			50.3						
7/30/2025				67.4					

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

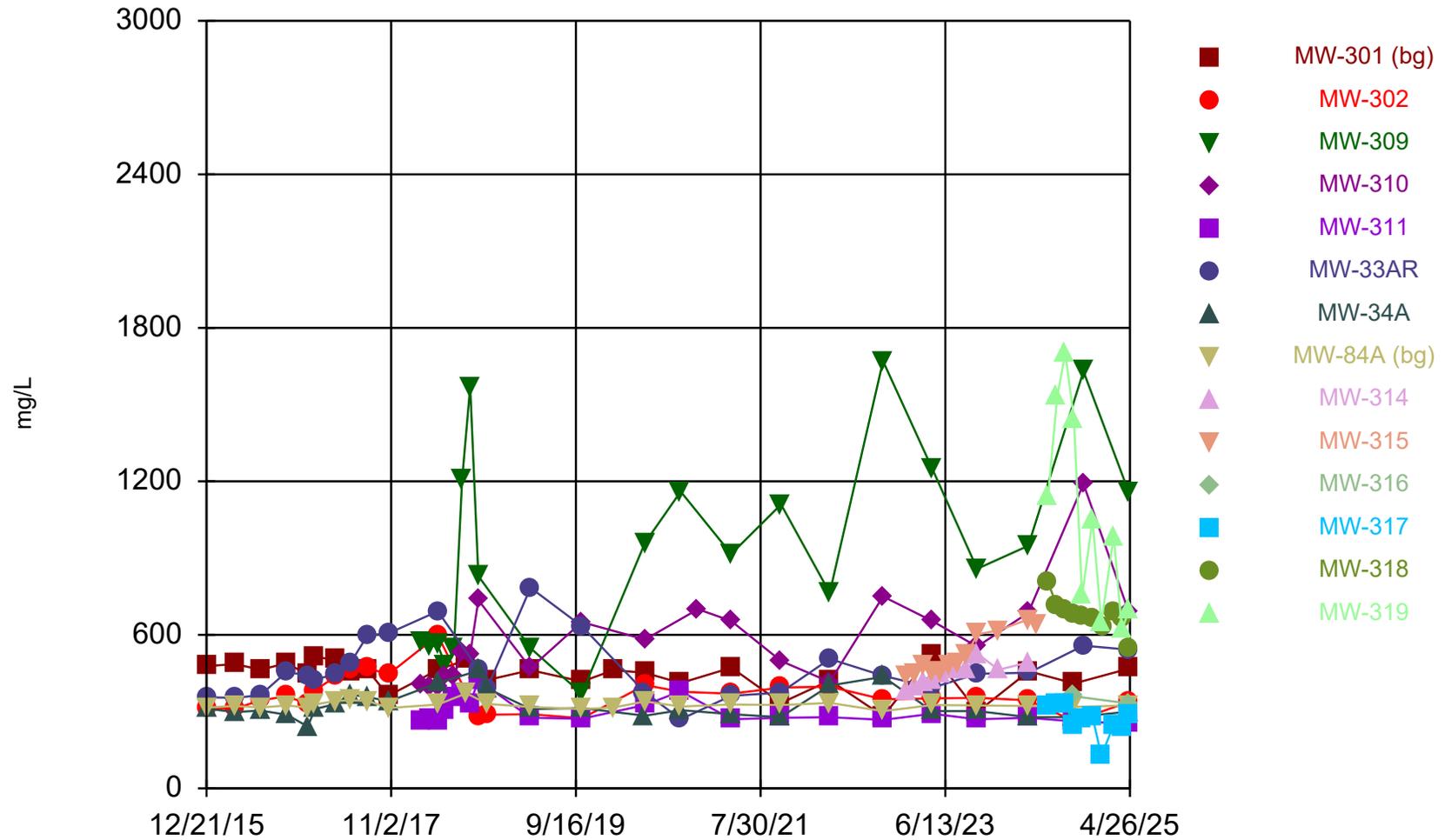
	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
2/3/2020					
5/28/2020					
5/29/2020					
10/8/2020					
4/13/2021					
4/14/2021					
10/12/2021					
10/14/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
1/24/2023	9.2				
2/23/2023	8.7				
3/27/2023	10.7				
4/26/2023	10.1				
4/27/2023					
5/30/2023	8.8				
6/29/2023	7				
7/31/2023	5.2				
8/31/2023	4.3				

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
10/9/2023					
10/11/2023	3.1				
11/9/2023					
4/15/2024	4.4				
4/17/2024					
6/4/2024					
6/27/2024			26.4	276	26.1
7/31/2024			23.5	290	43.6
8/30/2024			13.5	272	70.9 (J)
10/1/2024			5.2 (D)	227.5 (D)	62.45 (D)
10/2/2024		152			
10/31/2024			5	203	38.5
11/5/2024					
12/9/2024			3.7	215	50.3
1/10/2025			3.8		51.2
1/17/2025				187	
2/25/2025			3.8	186	44.4
3/27/2025			5.4	207	33.1
4/21/2025					
4/22/2025		134			
4/26/2025			5.2	152.5 (D)	31.6
7/16/2025				122	
7/17/2025					
7/30/2025					

Time Series



Constituent: Total Dissolved Solids Analysis Run 9/19/2025 3:45 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
12/21/2015						356	312 (D)		
12/22/2015	478	312						316	
4/5/2016	486	312				354	298	322	
7/7/2016		344				364	304		
7/8/2016	464							316	
10/13/2016	490	360				456	288	324	
12/29/2016	444	330				440	242	316	
1/25/2017	514	384				426	310	328	
4/11/2017	502	436				446	330	342	
6/6/2017	458	466				492	366	344	
8/7/2017						598	358		
8/8/2017	462	470						342	
10/23/2017	362								
10/24/2017		446				606	340	314	
2/21/2018			576	406	260				
3/23/2018			552	398	274				
4/23/2018			562	396	262				
4/24/2018		598				692	412		
4/25/2018	464							328	
5/24/2018			478	436	304				
6/23/2018			548	438	352				
7/23/2018			1210	532	372				
8/8/2018	502							372	
8/22/2018			1570	526	332				
9/21/2018		280	830	736	424	466	460		
10/22/2018		288				388	392		
10/24/2018	424							330	
4/2/2019	462	290	548	470	276	784	310		
4/3/2019								318	
10/8/2019			370	650	272	634	314		
10/9/2019	418	274						310	
2/3/2020	462							316	
5/28/2020						376	284		
5/29/2020	452	404	960	582	326			340	
10/8/2020	412	378	1160		380	270	306	320	
12/11/2020				700 (R)					
4/13/2021		370	916	654		362	290		
4/14/2021	472				270			328	
10/12/2021						374	278		
10/14/2021	334	394	1110	498	276			326	
4/12/2022		398	764	416	278	506	402		
4/13/2022	422							334	
10/26/2022			1670	750					
10/27/2022	282	348			268	440	436	302	
1/24/2023									380
2/23/2023									396
3/27/2023									412
4/26/2023			1250	654	292		302		418
4/27/2023	526	352				394		326	
5/30/2023									444
6/29/2023									470
7/31/2023									464

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-301 (bg)	MW-302	MW-309	MW-310	MW-311	MW-33AR	MW-34A	MW-84A (bg)	MW-314
8/31/2023									464
10/9/2023			858	554	270				
10/11/2023	300	354				448	302	324	526
12/27/2023									464
4/15/2024			948	686	276				492
4/17/2024	458	344				452	278	322	
5/20/2024									
6/27/2024									
7/31/2024									
8/30/2024									
10/1/2024					262				
10/2/2024	410	262					278	318	
10/31/2024									
11/5/2024			1630 (R)	1190 (R)		558 (R)			
12/9/2024									
1/10/2025									
1/17/2025									
2/25/2025									
3/27/2025									
4/21/2025			1160	692	254	542	300		
4/22/2025	468	338						324	
4/26/2025									

Time Series

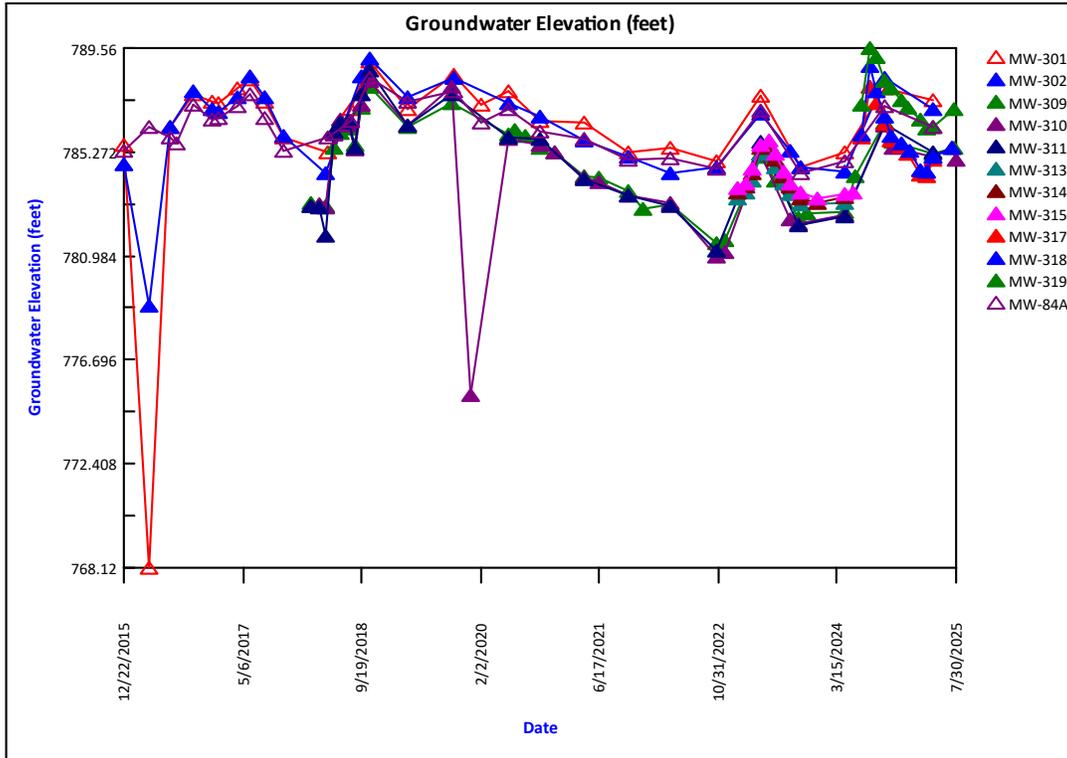
Constituent: Total Dissolved Solids (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
12/21/2015					
12/22/2015					
4/5/2016					
7/7/2016					
7/8/2016					
10/13/2016					
12/29/2016					
1/25/2017					
4/11/2017					
6/6/2017					
8/7/2017					
8/8/2017					
10/23/2017					
10/24/2017					
2/21/2018					
3/23/2018					
4/23/2018					
4/24/2018					
4/25/2018					
5/24/2018					
6/23/2018					
7/23/2018					
8/8/2018					
8/22/2018					
9/21/2018					
10/22/2018					
10/24/2018					
4/2/2019					
4/3/2019					
10/8/2019					
10/9/2019					
2/3/2020					
5/28/2020					
5/29/2020					
10/8/2020					
12/11/2020					
4/13/2021					
4/14/2021					
10/12/2021					
10/14/2021					
4/12/2022					
4/13/2022					
10/26/2022					
10/27/2022					
1/24/2023	436				
2/23/2023	448				
3/27/2023	480				
4/26/2023	452				
4/27/2023					
5/30/2023	456				
6/29/2023	482				
7/31/2023	486				

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 9/19/2025 3:47 PM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-315	MW-316	MW-317	MW-318	MW-319
8/31/2023	526				
10/9/2023					
10/11/2023	602				
12/27/2023	618				
4/15/2024	660				
4/17/2024					
5/20/2024	642				
6/27/2024			318	804	1140
7/31/2024			328	712	1530
8/30/2024			334	694	1700
10/1/2024			245 (D)	679 (D)	1445 (D)
10/2/2024		360			
10/31/2024			272	676	753
11/5/2024					
12/9/2024			280	666	1050
1/10/2025			128		647
1/17/2025				628	
2/25/2025			248	692	986
3/27/2025			240	666	623
4/21/2025					
4/22/2025		332			
4/26/2025			288	549 (D)	700



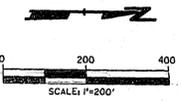
Appendix B

Historical Water Table Maps



- LEGEND**
- PROPERTY LINE
 - EXISTING RAILROAD TRACKS
 - EXISTING GROUND CONTOUR
 - CONTOUR DEPRESSION
 - EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - EXISTING FENCE
 - EXISTING BUILDING
 - EXISTING SPOT ELEVATION
 - TREES AND/OR BRUSH
 - WETLAND AREA
 - EDGE OF WATER
 - HC 1 WATER SUPPLY WELL
 - MW61A WATER TABLE WELL
 - MW61B PIEZOMETER
 - ABANDONED WATER TABLE WELL
 - ABANDONED PIEZOMETER
 - 801 STAFF GAUGE
 - ALS-1 LYSEMETER
 - DESIGN MANAGEMENT ZONE
 - PROPERTY LINE
 - O.S. OPEN STORAGE
 - O.H. OVERHEAD STRUCTURE
 - E.P.S. ELECTRICAL POWER STATION
 - T TANK
 - W WALL
 - (785.31) WATER TABLE ELEVATION (FT.-MSL)
(N.M. = NOT MEASURED)
 - 786 GROUNDWATER CONTOUR LINE
(FT. INTERVAL - FT. M.S.L.)
(DASHED WHERE INFERRED)
 - ➔ GROUNDWATER FLOW DIRECTION

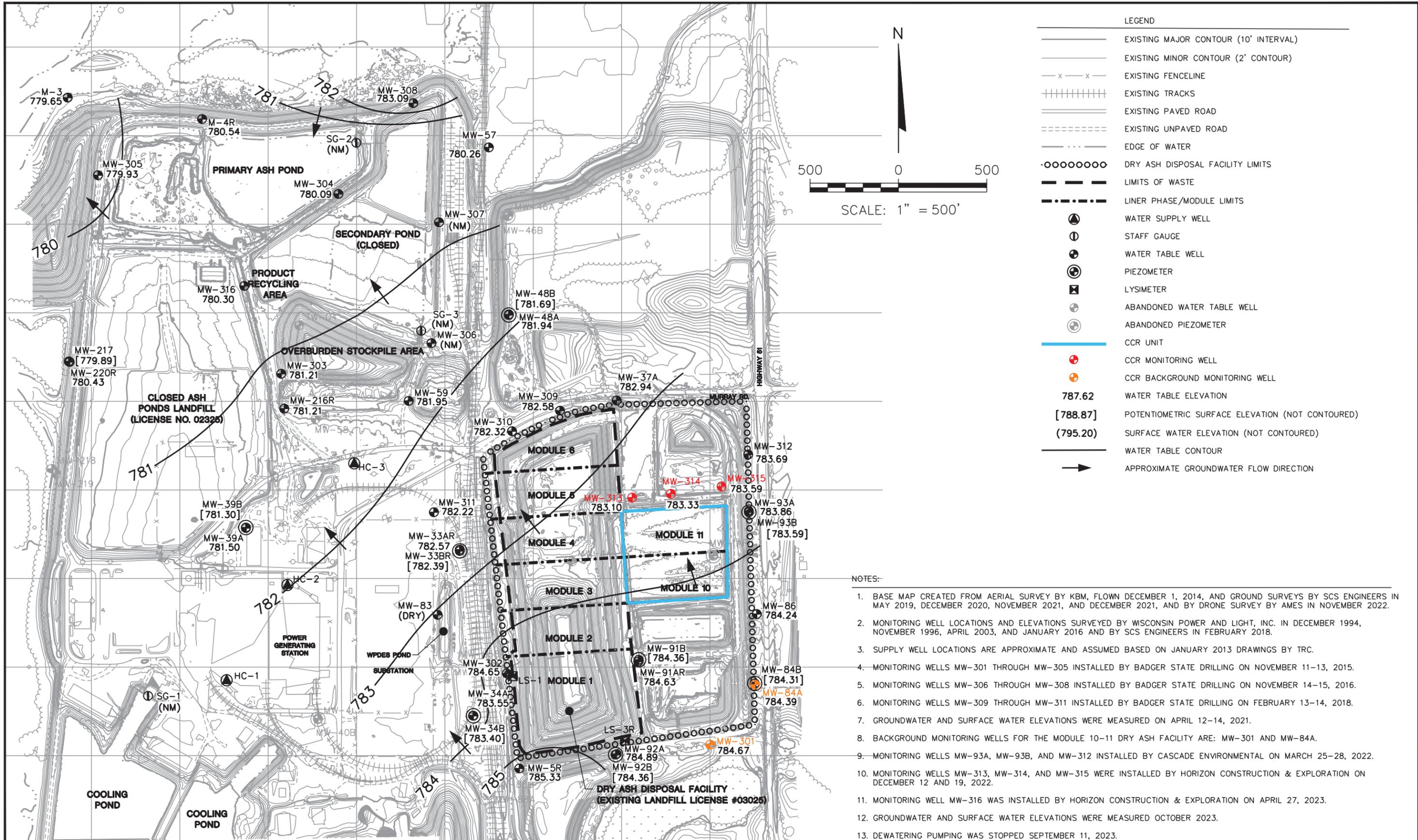
- NOTES**
1. BASE MAP IS PROVIDED BY WISCONSIN POWER & LIGHT CO. AND IS BASED ON PHOTOS TAKEN ON APRIL 6, 1995 BY AERO-METRIC ENGINEERING, SHEBOYGAN, WI.
 2. HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE - DATUM NAD 83(01).
 3. VERTICAL DATUM IS REFERENCED TO U.S.G.S. MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS TWO FEET.
 4. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER & LIGHT CO. IN DECEMBER 1994 & NOVEMBER 1996.
 5. THE LOCATION OF THE DESIGN MANAGEMENT ZONE DEMARCATION LINE IS APPROXIMATE.
 6. WATER ELEVATION USED TO PREPARE THIS MAP WERE MEASURED ON OCTOBER 24, 2002.
 7. THE WATER LEVEL AT MW 33A AND MW 33B COULD NOT BE MEASURED DURING OCTOBER 2002 DUE TO AN OBSTRUCTION IN THE WELL CASING.



3.			
2.			
1.			
NO.	BY	DATE	REVISION
PROJECT: ALLIANT ENERGY - WP&L COLUMBIA ASH POND & DRY ASH DISPOSAL FACILITY			
SHEET TITLE: WATER TABLE MAP (OCTOBER 2002)			
DRAWN BY: defoe	SCALE: 1"=200'	PROJ. NO. 3024.28	
CHECKED BY: JMR		FILE NO. WATERTBL.PLT	
APPROVED BY: JCD	DATE PRINTED:		FIGURE 3
DATE: JANUARY 2003			

144 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923
Madison, WI 53708-8923
Phone: 608-831-4444

PROJECT: ALLIANT ENERGY - WP&L COLUMBIA ASH POND & DRY ASH DISPOSAL FACILITY
 SHEET: WATER TABLE MAP (OCTOBER 2002)
 DRAWN BY: defoe
 CHECKED BY: JMR
 APPROVED BY: JCD
 DATE: JANUARY 2003
 SCALE: 1"=200'
 PROJ. NO. 3024.28
 FILE NO. WATERTBL.PLT
 FIGURE 3



LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LIMITS OF WASTE
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR UNIT
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	WATER TABLE ELEVATION
	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
	SURFACE WATER ELEVATION (NOT CONTOURED)
	WATER TABLE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
 3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
 4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
 5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
 6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
 7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
 8. BACKGROUND MONITORING WELLS FOR THE MODULE 10-11 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
 9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
 10. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
 11. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 12. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.
 13. DEWATERING PUMPING WAS STOPPED SEPTEMBER 11, 2023.

PROJECT NO. 25224067.00	DRAWN BY: KP/SB	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE ALLIANT ENERGY COLUMBIA ENERGY CENTER MODULES 10-11 DRY ASH DISPOSAL FACILITY PARDEEVILLE, WI	WATER TABLE MAP OCTOBER 2023	FIGURE 3
DRAWN: 11/13/2023	CHECKED BY:					
REVISED: 06/04/2024	APPROVED BY:					

I:\25224067.00\Drawings\Modules 10-11\Water Table Map-October 2023.dwg, 6/4/2024 12:29:40 PM

Appendix C

Trend Analysis

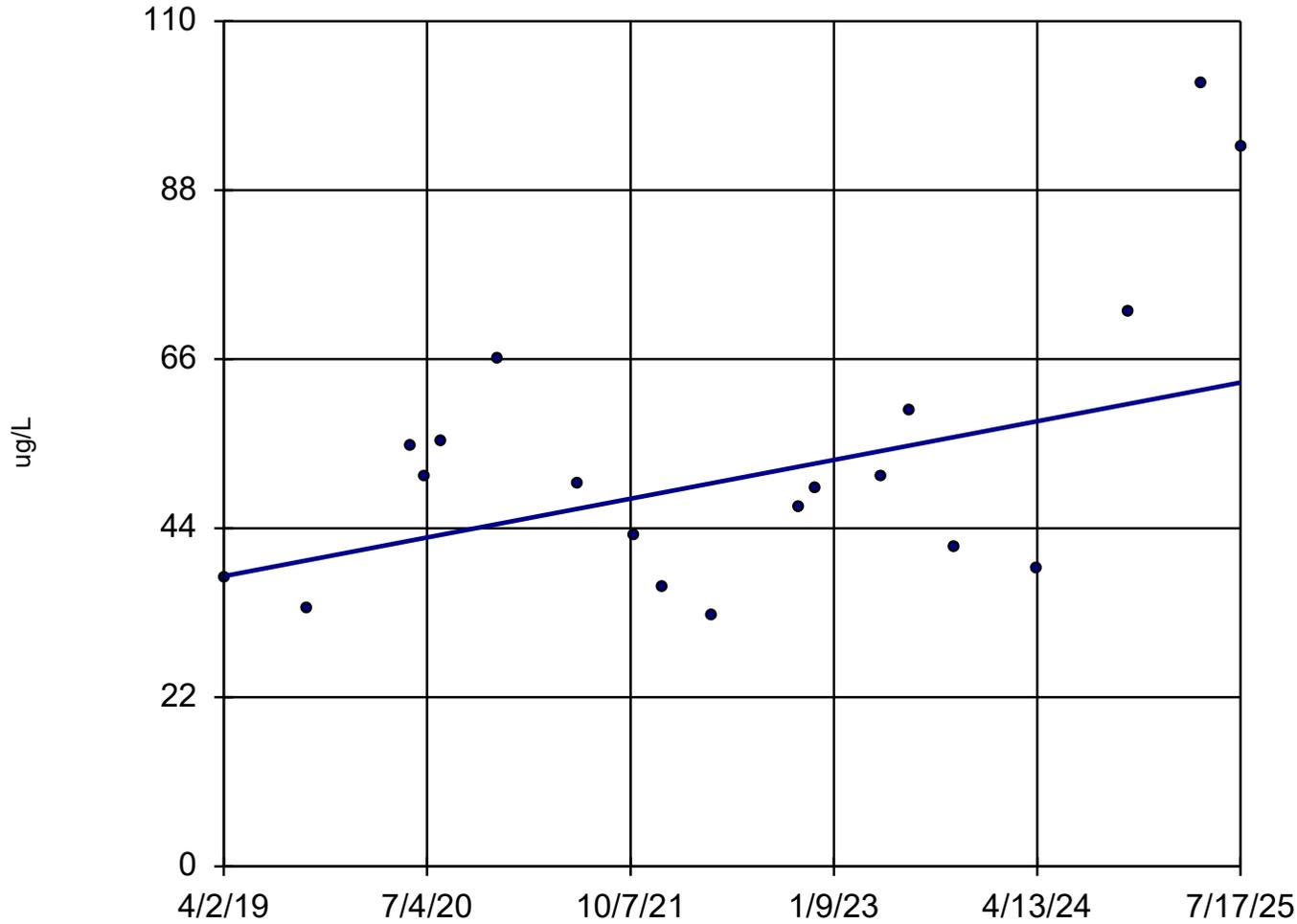
Trend Test

Columbia Energy Center Client: SCS Engineers Data: Columbia Printed 10/15/2025, 11:20 AM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron (ug/L)	MW-309	3.998	45	68	No	19	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-310	-0.33	-2	-44	No	14	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-309	7381	25	44	No	14	0	n/a	n/a	0.02	NP
Calcium (ug/L)	MW-310	-287.4	-1	-48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-309	43.48	22	39	No	13	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-310	5.613	4	44	No	14	0	n/a	n/a	0.02	NP
Field pH (Std. Units)	MW-309	0.007908	13	78	No	21	0	n/a	n/a	0.02	NP
Field pH (Std. Units)	MW-310	0	6	63	No	18	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-309	0	-7	-35	No	12	100	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-310	0	-8	-39	No	13	100	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-309	9.712	43	48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-310	8.034	23	44	No	14	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-309	112	29	39	No	13	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-310	26.74	27	39	No	13	0	n/a	n/a	0.02	NP

Sen's Slope Estimator

MW-309



n = 19
Slope = 3.998
units per year.
Mann-Kendall
statistic = 45
critical = 68
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Boron Analysis Run 10/15/2025 11:17 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

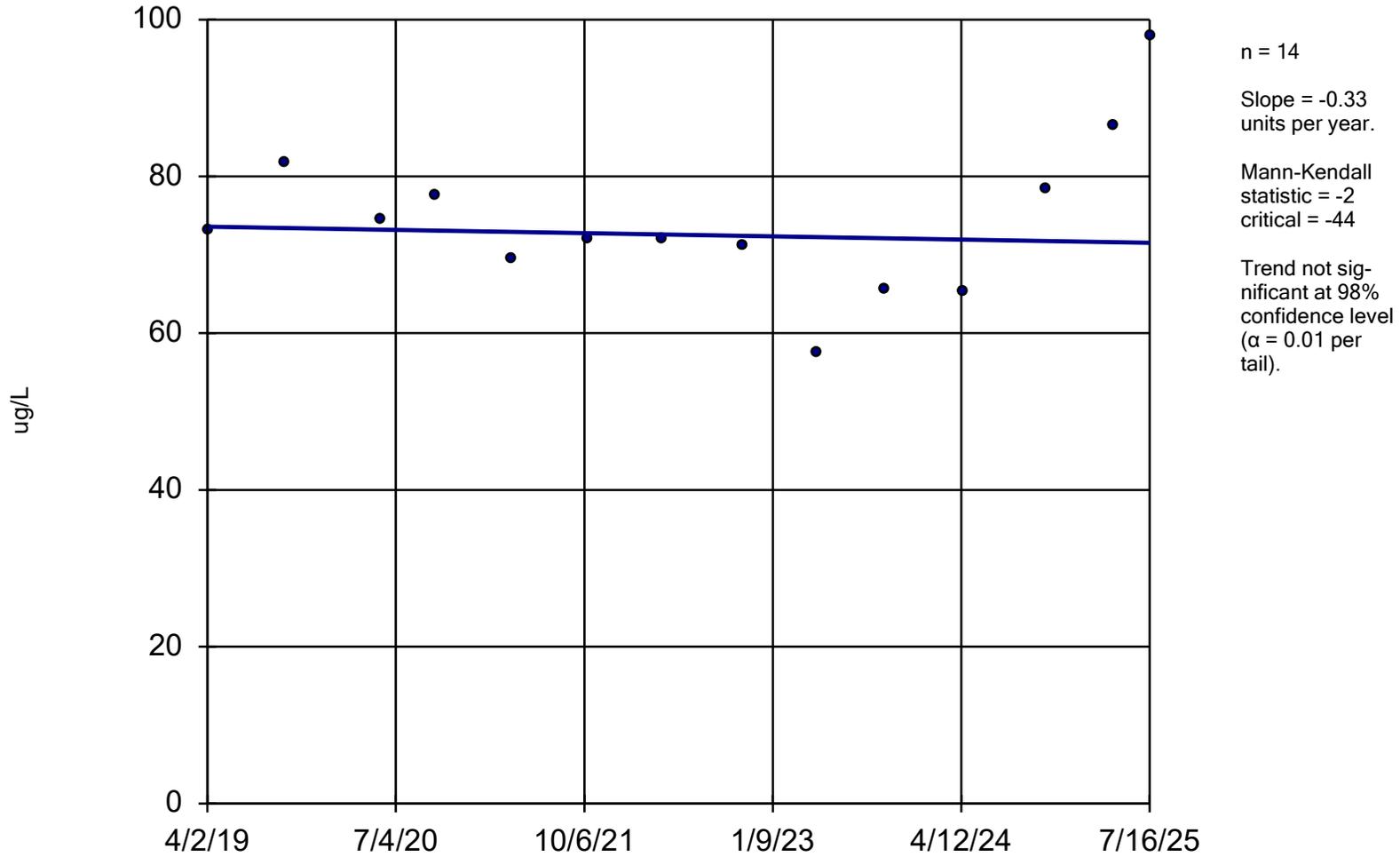
Sen's Slope Estimator

Constituent: Boron (ug/L) Analysis Run 10/15/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	37.4
10/8/2019	33.4
5/29/2020	54.6
6/30/2020	50.7
8/6/2020	55.3
12/11/2020	65.9 (R)
6/11/2021	49.9 (R)
10/14/2021	42.9
12/21/2021	36.4
4/12/2022	32.5
10/26/2022	46.6
11/30/2022	49.3
4/26/2023	50.8
6/29/2023	59.4
10/9/2023	41.5
4/15/2024	38.7
11/5/2024	72.3 (R)
4/21/2025	102
7/17/2025	93.6

Sen's Slope Estimator

MW-310



Constituent: Boron Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

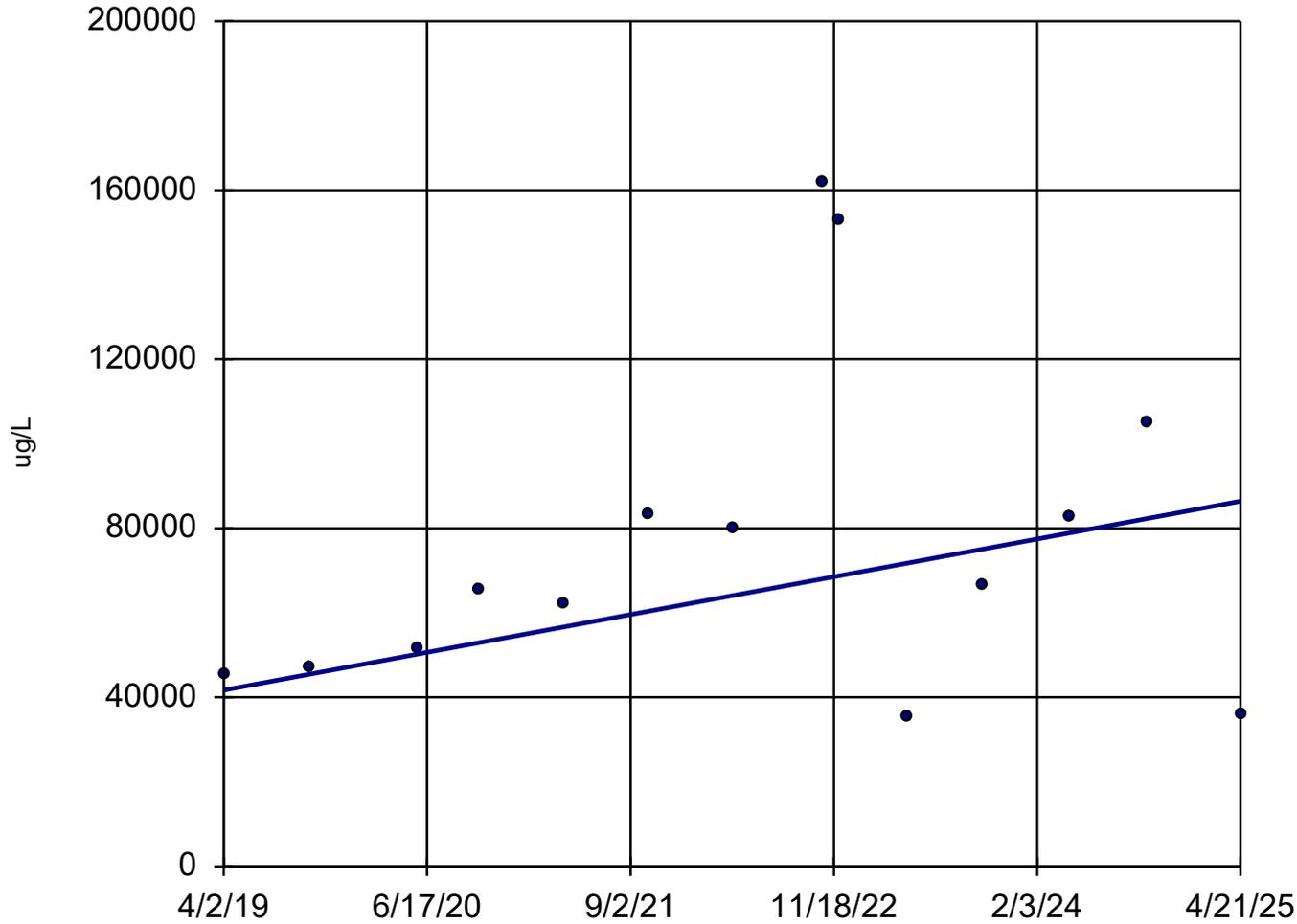
Sen's Slope Estimator

Constituent: Boron (ug/L) Analysis Run 10/15/2025 11:19 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	73
10/8/2019	81.8
5/29/2020	74.4
10/8/2020	77.6
4/13/2021	69.6
10/14/2021	72
4/12/2022	72
10/26/2022	71.3
4/26/2023	57.5
10/9/2023	65.6
4/15/2024	65.2
11/5/2024	78.4 (R)
4/21/2025	86.4
7/16/2025	97.9

Sen's Slope Estimator

MW-309



n = 14

Slope = 7381 units per year.

Mann-Kendall statistic = 25
critical = 44

Trend not significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Calcium Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

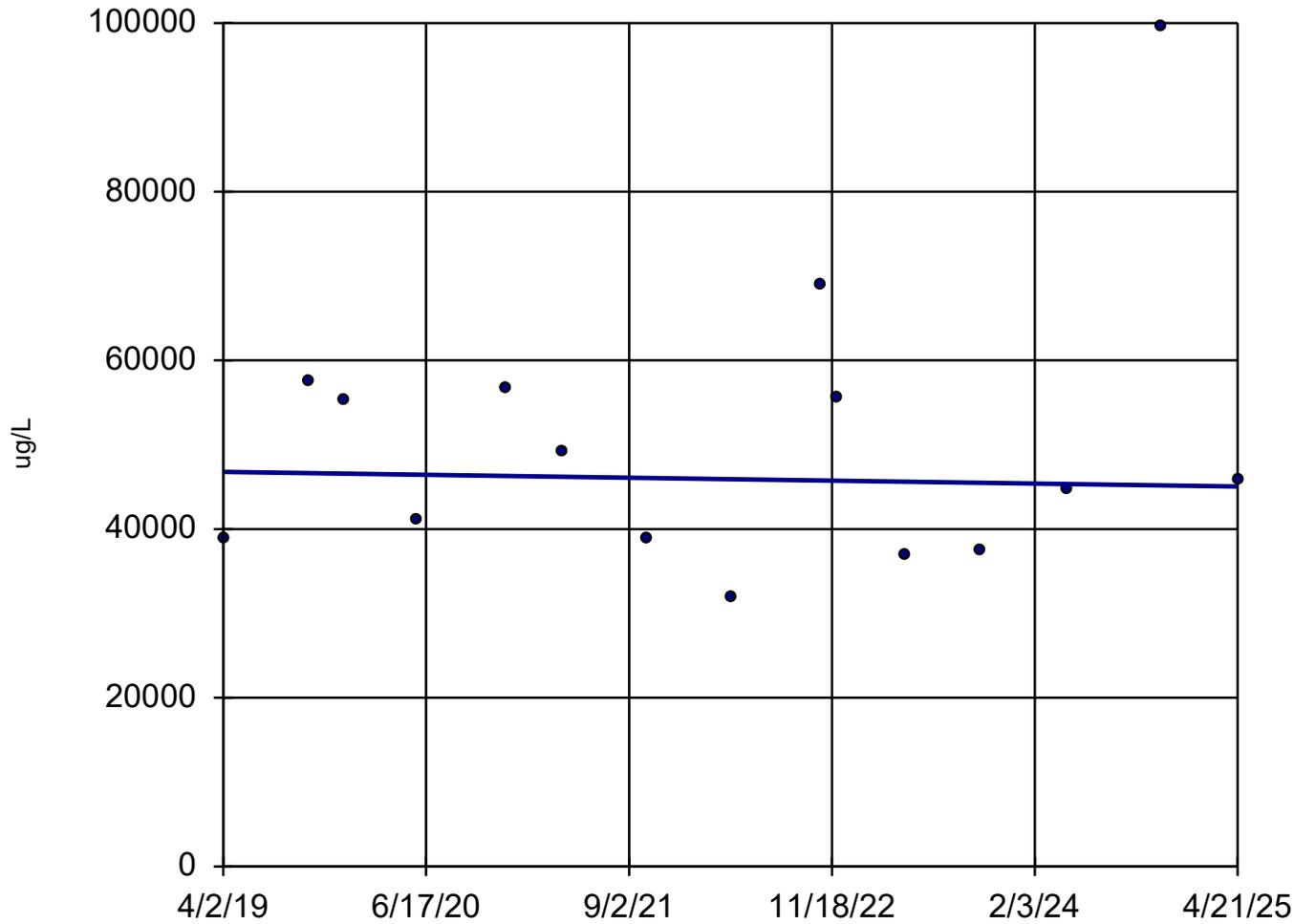
Sen's Slope Estimator

Constituent: Calcium (ug/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	45300
10/8/2019	46900
5/29/2020	51600
10/8/2020	65300
4/13/2021	62300
10/14/2021	83100
4/12/2022	80200
10/26/2022	162000
11/30/2022	153000
4/26/2023	35500
10/9/2023	66800
4/15/2024	82600
10/1/2024	105000
4/21/2025	35900

Sen's Slope Estimator

MW-310



n = 15

Slope = -287.4
units per year.

Mann-Kendall
statistic = -1
critical = -48

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Calcium Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

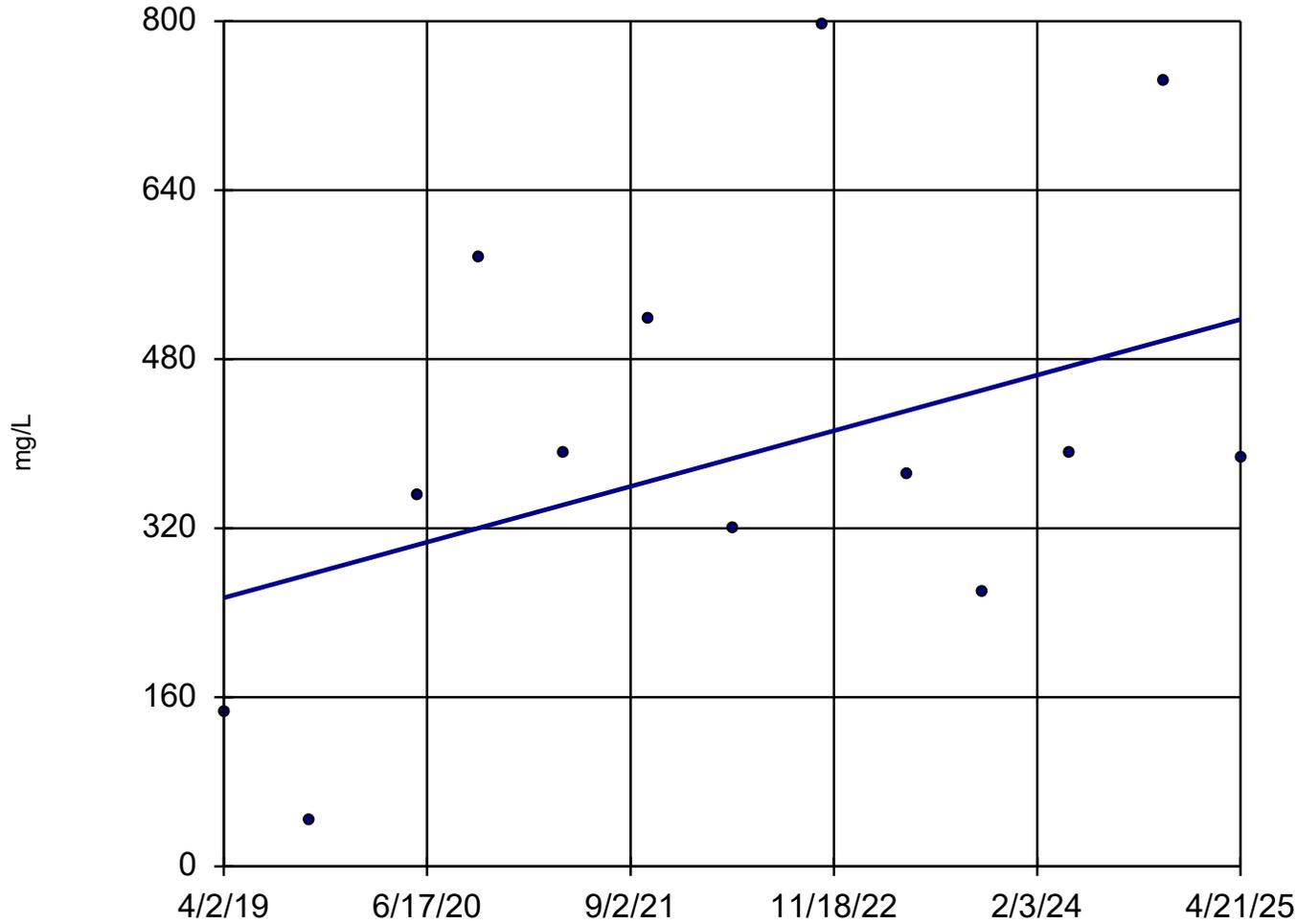
Sen's Slope Estimator

Constituent: Calcium (ug/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	38800
10/8/2019	57600
12/23/2019	55400
5/29/2020	41100
12/11/2020	56800 (R)
4/13/2021	49300
10/14/2021	38900
4/12/2022	31900
10/26/2022	68900
11/30/2022	55500
4/26/2023	36800
10/9/2023	37500
4/15/2024	44600
11/5/2024	99700 (R)
4/21/2025	45900

Sen's Slope Estimator

MW-309



n = 13

Slope = 43.48
units per year.

Mann-Kendall
statistic = 22
critical = 39

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

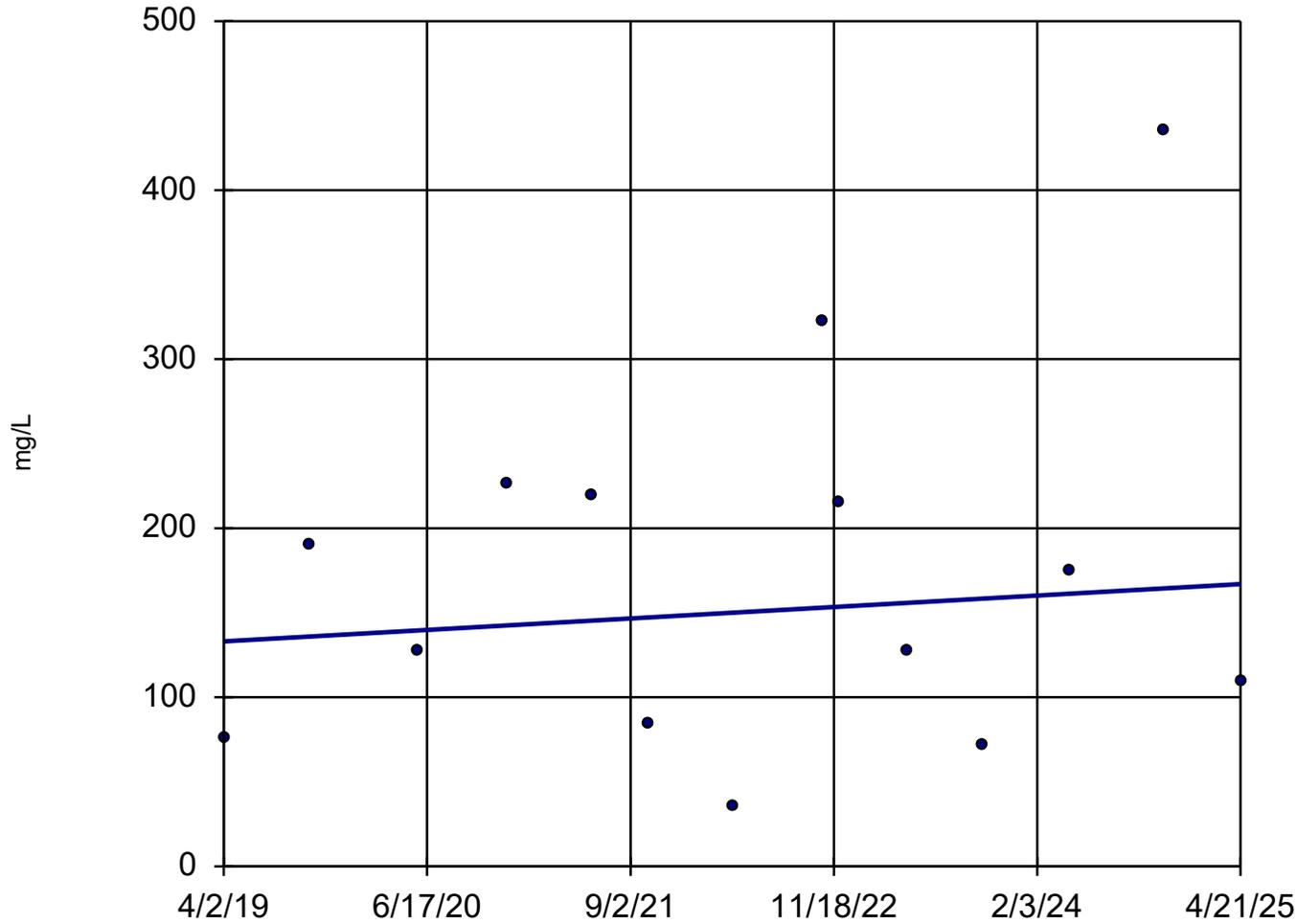
Sen's Slope Estimator

Constituent: Chloride (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	145
10/8/2019	43.2
5/29/2020	350
10/8/2020	575
4/13/2021	390
10/14/2021	519
4/12/2022	319
10/26/2022	796
4/26/2023	372
10/9/2023	259
4/15/2024	391
11/5/2024	743 (R)
4/21/2025	386

Sen's Slope Estimator

MW-310



n = 14

Slope = 5.613
units per year.

Mann-Kendall
statistic = 4
critical = 44

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

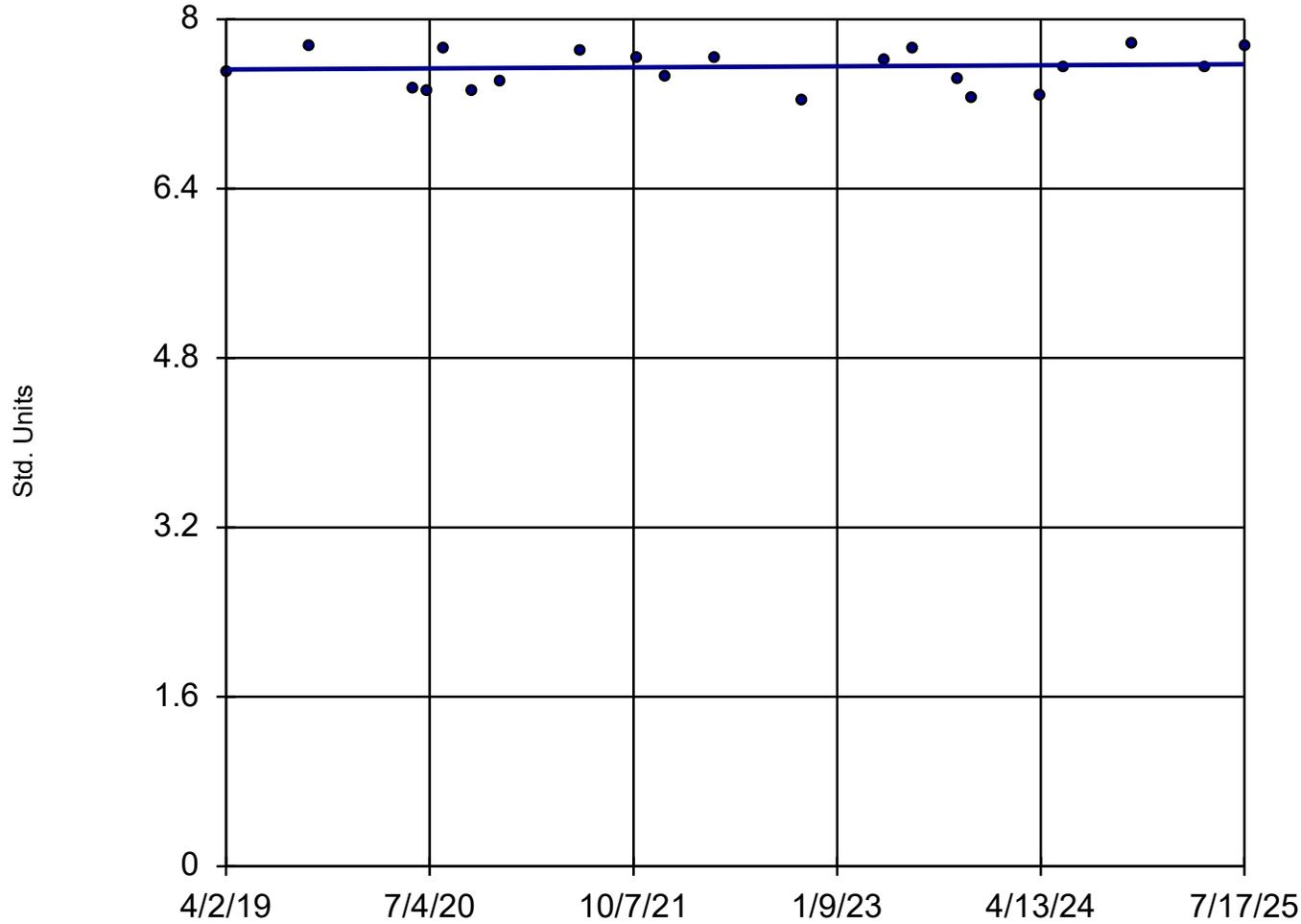
Sen's Slope Estimator

Constituent: Chloride (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	76
10/8/2019	190
5/29/2020	128
12/11/2020	227 (R)
6/11/2021	220 (R)
10/14/2021	84.6
4/12/2022	35.2
10/26/2022	323
11/30/2022	215
4/26/2023	128
10/9/2023	71.3
4/15/2024	175
11/5/2024	435 (R)
4/21/2025	110

Sen's Slope Estimator

MW-309



n = 21

Slope = 0.007908
units per year.

Mann-Kendall
statistic = 13
critical = 78

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Field pH Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

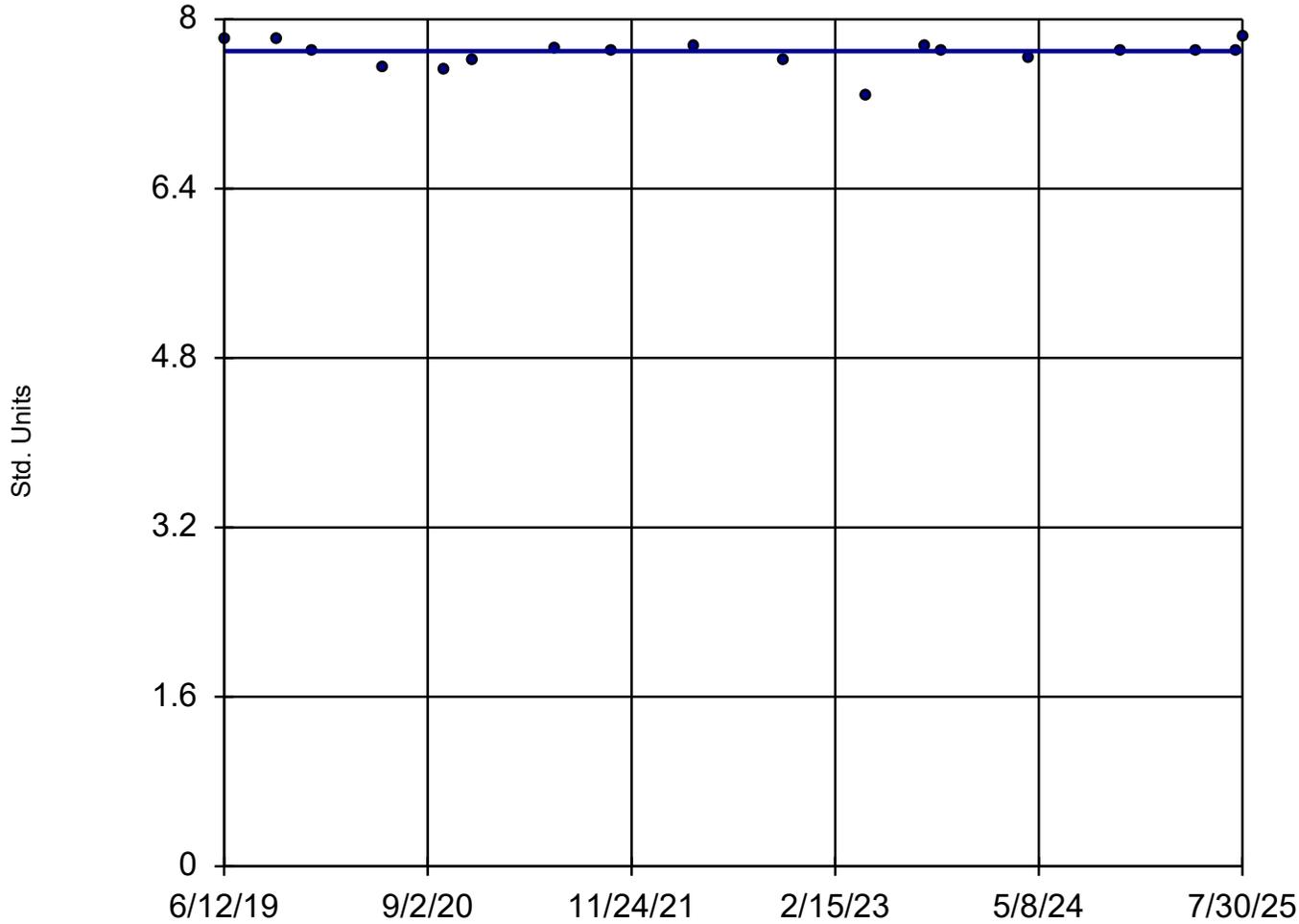
Sen's Slope Estimator

Constituent: Field pH (Std. Units) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	7.49
10/8/2019	7.75
5/29/2020	7.35
6/30/2020	7.33
8/6/2020	7.72
10/8/2020	7.33
12/11/2020	7.42
6/11/2021	7.71 (R)
10/14/2021	7.64
12/21/2021	7.45
4/12/2022	7.64
10/26/2022	7.23
4/26/2023	7.61
6/29/2023	7.72
10/9/2023	7.43
11/9/2023	7.25
4/15/2024	7.27
6/4/2024	7.55
11/5/2024	7.77 (R)
4/21/2025	7.55
7/17/2025	7.75

Sen's Slope Estimator

MW-310



n = 18

Slope = 0
units per year.

Mann-Kendall
statistic = 6
critical = 63

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Field pH Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

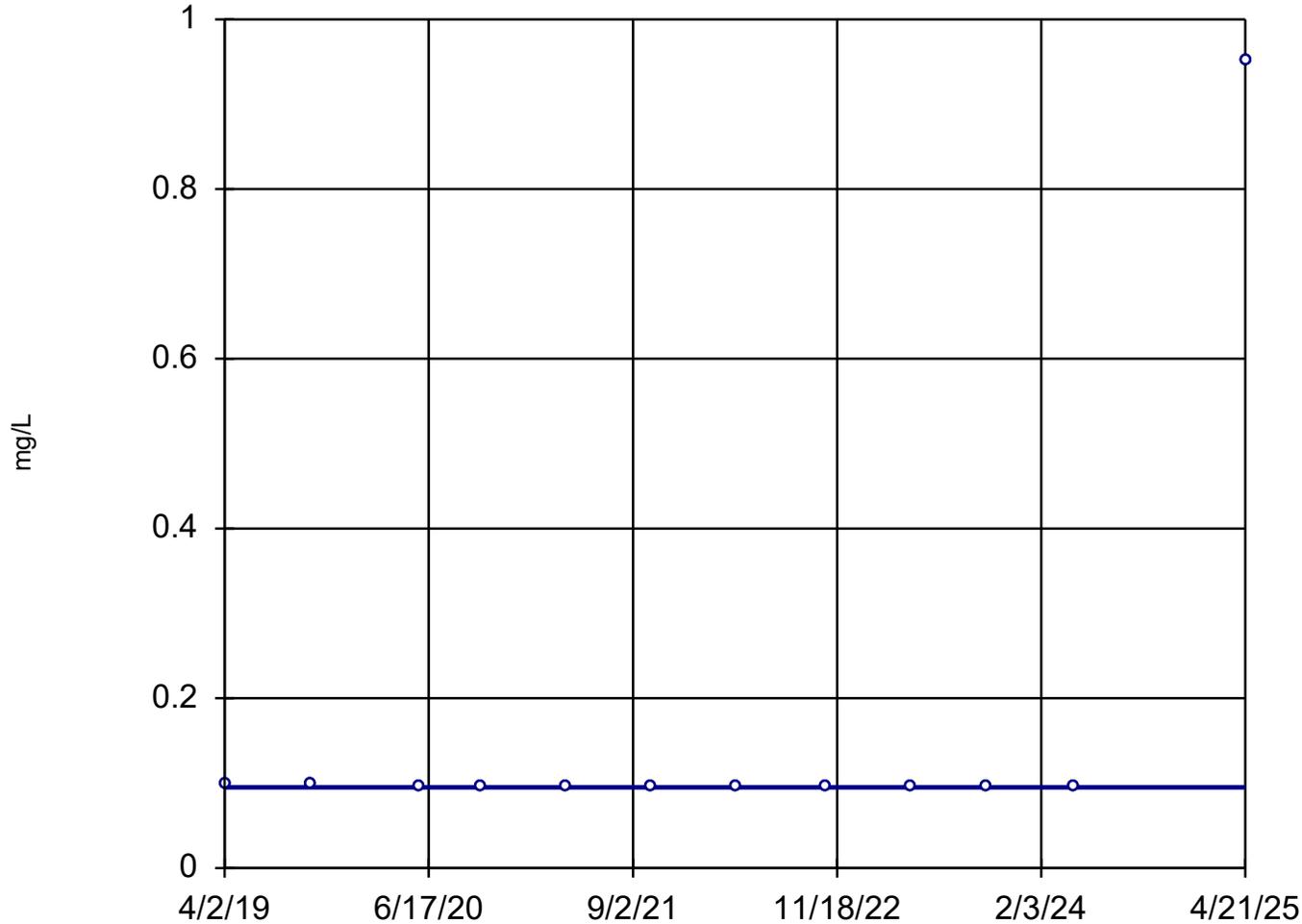
Sen's Slope Estimator

Constituent: Field pH (Std. Units) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	9.79 (X)
6/12/2019	7.82
10/8/2019	7.82
12/23/2019	7.7
5/29/2020	7.54
10/8/2020	7.52
12/11/2020	7.62
6/11/2021	7.73 (R)
10/14/2021	7.7
4/12/2022	7.74
10/26/2022	7.61
4/26/2023	7.27
8/31/2023	7.75
10/9/2023	7.7
4/15/2024	7.63
11/5/2024	7.7 (R)
4/21/2025	7.69
7/16/2025	7.71
7/30/2025	7.84

Sen's Slope Estimator

MW-309



n = 12

Slope = 0
units per year.

Mann-Kendall
statistic = -7
critical = -35

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

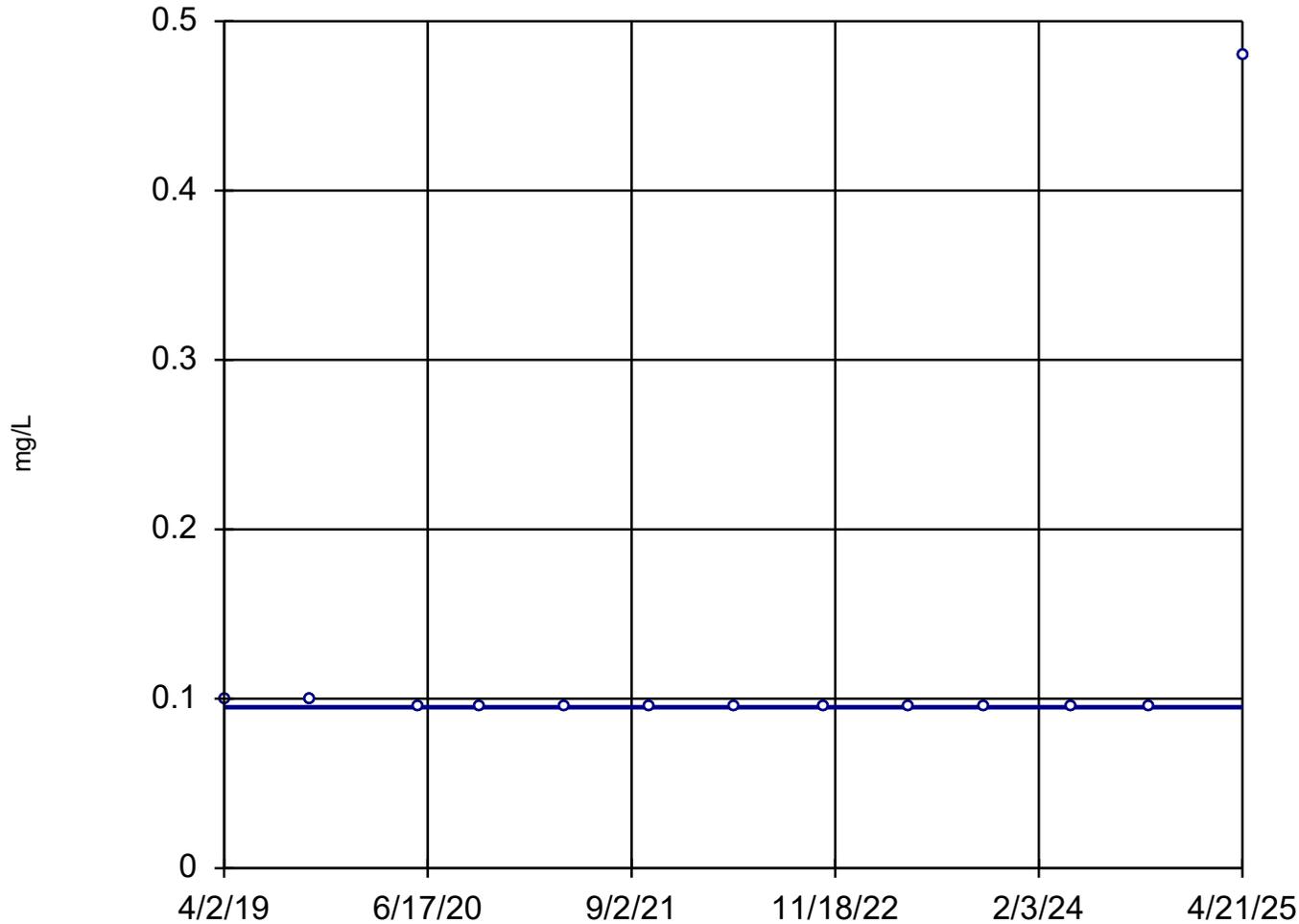
Sen's Slope Estimator

Constituent: Fluoride (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095 (U)
10/1/2024	<4.8 (UX)
4/21/2025	<0.95 (U)

Sen's Slope Estimator

MW-310



n = 13

Slope = 0
units per year.

Mann-Kendall
statistic = -8
critical = -39

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

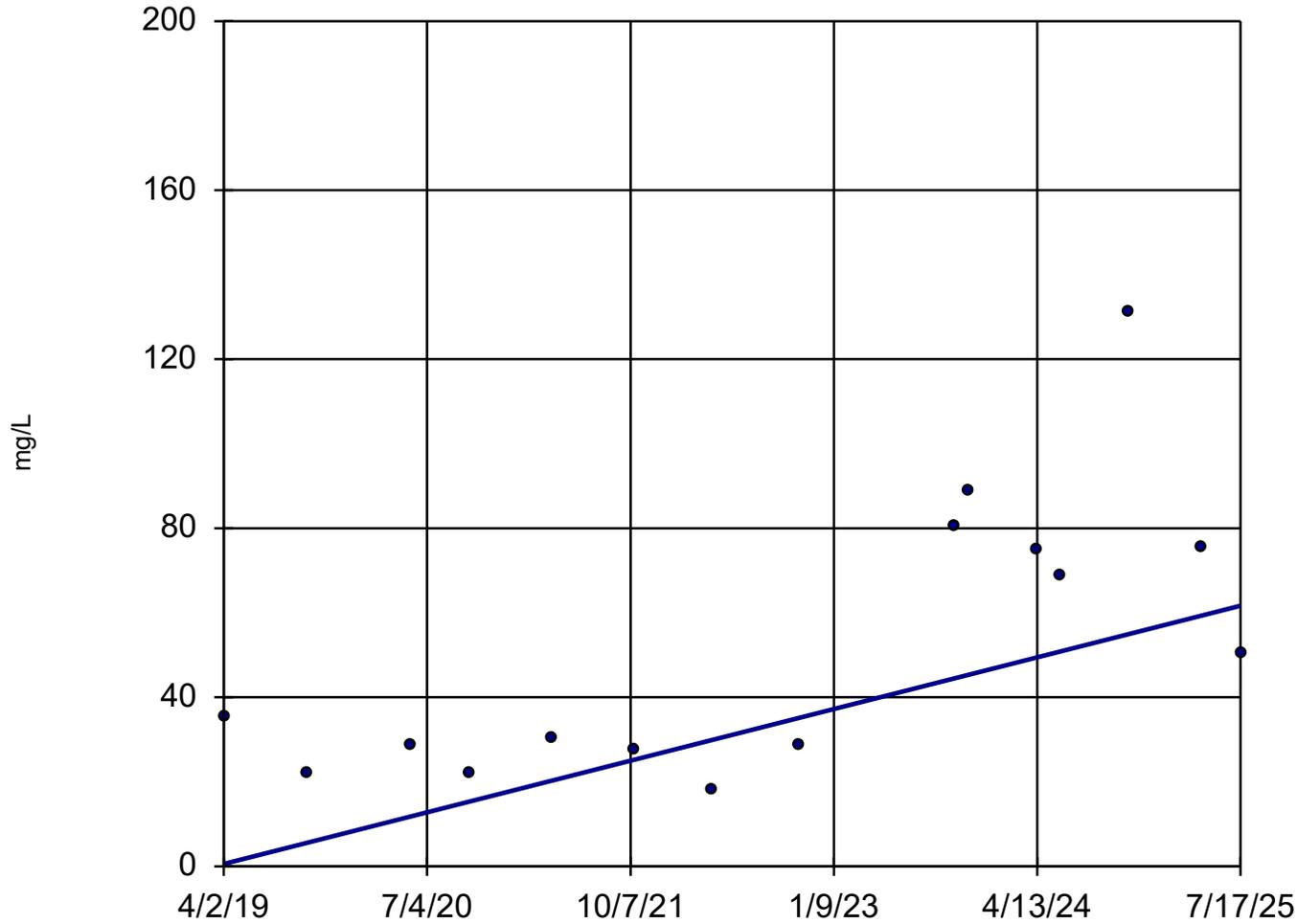
Sen's Slope Estimator

Constituent: Fluoride (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	<0.1 (U)
10/8/2019	<0.1 (U)
5/29/2020	<0.095 (U)
10/8/2020	<0.095 (U)
4/13/2021	<0.095 (U)
10/14/2021	<0.095 (U)
4/12/2022	<0.095 (U)
10/26/2022	<0.095 (U)
4/26/2023	<0.095 (U)
10/9/2023	<0.095 (U)
4/15/2024	<0.095
10/1/2024	<0.095
4/21/2025	<0.48

Sen's Slope Estimator

MW-309



n = 15

Slope = 9.712
units per year.

Mann-Kendall
statistic = 43
critical = 48

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Sulfate Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

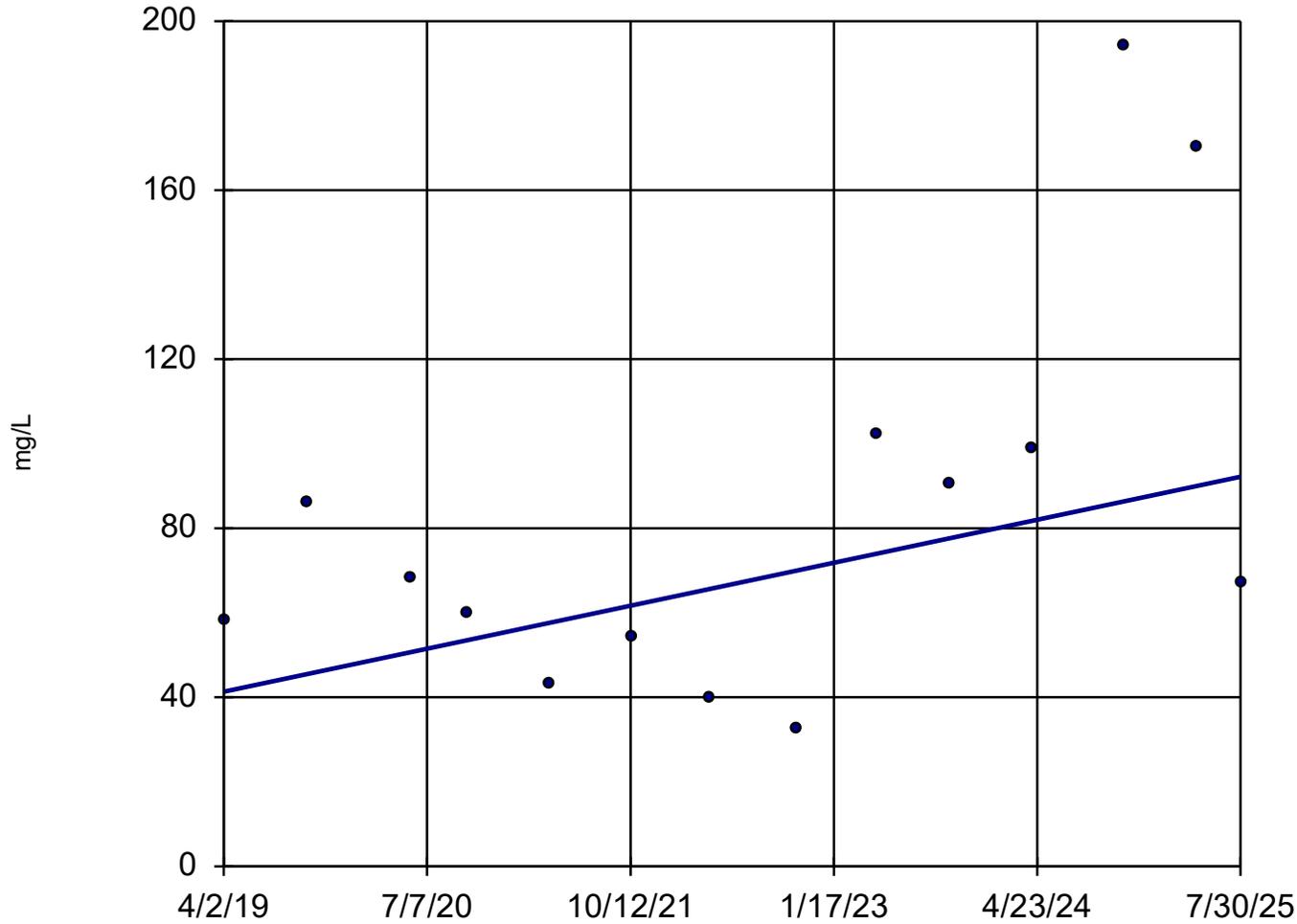
Sen's Slope Estimator

Constituent: Sulfate (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	35.2
10/8/2019	21.9
5/29/2020	28.6
10/8/2020	21.8
4/13/2021	30.3
10/14/2021	27.7
4/12/2022	17.9
10/26/2022	28.9
4/26/2023	143 (X)
6/29/2023	147 (X)
10/9/2023	80.6
11/9/2023	89
4/15/2024	75.1
6/4/2024	68.8
11/5/2024	131 (R)
4/21/2025	75.7
7/17/2025	50.3

Sen's Slope Estimator

MW-310



n = 14

Slope = 8.034
units per year.

Mann-Kendall
statistic = 23
critical = 44

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Sulfate Analysis Run 10/15/2025 11:17 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

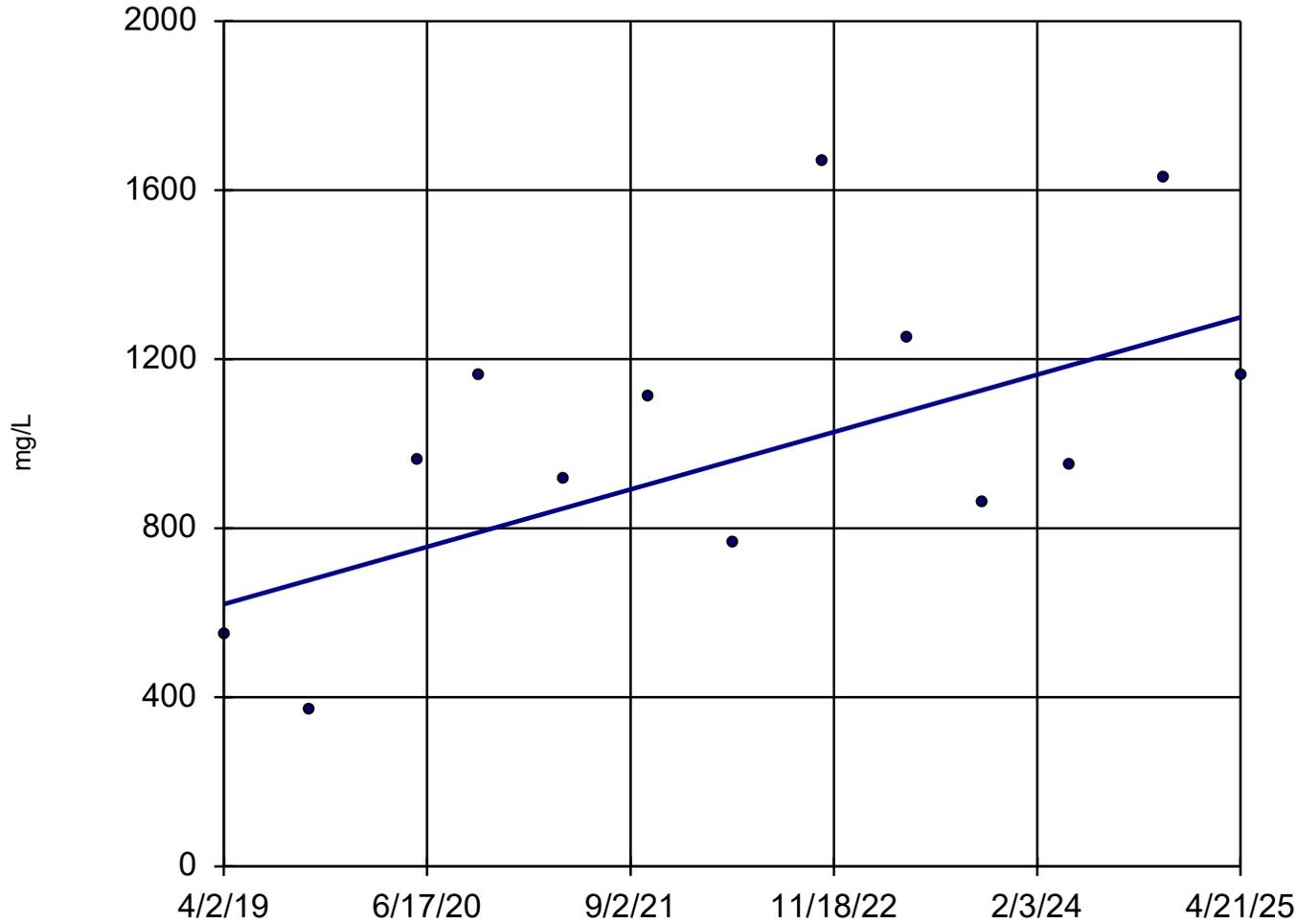
Sen's Slope Estimator

Constituent: Sulfate (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	58.4
10/8/2019	85.9
5/29/2020	68.2
10/8/2020	60
4/13/2021	43.3
10/14/2021	54.3
4/12/2022	39.8
10/26/2022	32.8
4/26/2023	102
10/9/2023	90.7
4/15/2024	98.9
11/5/2024	194 (R)
4/21/2025	170
7/30/2025	67.4

Sen's Slope Estimator

MW-309



n = 13

Slope = 112
units per year.

Mann-Kendall
statistic = 29
critical = 39

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 10/15/2025 11:18 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

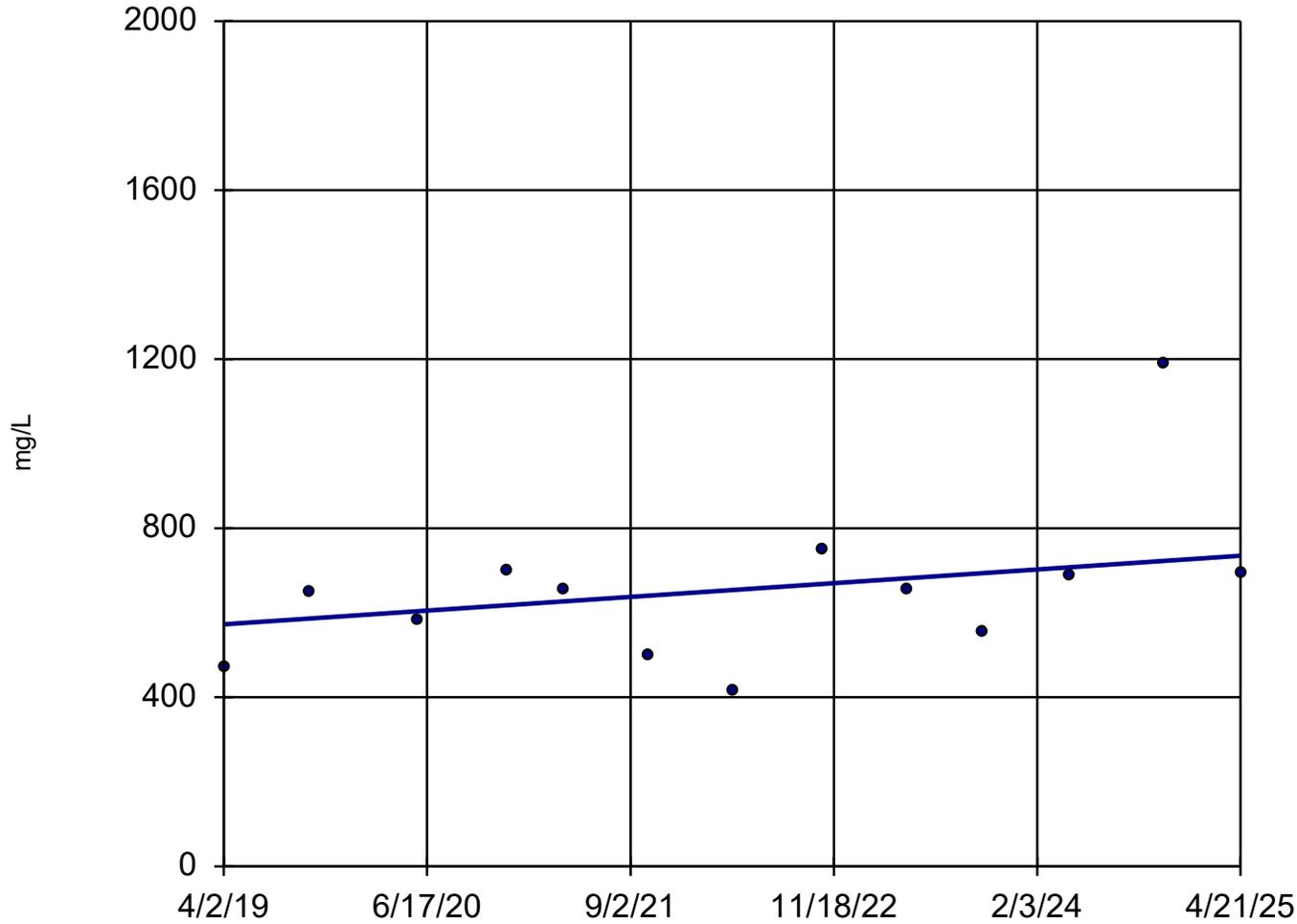
Sen's Slope Estimator

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-309
4/2/2019	548
10/8/2019	370
5/29/2020	960
10/8/2020	1160
4/13/2021	916
10/14/2021	1110
4/12/2022	764
10/26/2022	1670
4/26/2023	1250
10/9/2023	858
4/15/2024	948
11/5/2024	1630 (R)
4/21/2025	1160

Sen's Slope Estimator

MW-310



n = 13

Slope = 26.74
units per year.

Mann-Kendall
statistic = 27
critical = 39

Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Total Dissolved Solids Analysis Run 10/15/2025 11:18 AM View: COL ADF

Columbia Energy Center Client: SCS Engineers Data: Columbia

Sen's Slope Estimator

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/15/2025 11:20 AM View: COL ADF
Columbia Energy Center Client: SCS Engineers Data: Columbia

	MW-310
4/2/2019	470
10/8/2019	650
5/29/2020	582
12/11/2020	700 (R)
4/13/2021	654
10/14/2021	498
4/12/2022	416
10/26/2022	750
4/26/2023	654
10/9/2023	554
4/15/2024	686
11/5/2024	1190 (R)
4/21/2025	692