

2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
POND 003
NEW MADRID POWER PLANT
MARSTON, MISSOURI

by
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for
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Date

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1. Introduction

This 2023 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses Pond 003 at the New Madrid Power Plant (NMPP), operated by the Associated Electric Cooperative, Inc. (AECI). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency Coal Combustion Residual (CCR) Rule effective 19 October 2015 (Rule) including subsequent revisions, specifically Title 40 Code of Federal Regulations (40 CFR) § 257.90(e). The Annual Report documents the groundwater monitoring system for Pond 003 consistent with applicable sections of 40 CFR §§ 257.90 through 257.98, and describes activities conducted in the prior calendar year (2023) for compliance with the Rule. The specific requirements listed in 40 CFR § 257.90(e)(1) through (6) of the Rule are provided in Sections 1 and 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

1.1 40 CFR § 257.90(e)(6) SUMMARY

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. At a minimum, the summary must specify all of the following:

1.1.1 40 CFR § 257.90(e)(6)(i) – Initial Monitoring Program

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;

At the start of the current annual reporting period (1 January 2023), Pond 003 was operating under an assessment monitoring program in compliance with 40 CFR § 257.95 for all constituents except molybdenum. Since July 2019, Pond 003 is in a corrective measures program in accordance with 40 CFR § 257.96 for molybdenum.

1.1.2 40 CFR § 257.90(e)(6)(ii) – Final Monitoring Program

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;

At the end of the current annual reporting period (31 December 2023), Pond 003 was operating under an assessment monitoring program in compliance with 40 CFR § 257.95 for all constituents except molybdenum. Pond 003 is implementing a corrective measures program in accordance with 40 CFR § 257.96 for molybdenum.

1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

1.1.3.1 40 CFR § 257.90(e)(6)(iii)(A)

Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

Pond 003 at NMPP is operating under an assessment monitoring program; therefore, no statistical evaluations were conducted for Appendix III constituents in 2023.

1.1.3.2 40 CFR § 257.90(e)(6)(iii)(B)

Provide the date when the assessment monitoring program was initiated for the CCR unit.

An assessment monitoring program for Pond 003 was established on 15 August 2018 to meet the requirements of 40 CFR § 257.95. Pond 003 remained in assessment monitoring in 2023 for all constituents except molybdenum. A corrective measures program implemented for molybdenum in accordance with 40 CFR § 257.96 was in place during 2023.

1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

1.1.4.1 40 CFR § 257.90(e)(6)(iv)(A) – Statistically Significant Level Constituents

Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

Statistically significant levels (SSL) above the groundwater protection standards (GWPS) identified in 2023, following completion of statistical analyses in accordance with 40 CFR § 257.93 at Pond 003 for the August 2022 and February 2023 semi-annual assessment monitoring sampling events, are listed in Table I. In 2023, statistical analyses were completed for semi-annual sampling events in August 2022 and February 2023 based on the allowable timeframes to complete statistical analyses in accordance with 40 CFR § 257.93(h)(2). Although a semi-annual sampling event was completed in August 2023, statistical analyses were not completed within the 2023 calendar year based on allowable timing to complete the statistical analyses in accordance with 40 CFR § 257.93(h)(2).

1.1.4.2 40 CFR § 257.90(e)(6)(iv)(B) – Initiation of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was initiated for the CCR unit;

No assessment of corrective measures was required to be initiated in 2023 for this unit. The assessment of corrective measures for Pond 003 was initiated on 3 July 2019.

1.1.4.3 40 CFR § 257.90(e)(6)(iv)(C) – Assessment of Corrective Measures Public Meeting

Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

The public meeting following the assessment of corrective measures was held on 14 November 2019. No new assessment of corrective measures was required to be initiated for Pond 003 in 2023; therefore, a public meeting related to a new assessment of corrective measures was not held in 2023.

1.1.4.4 40 CFR § 257.90(e)(6)(iv)(D) – Completion of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was completed for the CCR unit.

An assessment of corrective measures was completed on 13 September 2019 in accordance with 40 CFR § 257.96. No new assessment of corrective measures was required to be completed in 2023 for this unit.

1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

The selection of remedy required under 40 CFR § 257.97 was certified on 29 March 2023 for molybdenum at the select monitoring wells with SSLs at Pond 003.

1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

Remedial activities were initiated within 90 days of selecting a remedy in accordance with 40 CFR § 257.97(a) and are ongoing.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §§ 257.90 through 257.99, except as provided in paragraph (g) [Suspension of groundwater monitoring requirements] of this section.

AECI has installed and certified a groundwater monitoring system at the NMPP Pond 003. Pond 003 is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. This document addresses the requirement for the Owner/Operator to prepare an Annual Report per 40 CFR § 257.90(e) (Rule).

2.2 40 CFR § 257.90(e) – SUMMARY

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 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).

This Annual Report describes the groundwater monitoring activities completed and related actions taken at the NMPP Pond 003 as required by the Rule. Groundwater sampling and analysis was conducted in accordance with requirements described in 40 CFR § 257.93, and the status of the groundwater monitoring program described in 40 CFR § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2023.

2.2.1 Status of the Groundwater Monitoring Program

Results of the detection monitoring statistical analyses completed in January 2018 identified a statistically significant increased (SSI) concentration of Appendix III constituents in downgradient monitoring wells relative to concentrations observed in upgradient monitoring wells. No alternative source was identified for the SSI constituents. Accordingly, the groundwater monitoring program transitioned to assessment monitoring in May 2018. Appendix IV SSLs were detected above the GWPS for molybdenum during the October 2018 and March 2019 assessment monitoring sampling events. Therefore, a corrective measures assessment was initiated and completed in 2019. The selection of remedy required under 40 CFR § 257.97 was completed in March 2023 for molybdenum at Pond 003, and the implementation of the selected remedy has been initiated. AECI is currently implementing an assessment monitoring program for all other constituents.

2.2.2 Key Actions Completed

The 2022 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2023. Statistical analysis of analytical data from the August 2022 semi-annual assessment monitoring sampling event was completed in February 2023. A summary including the sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program of the NMPP Pond 003 is presented in Table II of this report. The statistical analyses completed in February 2023 indicated Appendix IV SSLs above the GWPS for molybdenum at monitoring wells MW-7, MW-8, MW-9, P-2, P-3, and P-5 from the August 2022 sampling event.

A semi-annual assessment monitoring event was completed in February 2023 for Appendix IV constituents detected during the June 2022 annual assessment monitoring sampling event. Statistical analysis was completed within 90 days of receipt of verified laboratory data for the February 2023 sampling event. Appendix IV SSLs were identified consistent with previous monitoring events for molybdenum. A summary of Appendix IV SSLs identified in the August 2022 and February 2023 assessment monitoring events are provided in Table I. Notifications documenting the identified SSLs have been entered into the facility's operating record in accordance with 40 CFR § 257.95(g).

The determination of the nature and extent of the Appendix IV SSLs was initiated in 2019 pursuant to 40 CFR § 257.95(g) with the installation of 15 additional groundwater monitoring wells. Analytical results from the groundwater monitoring events completed at the nature and extent monitoring wells from February and August 2023 are provided in Table III. One Semi-Annual Remedy Selection Progress report was completed in March 2023 pursuant to 40 CFR § 257.96(a). The selection of remedy required under 40 CFR § 257.97 was certified on 29 March 2023 for molybdenum at select monitoring wells at Pond 003.

An annual assessment monitoring sampling event was completed in May 2023 to identify detected Appendix IV constituents for subsequent semi-annual sampling events in August 2023 and planned for February 2024. GWPSs for detected Appendix IV constituents were established. GWPSs utilized for the statistical analyses completed in 2023 are shown on Table IV. Semi-annual assessment monitoring was completed in August 2023 for Appendix IV constituents detected during the May 2023 annual monitoring event. Statistical analysis of the results from the August 2023 semi-annual assessment monitoring sampling event are due to be completed in January 2024 and will be reported in the next calendar year annual report.

Remedial activities were initiated within 90 days of selecting a remedy in accordance with 40 CFR § 257.97(a) for molybdenum at Pond 003. To support and monitor the effectiveness of the selected remedy, 12 monitoring wells were installed at Pond 003 in 2023. Remedial activities for molybdenum at Pond 003 are ongoing.

2.2.3 Problems Encountered

Problems encountered during groundwater monitoring activities in 2023 consisted of difficulties with groundwater sampling of upgradient monitoring well B-126 due to slow groundwater recharge and elevated turbidity during the May 2023 and August 2023 groundwater sampling events. The elevated turbidity observed in the groundwater samples collected during these sampling events resulted in elevated analytical results for select constituents.

2.2.4 Actions to Resolve Problems

The resolution to the elevated turbidity observed at upgradient monitoring well B-126 included the redevelopment of the monitoring well in August 2023. Following redevelopment of the monitoring well, the groundwater recharge rates have improved, and the turbidity measurements have decreased. No other problems were encountered at Pond 003 in 2023; therefore, no actions to resolve problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2024 include completion of the 2023 Annual Groundwater Monitoring and Corrective Action Report, statistical analysis of assessment monitoring analytical data collected in August 2023, completing an assessment monitoring annual sampling event, and conducting semi-annual assessment monitoring sampling events and subsequent statistical analysis. AECl is also implementing initial steps of the selected remedy for molybdenum at Pond 003, which includes additional sampling criteria for select monitoring wells and evaluating the need for additional monitoring points to monitor the effectiveness of the selected remedy.

2.3 40 CFR § 257.90€ – INFORMATION

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.3.1 40 CFR § 257.90(e)(1)

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

As required by 40 CFR § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for Pond 003 is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for AECl, which was placed in the facility's operating record by 17 October 2017 as required by § 257.105(h)(2) and updated in April 2019. Monitoring wells installed to assist with the nature and extent investigation at Pond 003, along with monitoring wells installed to monitor the effectiveness of the selected remedy, are shown on Figure 2.

2.3.2 40 CFR § 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;

Twelve monitoring wells were installed during 2023 to assist with evaluating the effectiveness of the selected remedy for molybdenum at Pond 003. Newly installed nature and extent monitoring wells are shown on Figure 2. No monitoring wells were decommissioned during 2023.

2.3.3 40 CFR § 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 down gradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

In accordance with 40 CFR § 257.94(b), three independent assessment monitoring samples were collected from each background and downgradient monitoring well that are a part of the certified groundwater monitoring network in 2023. A summary including the sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program of the NMPP Pond 003 is presented in Table II of this report.

Two independent samples were collected from each nature and extent monitoring well in 2023 during the semi-annual sampling events pursuant to 40 CFR § 257.95(g)(1)(iv). Analytical results associated with the nature and extent investigation conducted in 2022 are reported in Table III.

Four independent samples were collected from each monitoring well installed to support the evaluation of the selected remedy for molybdenum at Pond 003. Due to decreased water levels in the region, groundwater samples were unable to be collected from select monitoring wells. Analytical results collected from these new nature and extent monitoring wells in 2023 are reported in Table III. Additional newly installed monitoring wells MW-7I, MW-7L, MW-20L, and MW-22L were installed in late 2023, but no samples were collected from those wells in 2023.

2.3.4 40 CFR § 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); and

An assessment monitoring program was established on 15 August 2018 to meet the requirements of 40 CFR § 257.95. Statistical analyses of analytical data from October 2018 and March 2019 indicated Appendix IV SSLs above the GWPS for molybdenum at monitoring wells MW-7, MW-8, MW-9, P-2, P-3, and P-5. AECl pursued an Alternate Source Demonstration (ASD) in April 2019 for molybdenum to determine if a source other than the CCR unit caused the SSL, which was unsuccessful. Therefore, a corrective measures assessment was initiated, which was completed in September 2019. The selection of remedy required under 40 CFR § 257.97 was completed in March 2023, and implementation of the selected remedy was initiated within 90 days of the selection of remedy. AECl is currently implementing an assessment monitoring program for all other Appendix IV constituents.

2.3.5 40 CFR § 257.90(e)(5) – Other Requirements

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

This Annual Report documents activities conducted to comply with 40 CFR §§ 257.90(e) of the Rule. It is understood that there are supplemental references in 40 CFR §§ 257.90 through 257.98 that must be

placed in the Annual Report. The following requirements include relevant and required information in the Annual Report for activities completed in calendar year 2023.

2.3.5.1 40 CFR § 257.94(d)(3) – Demonstration for Alternative Detection Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater detection monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.2 40 CFR § 257.94(e)(2) – Detection Monitoring Alternate Source Demonstration

The owner or 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 to include obtaining a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under this section. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. 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 or approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

This unit is in assessment monitoring; therefore, no detection monitoring ASD or certification is applicable.

2.3.5.3 40 CFR § 257.95(c)(3) – Demonstration for Alternative Assessment Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater assessment monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.4 40 CFR § 257.95(d)(3) – Assessment Monitoring Concentrations and Groundwater Protection 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).

An assessment monitoring program is currently being implemented at the CCR unit. Three rounds of assessment monitoring sampling were completed in 2023. Analytical results for both downgradient and upgradient compliance wells are provided in Table II. The background concentrations (upper tolerance limits) and GWPSs established for the NMPP Pond 003 that were utilized for statistical analyses completed in 2023 are included in Table IV.

2.3.5.5 40 CFR § 257.95(g)(3)(ii) – Assessment Monitoring Alternate Source Demonstration

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. 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 or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

An alternate source was not identified for SSLs identified in 2023 at Pond 003; therefore, no ASD or certification is applicable. Pond 003 remained in assessment monitoring during 2023 for all constituents other than molybdenum.

2.3.5.6 40 CFR § 257.96(a) – Demonstration for Additional Time for Assessment of Corrective Measures

Within 90 days of finding that any constituent listed in Appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. 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 measures due to site-specific conditions or circumstances. The

owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no 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 or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

A new assessment of corrective measures was not required to be initiated in 2023; therefore, no demonstration or certification is applicable for this unit.

2.4 40 CFR § 257.90(f)

The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

In order to comply with the Rule recordkeeping requirements, the following actions must be completed:

- Pursuant to 40 CFR § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to 40 CFR § 257.106(h)(1), notification must be sent to the relevant State Director and/or Tribal authority within 30 days of this Annual Report being placed on the facility's operating record [40 CFR § 257.106(d)].
- Pursuant to 40 CFR § 257.107(h)(1), this Annual Report must be posted to the AECI CCR website within 30 days of this Annual Report being placed on the facility's operating record [40 CFR § 257.107(d)].

TABLES

TABLE I
SSL SUMMARY TABLE
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Constituent	Sampling Event	Well ID	Groundwater Protection Standard (mg/L)
Molybdenum	August 2022	MW-7	0.100*
		MW-8	
		MW-9	
		P-2	
		P-3	
		P-5	
	February 2023	MW-7	
		MW-8	
		MW-9	
		P-2	
		P-3	
		P-5	

Notes:

* Value obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations § 257.95(h)(2)

mg/L = milligrams per liter

SSL = statistically significant level

TABLE II
SUMMARY OF ANALYTICAL RESULTS - 2023 ASSESSMENT MONITORING
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Upgradient								
	B-123			B-126			MW-16		
Measure Point (TOC)	292.70			293.63			292.85		
Sample Name	B-123	B-123	B-123	B-126	B-126	B-126	MW-16	MW-16	MW-16
Sample Date	2/13/2023	5/5/2023	8/10/2023	2/14/2023	5/8/2023	8/10/2023	2/13/2023	5/4/2023	8/10/2023
Final Lab Report Date	3/10/2023	6/2/2023	9/7/2023	3/10/2023	6/2/2023	9/7/2023	3/10/2023	6/2/2023	9/7/2023
Final Lab Report Revision Date	N/A	N/A	10/20/2023	N/A	N/A	10/20/2023	N/A	N/A	10/20/2023
Final Radiation Lab Report Date	4/7/2023	7/17/2023	9/29/2023	4/7/2023	7/17/2023	9/29/2023	4/7/2023	7/17/2023	9/29/2023
Final Radiation Lab Report Revision Date	N/A	N/A	10/23/2023	N/A	N/A	10/23/2023	N/A	N/A	10/23/2023
Lab Data Reviewed and Accepted	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023
Depth to Water (ft btoc)	21.62	21.20	22.89	25.33	23.15	23.30	27.16	23.10	29.60
Temperature (Deg C)	16.40	16.11	16.99	16.65	-	18.42	17.17	17.72	17.83
Conductivity, Field (µS/cm)	675	671	646	499	-	497	916	862	692
Turbidity, Field (NTU)	99.8	40.2	10.73	298	-	55	9.6	5.4	5.32
pH (field) (su)	6.48	7.68	7.14	5.87	-	5.98	6.49	7.51	6.95
Dissolved Oxygen, Field (mg/L)	0.18	0.00	1.26	2.26	-	3.20	0.00	4.90	1.33
Oxidation Reduction Potential (ORP), Field (mv)	-108	-167	-71	129	-	318	-126	-170	-83
Boron, Total (mg/L)	0.049	-	0.072	0.069	-	0.12	0.086	-	0.11
Calcium, Total (mg/L)	74	-	78	86	-	78	130	-	100
Chloride (mg/L)	2.2	-	2.4	8.2	-	6.9	< 5.0	-	4.4
Fluoride (mg/L)	0.492	0.505	0.469	0.451	0.485	0.433	1.25	1.37	1.15
Sulfate (mg/L)	30	-	26	68	-	50	60	-	48
pH (lab) (su)	7.20	-	7.22	6.96	-	6.86	6.9	-	6.98
TDS (mg/L)	360	-	400	360	-	420	480	-	420
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	0.0031	0.0022	0.0019	0.0076	0.0081	< 0.0010	0.0032	0.0019	0.0018
Barium, Total (mg/L)	0.18	0.18	0.18	0.42	0.54	0.26	0.58	0.53	0.48
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	0.023	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	0.0032	0.0058	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	< 0.00050	< 0.00050	< 0.0010	0.0063	0.013	0.0013	< 0.00050	< 0.00050	< 0.0010
Lithium, Total (mg/L)	0.021	0.024	0.025	0.017	0.025	0.013	0.018	0.020	0.018
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.0037	0.0037	0.0039	0.0023	0.0023	0.0016	< 0.0010	< 0.0010	< 0.0010
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	0.0021	0.0039	0.0019	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.08 ± 0.321 (0.510)	1.34 ± 0.457 (0.550)	0.945 ± 0.404 (0.653)	0.560 ± 0.655 (1.14)	1.93 ± 0.508 (0.518)	0.830 ± 0.383 (0.598)	1.91 ± 0.515 (0.615)	2.02 ± 0.458 (0.579)	2.44 ± 0.535 (0.611)

Notes:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
Radiological results are presented as activity plus or minus uncertainty with MDC.
µS/cm = micro Siemens per centimeter
Deg C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
N/A = Not Applicable
NTU = Nephelometric Turbidity Unit
pCi/L = picoCuries per liter
su = standard unit
TDS = total dissolved solids
TOC = top of casing

TABLE II
SUMMARY OF ANALYTICAL RESULTS - 2023 ASSESSMENT MONITORING
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient									
	MW-6			MW-7			MW-8			
Measure Point (TOC)	300.27			301.50			310.63			
Sample Name	MW-6	MW-6	DUP-POND3-MAY23	MW-6	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8
Sample Date	2/15/2023	5/3/2023	5/3/2023	8/21/2023	2/15/2023	5/3/2023	8/21/2023	2/7/2023	5/4/2023	8/10/2023
Final Lab Report Date	3/9/2023	6/2/2023	6/2/2023	9/28/2023	3/9/2023	6/2/2023	9/28/2023	2/23/2023	6/2/2023	9/7/2023
Final Lab Report Revision Date	3/10/2023	6/14/2023	6/14/2023	10/16/2023	3/10/2023	6/14/2023	10/16/2023	3/9/2023	6/14/2023	10/20/2023
Final Radiation Lab Report Date	3/28/2023	6/19/2023	6/19/2023	10/13/2023	3/28/2023	6/19/2023	10/13/2023	3/27/2023	6/19/2023	9/29/2023
Final Radiation Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4/17/2023	N/A	10/23/2023
Lab Data Reviewed and Accepted	5/18/2023	8/14/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023
Depth to Water (ft btoc)	34.06	30.20	-	38.44	35.45	30.84	38.73	44.92	39.98	47.90
Temperature (Deg C)	17.58	17.72	-	17.16	17.29	17.51	17.17	17.05	18.01	20.75
Conductivity, Field (µS/cm)	782	796	-	783	669	713	684	891	984	733
Turbidity, Field (NTU)	7.5	1.4	-	0.0	8.9	2.5	0.0	9.6	1.3	0.00
pH (field) (su)	6.94	7.55	-	7.45	6.81	7.46	7.08	7.04	7.48	7.15
Dissolved Oxygen, Field (mg/L)	0.23	0.00	-	0.68	0.00	5.86	0.93	0.30	0.04	2.41
Oxidation Reduction Potential (ORP), Field (mv)	12	69	-	4	5	-71	47	-113	-155	-53
Boron, Total (mg/L)	0.16	0.29	0.25	0.12	4.3	6.0	3.7	6.4	8.4	12
Calcium, Total (mg/L)	110	120	120	110	76	89	90	140	150	180
Chloride (mg/L)	7.3	5.5	5.5	5.5	9.1	7.3	8.6	8.0	9.3	7.4
Fluoride (mg/L)	0.610	0.422	0.494	0.652	0.381	0.438	0.336	<0.250	0.252	<0.250
Sulfate (mg/L)	48	47	50	50	73	87	72	64	77	160
pH (lab) (su)	7.03	7.11	7.17	7.09	6.86	7.15	7.74	7.07	7.19	7.04
TDS (mg/L)	420	480	500	460	380	460	460	580	600	780
Antimony, Total (mg/L)	-	< 0.0030	< 0.0030	-	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0042	0.0029	0.0032	0.0049	0.0052	0.0033
Barium, Total (mg/L)	0.11	0.13	0.13	0.11	0.066	0.081	0.076	0.10	0.11	0.12
Beryllium, Total (mg/L)	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	< 0.0010	-	-	0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	< 0.0040	-	-	< 0.0040	-	-	< 0.0040	-
Cobalt, Total (mg/L)	0.0020	< 0.0020	< 0.0020	0.0022	0.0021	0.0038	0.0036	< 0.0020	< 0.0020	0.0028
Lead, Total (mg/L)	-	< 0.00050	< 0.00050	-	-	< 0.00050	-	< 0.00050	< 0.00050	< 0.0010
Lithium, Total (mg/L)	0.011	0.014	0.015	0.014	0.011	0.013	0.014	0.017	0.016	0.018
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.016	0.0096	0.012	0.023	1.7	1.9	1.4	0.46	0.73	0.69
Selenium, Total (mg/L)	0.0017	0.0081	0.0066	< 0.0010	< 0.0010	0.0011	0.0026	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.06 ± 0.369 (0.624)	0.399 ± 0.435 (1.85)	0.223 ± 0.891 (1.93)	1.17 ± 0.460 (0.592)	0.160 ± 0.399 (0.707)	0.535 ± 1.04 (2.04)	0.725 ± 0.436 (0.694)	0.558 ± 0.875 (1.67)	0.851 ± 0.985 (1.75)	1.61 ± 0.494 (0.713)

Notes:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
Radiological results are presented as activity plus or minus uncertainty with MDC.
µS/cm = micro Siemens per centimeter
Deg C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
N/A = Not Applicable
NTU = Nephelometric Turbidity Unit
pCi/L = picoCuries per liter
su = standard unit
TDS = total dissolved solids
TOC = top of casing

TABLE II
SUMMARY OF ANALYTICAL RESULTS - 2023 ASSESSMENT MONITORING
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient								
	MW-9			P-1			P-2		
Measure Point (TOC)	310.24			313.35			309.84		
Sample Name	MW-9	MW-9	MW-9	P-1	P-1	P-1	P-2	P-2	P-2
Sample Date	2/7/2023	5/4/2023	8/10/2023	2/22/2023	5/3/2023	8/10/2023	2/22/2023	5/3/2023	8/10/2023
Final Lab Report Date	2/23/2023	6/2/2023	9/7/2023	3/21/2023	6/2/2023	9/7/2023	3/21/2023	6/2/2023	9/7/2023
Final Lab Report Revision Date	3/9/2023	6/14/2023	10/20/2023	N/A	6/14/2023	11/6/2023	N/A	6/14/2023	11/6/2023
Final Radiation Lab Report Date	3/27/2023	6/19/2023	9/29/2023	4/7/2023	6/19/2023	9/29/2023	4/7/2023	6/19/2023	9/29/2023
Final Radiation Lab Report Revision Date	4/17/2023	N/A	10/23/2023	N/A	N/A	10/23/2023	N/A	N/A	10/23/2023
Lab Data Reviewed and Accepted	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023
Depth to Water (ft btoc)	43.82	39.93	48.75	44.60	44.51	52.72	39.20	41.09	-
Temperature (Deg C)	17.31	18.09	18.85	19.32	19.25	21.52	19.43	19.46	27.21
Conductivity, Field (µS/cm)	787	910	787	1020	1010	897	1120	1090	374
Turbidity, Field (NTU)	7.5	0.3	0.00	7.6	3.4	0.68	5.5	10.0	3.38
pH (field) (su)	7.19	7.39	7.37	6.36	7.43	7.37	6.59	7.65	7.59
Dissolved Oxygen, Field (mg/L)	0.09	4.23	1.10	2.86	4.74	2.65	5.94	6.78	4.97
Oxidation Reduction Potential (ORP), Field (mv)	-23	134	-66	157	99	138	162	125	-80
Boron, Total (mg/L)	4.4	3.0	3.9	1.6	1.6	1.8	2.1	2.1	2.1
Calcium, Total (mg/L)	110	120	110	150	150	150	150	150	130
Chloride (mg/L)	14	14	16	14	16	16	16	16	15
Fluoride (mg/L)	0.437	0.413	0.463	0.407	0.325	0.519	0.492	0.486	0.536
Sulfate (mg/L)	110	110	140	170	180	180	260	140	270
pH (lab) (su)	7.27	7.29	7.24	7.10	7.24	7.30	7.14	7.49	7.45
TDS (mg/L)	540	560	580	640	650	620	740	740	770
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Barium, Total (mg/L)	0.079	0.081	0.076	0.069	0.070	0.068	0.082	0.080	0.074
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	< 0.0040	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	< 0.00050	< 0.00050	< 0.0010	-	< 0.00050	-	-	< 0.00050	-
Lithium, Total (mg/L)	0.023	0.023	0.020	0.020	0.018	0.015	0.016	0.017	0.014
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.36	0.31	0.40	0.025	0.011	0.053	0.30	0.25	0.38
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	0.035	0.0049	0.015	< 0.0010	0.0015	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.18 ± 1.05 (1.75)	0.132 ± 0.867 (1.99)	1.99 ± 0.464 (0.671)	0.835 ± 0.570 (0.790)	0.314 ± 1.16 (2.37)	2.47 ± 0.553 (0.557)	1.92 ± 0.531 (0.694)	0.00 ± 0.816 (1.89)	0.737 ± 0.425 (0.634)

Notes:
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Radiological results are presented as activity plus or minus uncertainty with MDC.
µS/cm = micro Siemens per centimeter
Deg C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
N/A = Not Applicable
NTU = Nephelometric Turbidity Unit
pCi/L = picoCuries per liter
su = standard unit
TDS = total dissolved solids
TOC = top of casing

TABLE II
SUMMARY OF ANALYTICAL RESULTS - 2023 ASSESSMENT MONITORING
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Location	Downgradient									
	P-3			P-4			P-5			
Measure Point (TOC)	310.72			311.07			301.97			
Sample Name	P-3	P-3	P-3	P-4	P-4	P-4	P-5	DUP-P3-08-2022	P-5	P-5
Sample Date	2/22/2023	5/3/2023	8/11/2023	2/15/2023	5/3/2023	8/11/2023	2/15/2023	2/15/2023	5/3/2023	8/11/2023
Final Lab Report Date	3/21/2023	6/2/2023	9/7/2023	3/9/2023	6/2/2023	9/7/2023	3/9/2023	3/9/2023	6/2/2023	9/7/2023
Final Lab Report Revision Date	N/A	6/14/2023	11/6/2023	3/10/2023	6/14/2023	11/6/2023	3/10/2023	3/10/2023	6/14/2023	11/6/2023
Final Radiation Lab Report Date	4/7/2023	6/19/2023	9/29/2023	3/28/2023	6/19/2023	9/29/2023	3/28/2023	3/28/2023	6/19/2023	9/29/2023
Final Radiation Lab Report Revision Date	N/A	N/A	10/23/2023	N/A	N/A	10/23/2023	N/A	N/A	N/A	10/23/2023
Lab Data Reviewed and Accepted	5/18/2023	8/14/2023	12/8/2023	5/18/2023	8/14/2023	12/8/2023	5/18/2023	5/18/2023	8/14/2023	12/8/2023
Depth to Water (ft btoc)	39.82	41.78	49.95	43.88	42.28	-	36.01	36.01	31.20	38.95
Temperature (Deg C)	17.12	17.45	18.50	17.67	17.87	19.28	16.62	-	16.69	17.17
Conductivity, Field (µS/cm)	908	994	1260	842	837	826	983	-	934	938
Turbidity, Field (NTU)	4.6	5.8	1.00	6.7	2.5	0.00	8.2	-	5.6	7.51
pH (field) (su)	6.67	7.70	6.98	7.06	7.70	7.21	6.64	-	7.30	6.68
Dissolved Oxygen, Field (mg/L)	1.98	5.83	4.13	4.14	6.71	1.41	0.00	-	0.00	0.82
Oxidation Reduction Potential (ORP), Field (mv)	180	129	285	70	134	277	-76	-	-106	-40
Boron, Total (mg/L)	5.2	5.7	8.8	0.47	0.55	0.58	5.4	5.4	6.6	4.2
Calcium, Total (mg/L)	150	170	200	110	120	99	140	140	130	130
Chloride (mg/L)	14	17	13	17	18	19	7.1	7.1	7.0	7.3
Fluoride (mg/L)	0.696	0.669	0.563	0.342	0.310	0.331	< 0.250	< 0.250	< 0.250	< 0.250
Sulfate (mg/L)	89	89	150	60	60	65	110	100	120	93
pH (lab) (su)	7.00	7.31	7.20	7.17	7.62	7.32	6.68	6.65	6.88	6.67
TDS (mg/L)	580	640	770	500	490	480	610	600	570	540
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-	-	-	< 0.0030	-
Arsenic, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0061	0.0059	0.0055	0.0058
Barium, Total (mg/L)	0.086	0.093	0.11	0.13	0.13	0.13	0.12	0.12	0.12	0.12
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	< 0.0040	-	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	< 0.00050	-	-	< 0.00050	-	-	-	< 0.00050	-
Lithium, Total (mg/L)	0.019	0.020	0.021	0.027	0.030	0.024	0.014	0.014	0.015	0.014
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.89	1.000	1.5	0.022	0.022	0.025	0.21	0.21	0.27	0.24
Selenium, Total (mg/L)	0.0034	0.0072	0.0069	0.0070	0.0080	0.0032	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	0.514 ± 0.298 (0.525)	0.289 ± 0.847 (1.79)	2.69 ± 0.624 (0.624)	0.276 ± 0.352 (0.564)	0.856 ± 0.973 (1.74)	1.06 ± 0.355 (0.536)	2.28 ± 0.399 (0.598)	1.55 ± 0.451 (0.675)	1.48 ± 1.17 (2.05)	0.752 ± 0.468 (0.694)

Notes:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
 Radiological results are presented as activity plus or minus uncertainty with MDC.
 µS/cm = micro Siemens per centimeter
 Deg C = degrees Celsius
 ft btoc = feet below top of casing
 mg/L = milligrams per liter
 N/A = Not Applicable
 NTU = Nephelometric Turbidity Unit
 pCi/L = picoCuries per liter
 su = standard unit
 TDS = total dissolved solids
 TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient							
	MW-7D				MW-19S			
Measure Point (TOC)	302.07				293.87			
Sample Name	MW-7D	NM-MW-7D	MW-7D	NE-DUP1-08-2023	MW-19S	DUP1-POND3-MAY23	NM-MW-19S	MW-19S
Sample Date	2/10/2023	5/15/2023	8/29/2023	8/29/2023	2/10/2023	5/11/2023	5/11/2023	8/30/2023
Final Lab Report Date	3/10/2023	6/2/2023	10/25/2023	10/25/2023	3/10/2023	6/4/2023	6/4/2023	10/25/2023
Final Lab Report Revision Date	4/27/2023	6/14/2023	11/16/2023	11/16/2023	4/27/2023	-	-	11/16/2023
Final Radiation Lab Report Date	4/7/2023	7/18/2023	11/8/2023	11/8/2023	4/7/2023	7/18/2023	7/18/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	36.00	30.74	39.53	39.53	27.04	-	21.48	37.52
Temperature (Deg C)	16.27	18.5	19.45	-	17.77	-	17.9	18.49
Conductivity, Field (µS/cm)	958	1167	918	-	849	-	1009	1080
Turbidity, Field (NTU)	2.1	4.71	8.95	-	9.2	-	26.78	9.22
pH (field) (su)	7.01	6.86	6.50	-	7.02	-	6.97	6.04
Dissolved Oxygen, Field (mg/L)	5.97	0.19	4.22	-	4.47	-	0.48	1.93
Oxidation Reduction Potential (ORP), Field (mv)	-132	4.71	-70	-	88	-	169.2	135
Boron, Total (mg/L)	8.4	14	7.6	7.7	0.84	1.4	1.4	1.4
Calcium, Total (mg/L)	130	140	120	120	120	150	140	140
Chloride (mg/L)	8.2	9.4	11	11	17	17	17	15
Fluoride (mg/L)	0.635	0.555	0.75	0.74	0.354	0.532	0.538	0.68
Sulfate (mg/L)	110	130	100	100	160	250	250	300
pH (lab) (su)	7.16	7.26	-	-	7.34	7.73	7.35	-
TDS (mg/L)	600	840	-	-	640	680	670	-
Antimony, Total (mg/L)	-	< 0.0030	-	-	-	< 0.0030	< 0.0030	-
Arsenic, Total (mg/L)	0.0056	0.0048	0.0044	0.0044	0.0019	< 0.0010	< 0.0010	< 0.0010
Barium, Total (mg/L)	0.088	0.11	0.082	0.080	0.072	0.14	0.13	0.12
Beryllium, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	-	< 0.0040	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	< 0.00050	-	-	-	< 0.00050	< 0.00050	-
Lithium, Total (mg/L)	0.023	0.023	0.020	0.021	0.017	0.015	0.017	0.019
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	-	< 0.00020	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.41	0.57	0.46	0.46	0.030	0.098	0.096	0.060
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0030	< 0.0010	< 0.0010	0.0029
Thallium, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.81 ± 0.381 (0.526)	1.07 ± 0.410 (0.576)	0.732 ± 0.402 (0.657)	0.498 ± 0.389 (0.650)	0.683 ± 0.415 (0.715)	-	0.259 ± 0.326 (0.551)	1.02 ± 0.386 (0.621)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient								
	MW-20S			MW-20D			MW-21S		
Measure Point (TOC)	293.56			293.45			289.90		
Sample Name	MW-20S	NM-MW-20S	MW-20S	MW-20D	NM-MW-20D	MW-20D	MW-21S	NM-MW-21S	MW-21S
Sample Date	2/10/2023	5/11/2023	8/30/2023	2/10/2023	5/11/2023	8/30/2023	2/10/2023	5/11/2023	8/30/2023
Final Lab Report Date	3/10/2023	6/4/2023	10/25/2023	3/10/2023	6/4/2023	10/25/2023	3/10/2023	6/4/2023	10/25/2023
Final Lab Report Revision Date	4/27/2023		11/16/2023	4/27/2023		11/16/2023	4/27/2023		11/16/2023
Final Radiation Lab Report Date	4/7/2023	7/18/2023	11/8/2023	4/7/2023	-	11/8/2023	4/7/2023	7/18/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	26.13	21.03	36.92	26.19	21.11	36.90	22.52	17.27	33.49
Temperature (Deg C)	18.07	18.5	18.94	17.83	18.3	20.67	15.8	17.0	17.09
Conductivity, Field (µS/cm)	922	1000	1170	699	785	775	1080	997	976
Turbidity, Field (NTU)	18.1	9.56	3.63	66.7	7.69	9.08	9.6	12.08	4.73
pH (field) (su)	6.97	7.00	6.22	7.19	7.22	6.45	6.32	6.82	5.97
Dissolved Oxygen, Field (mg/L)	0.00	0.23	0.77	6.73	0.22	0.69	0.07	0.25	0.66
Oxidation Reduction Potential (ORP), Field (mv)	-127	-203.7	-74	-149	-186.9	-98	23	-94.9	33
Boron, Total (mg/L)	2.5	3.0	2.4	2.0	2.3	1.5	7.6	6.6	4.5
Calcium, Total (mg/L)	120	140	150	84	96	80	190	170	150
Chloride (mg/L)	14	17	16	17	19	19	11	15	15
Fluoride (mg/L)	0.630	0.640	0.81	0.670	0.768	0.89	0.506	0.683	0.98
Sulfate (mg/L)	250	230	420	130	170	180	91	92	91
pH (lab) (su)	7.08	7.34	-	7.53	7.56	-	7.27	7.27	-
TDS (mg/L)	660	620	-	500	500	-	740	570	-
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	0.0066	0.0036	0.0030	0.0028	0.0013	0.0012	0.0019	< 0.0010	< 0.0010
Barium, Total (mg/L)	0.12	0.14	0.15	0.075	0.079	0.069	0.13	0.12	0.10
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	< 0.0040	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	< 0.00050	-	-	< 0.00050	-	-	< 0.00050	-
Lithium, Total (mg/L)	0.015	0.016	0.017	0.013	0.012	0.012	0.018	0.017	0.018
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.38	0.37	0.33	0.21	0.22	0.20	0.86	0.90	0.92
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	0.955 ± 0.470 (0.845)	1.02 ± 0.368 (0.490)	1.41 ± 0.325 (0.491)	0.992 ± 0.467 (0.796)	-	0.308 ± 0.251 (0.508)	1.17 ± 0.463 (0.762)	1.46 ± 0.396 (0.615)	0.854 ± 0.453 (0.676)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

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µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

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NTU = Nephelometric Turbidity Unit

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su = standard unit

TDS = total dissolved solids

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TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient									
	MW-21D			MW-22S			MW-22D			
Measure Point (TOC)	289.95			293.66			293.54			
Sample Name	MW-21D	NM-MW-21D	MW-21D	MW-22S	NM-MW-22S	MW-22S	MW-22D	NE-DUP1-08-2022	NM-MW-22D	MW-22D
Sample Date	2/10/2023	5/11/2023	8/30/2023	2/9/2023	5/12/2023	8/30/2023	2/9/2023	2/9/2023	5/12/2023	8/30/2023
Final Lab Report Date	3/10/2023	6/4/2023	10/25/2023	2/23/2023	6/12/2023	10/25/2023	2/23/2023	2/23/2023	6/12/2023	10/25/2023
Final Lab Report Revision Date	4/27/2023		11/16/2023	3/9/2023	6/26/2023	11/16/2023	3/9/2023	3/9/2023	6/26/2023	11/16/2023
Final Radiation Lab Report Date	4/7/2023	-	11/8/2023	4/17/2023	6/20/2023	11/8/2023	4/17/2023	4/17/2023	6/20/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	27.47	17.27	33.23	26.28	20.77	-	26.78	26.78	20.73	37.20
Temperature (Deg C)	15.89	17.3	17.85	16.04	16.7	17.25	16.07	-	17.0	17.45
Conductivity, Field (µS/cm)	773	830	904	992	773	1180	915	-	952	965
Turbidity, Field (NTU)	11.6	12.02	9.37	19.6	6.03	5.44	9.9	-	2.54	3.95
pH (field) (su)	6.87	7.26	6.43	6.54	6.78	5.81	7.05	-	7.30	6.49
Dissolved Oxygen, Field (mg/L)	5.20	0.14	5.51	3.81	0.33	0.86	0.00	-	0.38	0.74
Oxidation Reduction Potential (ORP), Field (mv)	-148	-205.8	-112	164	-41.3	-13	-146	-	-184	-103
Boron, Total (mg/L)	4.0	4.3	2.5	6.5	4.3	3.3	8.4	8.4	8.1	7.6
Calcium, Total (mg/L)	110	130	120	150	100	160	130	130	130	120
Chloride (mg/L)	15	17	15	16	19	22	16	16	13	15
Fluoride (mg/L)	0.419	0.454	0.68	0.292	< 0.250	0.50	0.522	0.568	0.667	0.82
Sulfate (mg/L)	110	120	140	170	74	110	140	150	130	130
pH (lab) (su)	7.73	7.52	-	7.03	6.98	-	7.44	7.44	7.47	-
TDS (mg/L)	550	510	-	680	440	-	640	600	580	-
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-	-	-	< 0.0030	-
Arsenic, Total (mg/L)	0.0028	0.0013	0.0015	< 0.0010	< 0.0010	< 0.0010	0.0047	0.0046	0.0045	0.0041
Barium, Total (mg/L)	0.11	0.12	0.12	0.15	0.11	0.17	0.11	0.12	0.10	0.089
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	< 0.0040	-	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	0.00068	-	-	< 0.00050	-	-	-	< 0.00050	-
Lithium, Total (mg/L)	0.019	0.023	0.023	0.017	0.013	0.017	0.021	0.020	0.019	0.019
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.34	0.36	0.26	0.084	0.23	0.095	0.82	0.82	0.75	0.72
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.16 ± 0.485 (0.749)	-	1.63 ± 0.453 (0.720)	1.32 ± 1.00 (1.75)	0.744 ± 0.952 (1.84)	1.53 ± 0.425 (0.632)	1.24 ± 1.31 (2.42)	1.52 ± 1.13 (1.97)	0.982 ± 0.982 (1.78)	1.09 ± 0.401 (0.532)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Location	Downgradient							
	MW-23S		MW-24S			MW-24D		
Measure Point (TOC)	292.32		300.66			300.67		
Sample Name	MW-23S	NM-MW-23S	MW-24S	NM-MW-24S	MW-24S	MW-24D	NM-MW-24D	MW-24D
Sample Date	2/9/2023	5/12/2023	2/14/2023	5/14/2023	8/28/2023	2/14/2023	5/14/2023	8/28/2023
Final Lab Report Date	2/23/2023	6/12/2023	3/10/2023	6/2/2023	10/25/2023	3/10/2023	6/2/2023	10/25/2023
Final Lab Report Revision Date	3/9/2023	6/26/2023	-	6/14/2023	11/16/2023	-	6/14/2023	11/16/2023
Final Radiation Lab Report Date	4/17/2023	6/20/2023	4/7/2023	7/18/2023	11/8/2023	4/7/2023	7/18/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	25.97	19.79	34.74	29.69	36.12	34.70	29.67	36.56
Temperature (Deg C)	17.52	18.7	15.43	19.6	17.55	15.77	18.2	20.92
Conductivity, Field (µS/cm)	853	650	619	692	561	576	597	582
Turbidity, Field (NTU)	1.9	1.02	13.9	7.60	3.40	0.00	4.54	3.79
pH (field) (su)	6.22	6.84	6.51	6.85	7.01	6.24	6.88	7.09
Dissolved Oxygen, Field (mg/L)	5.38	1.67	0.00	0.70	0.71	0.21	0.80	1.12
Oxidation Reduction Potential (ORP), Field (mv)	218	1.5	-84	-122.5	-61	-117	-148.3	-89
Boron, Total (mg/L)	0.34	1.1	0.061	0.11	0.076	0.039	0.13	0.044
Calcium, Total (mg/L)	68	83	81	95	77	68	76	75
Chloride (mg/L)	18	19	7.4	10	8.0	8.6	9.7	9.6
Fluoride (mg/L)	< 0.250	0.366	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250
Sulfate (mg/L)	66	51	39	48	39	40	74	48
pH (lab) (su)	6.83	7.14	7.04	6.97	-	7.09	2.04	-
TDS (mg/L)	540	360	360	380	-	360	1200	-
Antimony, Total (mg/L)	-	< 0.0030	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	< 0.0010	< 0.0010	0.0040	0.0040	0.0039	0.0038	0.0033	0.0028
Barium, Total (mg/L)	0.070	0.078	0.17	0.22	0.15	0.13	0.14	0.13
Beryllium, Total (mg/L)	-	< 0.0010	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	< 0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	< 0.0040	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	< 0.00050	-	< 0.00050	-	-	< 0.00050	-
Lithium, Total (mg/L)	0.023	0.020	0.010	0.014	0.012	< 0.010	< 0.010	< 0.010
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.0076	0.023	< 0.0010	< 0.0010	< 0.0010	0.0052	0.0079	0.0034
Selenium, Total (mg/L)	0.0028	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	1.80 ± 1.08 (1.80)	1.06 ± 0.827 (1.60)	1.08 ± 0.398 (0.573)	1.31 ± 0.432 (0.631)	0.984 ± 0.337 (0.548)	1.67 ± 0.596 (0.646)	0.663 ± 0.437 (0.716)	0.648 ± 0.318 (0.464)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

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su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient					
	MW-25S			MW-25D		
Measure Point (TOC)	299.35			299.25		
Sample Name	MW-25S	NM-MW-25S	MW-25S	MW-25D	NM-MW-25D	MW-25D
Sample Date	2/13/2023	5/15/2023	8/29/2023	2/13/2023	5/15/2023	8/28/2023
Final Lab Report Date	3/10/2023	6/2/2023	10/25/2023	3/10/2023	6/2/2023	10/25/2023
Final Lab Report Revision Date	-	6/14/2023	11/16/2023	-	6/14/2023	11/16/2023
Final Radiation Lab Report Date	4/7/2023	7/18/2023	11/8/2023	4/7/2023	7/18/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-
Depth to Water (ft btoc)	33.50	28.52	35.24	33.33	28.29	34.95
Temperature (Deg C)	16.11	19.4	17.15	16.17	18.6	28.99
Conductivity, Field (µS/cm)	646	650	622	535	524	422
Turbidity, Field (NTU)	84.1	2.60	0.94	22.3	2.62	2.77
pH (field) (su)	6.44	6.54	5.97	6.74	6.79	7.07
Dissolved Oxygen, Field (mg/L)	0.00	0.36	1.14	0.10	0.21	2.91
Oxidation Reduction Potential (ORP), Field (mv)	-96	-134.2	-33	-134	-17.2	-85
Boron, Total (mg/L)	0.033	0.060	0.046	0.067	0.11	0.063
Calcium, Total (mg/L)	67	68	62	54	54	55
Chloride (mg/L)	17	20	20	9.3	10	9.7
Fluoride (mg/L)	< 0.250	< 0.250	< 0.250	0.309	0.308	0.51
Sulfate (mg/L)	71	69	77	38	40	42
pH (lab) (su)	6.67	7.05	-	6.87	6.85	-
TDS (mg/L)	320	350	-	300	240	-
Antimony, Total (mg/L)	-	< 0.0030	-	-	< 0.0030	-
Arsenic, Total (mg/L)	0.0058	0.0052	0.0044	0.0040	0.0036	0.0030
Barium, Total (mg/L)	0.35	0.32	0.30	0.12	0.12	0.13
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-
Chromium, Total (mg/L)	-	< 0.0040	-	-	< 0.0040	-
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	< 0.00050	-	-	< 0.00050	-
Lithium, Total (mg/L)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Mercury, Total (mg/L)	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-
Molybdenum, Total (mg/L)	0.011	0.028	0.013	0.0063	0.014	0.0066
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-
Radium 226 & 228 Combined (pCi/L)	2.00 ± 0.547 (0.626)	0.951 ± 0.486 (0.650)	1.13 ± 0.506 (0.713)	0.904 ± 0.420 (0.577)	0.973 ± 0.448 (0.647)	4.13 ± 0.828 (0.525)

Notes:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
Radiological results are presented as activity plus or minus uncertainty with MDC.
µS/cm = micro Siemens per centimeter
Deg C = degrees Celsius
ft btoc = feet below top of casing
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TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Location	Downgradient								
	MW-26S				MW-26D				
Measure Point (TOC)	298.96				298.92				
Sample Name	MW-26S	NE-DUP2-08-2022	NM-MW-26S	DUP2-POND3-MAY23	MW-26S	MW-26D	NM-MW-26D	MW-26D	NE-DUP2-08-2023
Sample Date	2/15/2023	2/15/2023	5/12/2023	5/12/2023	8/29/2023	2/15/2023	5/15/2023	8/29/2023	8/29/2023
Final Lab Report Date	3/9/2023	3/9/2023	6/12/2023	6/12/2023	10/25/2023	3/9/2023	6/2/2023	10/25/2023	10/25/2023
Final Lab Report Revision Date	-	-	6/26/2023	6/26/2023	11/16/2023	-	6/14/2023	11/16/2023	11/16/2023
Final Radiation Lab Report Date	3/28/2023	3/28/2023	6/20/2023	6/20/2023	11/8/2023	3/28/2023	7/18/2023	11/8/2023	11/8/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	32.68	-	27.90	-	36.86	32.53	27.44	36.73	36.73
Temperature (Deg C)	18.19	-	19.1	-	18.47	18.26	18.9	19.41	-
Conductivity, Field (µS/cm)	978	-	1078	-	898	1200	1063	1120	-
Turbidity, Field (NTU)	9.9	-	3.16	-	5.13	61.5	2.57	3.59	-
pH (field) (su)	6.65	-	6.63	-	6.30	6.74	6.96	6.48	-
Dissolved Oxygen, Field (mg/L)	0.00	-	0.48	-	0.54	0.15	0.28	0.73	-
Oxidation Reduction Potential (ORP), Field (mv)	7	-	-3.2	-	61	-127	-160.6	-66	-
Boron, Total (mg/L)	5.4	5.9	8.9	8.9	5.1	15	14	13	0.034
Calcium, Total (mg/L)	140	140	150	150	120	150	130	130	64
Chloride (mg/L)	4.6	5.2	5.5	5.7	3.5	9.8	14	9.8	19
Fluoride (mg/L)	0.583	0.586	0.649	0.676	0.81	0.616	0.705	0.76	< 0.250
Sulfate (mg/L)	110	120	200	200	99	290	130	250	76
pH (lab) (su)	6.90	6.91	6.96	6.93	-	7.06	7.35	-	-
TDS (mg/L)	600	620	940	920	-	830	730	-	-
Antimony, Total (mg/L)	-	-	< 0.0030	< 0.0030	-	-	< 0.0030	-	-
Arsenic, Total (mg/L)	0.0022	0.0023	0.0017	0.0017	0.0023	0.0055	0.0045	0.0049	0.0044
Barium, Total (mg/L)	0.074	0.075	0.090	0.091	0.082	0.098	0.086	0.091	0.31
Beryllium, Total (mg/L)	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-
Cadmium, Total (mg/L)	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-
Chromium, Total (mg/L)	-	-	< 0.0040	< 0.0040	-	-	< 0.0040	-	-
Cobalt, Total (mg/L)	0.0031	0.0030	0.0040	0.0040	0.0024	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	-	-	< 0.00050	< 0.00050	-	-	< 0.00050	-	-
Lithium, Total (mg/L)	0.018	0.019	0.022	0.022	0.020	0.020	0.020	0.023	< 0.010
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	-	-
Molybdenum, Total (mg/L)	0.90	0.95	1.2	1.2	0.87	0.70	0.72	0.78	0.014
Selenium, Total (mg/L)	< 0.0010	< 0.0010	0.0015	0.0017	0.0025	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-
Radium 226 & 228 Combined (pCi/L)	0.809 ± 0.546 (1.00)	0.557 ± 0.559 (0.961)	1.11 ± 0.877 (1.64)	1.58 ± 1.12 (1.85)	3.85 ± 0.785 (0.606)	0.447 ± 0.641 (1.10)	0.988 ± 0.360 (0.552)	2.60 ± 0.577 (0.630)	1.88 ± 0.487 (0.647)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Location	Downgradient									
	HAB-21-OWN			HAB-22-OWN				HAB-24-OWN		
Measure Point (TOC)	321.03			310.42				314.31		
Sample Name	HAB-21-OWN	HAB-21-OWN	HAB-21-OWN	HAB-22-OWN	HAB-22-OWN	HAB-22-OWN	DUP1-POND3-AUG23	HAB-24-OWN	HAB-24-OWN	HAB-24-OWN
Sample Date	2/27/2023	5/10/2023	8/29/2023	2/28/2023	5/17/2023	8/29/2023	8/29/2023	3/3/2023	5/16/2023	8/30/2023
Final Lab Report Date	3/27/2023	6/2/2023	10/2/2023	3/21/2023	6/4/2023	10/2/2023	10/2/2023	3/27/2023	6/2/2023	10/2/2023
Final Lab Report Revision Date	-	6/20/2023	-	-	-	-	-	-	6/14/2023	-
Final Radiation Lab Report Date	4/7/2023	7/18/2023	10/27/2023	4/7/2023	7/14/2023	10/27/2023	10/27/2023	4/7/2023	7/17/2023	10/27/2023
Final Radiation Lab Report Revision Date	7/28/2023	-	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	51.91	52.86	67.89	44.61	41.50	51.98	51.98	44.44	44.24	62.62
Temperature (Deg C)	20.3	21.5	22.57	16.9	20.4	19.81	-	17.1	20.0	22.24
Conductivity, Field (µS/cm)	866	844	733	688	657	646	-	1029	1021	821
Turbidity, Field (NTU)	6.22	36.42	18.1	52.82	34.35	4.4	-	10.45	8.21	4.0
pH (field) (su)	7.59	7.47	8.15	7.04	6.93	7.01	-	6.93	6.8	7.90
Dissolved Oxygen, Field (mg/L)	-	4.59	4.92	-	0.13	4.67	-	-	7.53	5.89
Oxidation Reduction Potential (ORP), Field (mv)	-	81.3	136	-	-170.6	24	-	-	31.1	153
Boron, Total (mg/L)	1.0	1.1	1.1	2.6	2.5	3.6	3.6	2.6	2.7	2.9
Calcium, Total (mg/L)	110	110	110	86	81	88	87	150	150	140
Chloride (mg/L)	16	16	17	16	17	17	17	15	17	17
Fluoride (mg/L)	0.388	0.316	0.403	0.658	0.644	0.707	0.687	0.595	0.580	1.13
Sulfate (mg/L)	230	260	270	87	86	84	80	200	180	200
pH (lab) (su)	7.77	7.77	7.73	7.25	7.41	7.06	7.18	7.07	7.33	7.51
TDS (mg/L)	540	540	630	420	400	460	470	660	650	660
Antimony, Total (mg/L)	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Arsenic, Total (mg/L)	0.0036	0.0036	0.0013	0.020	0.022	0.0044	0.0048	0.0012	< 0.0010	< 0.0010
Barium, Total (mg/L)	0.072	0.065	0.075	0.12	0.092	0.12	0.12	0.14	0.15	0.12
Beryllium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cadmium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chromium, Total (mg/L)	< 0.0040	< 0.0040	< 0.0040	0.0056	0.0054	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	< 0.00050	< 0.00050	< 0.0010	0.0023	0.0011	< 0.0010	< 0.0010	< 0.00050	< 0.00050	< 0.0010
Lithium, Total (mg/L)	0.013	0.012	< 0.010	0.014	0.012	0.011	0.011	0.020	0.021	0.015
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Molybdenum, Total (mg/L)	0.13	-	0.13	0.59	0.61	0.37	0.37	0.23	0.25	0.65
Selenium, Total (mg/L)	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0010	0.0021	0.0022	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Radium 226 & 228 Combined (pCi/L)	1.25 ± 0.594 (0.695)	2.30 ± 0.471 (0.507)	1.92 ± 0.313 (0.469)	0.966 ± 0.381 (0.494)	1.32 ± 0.444 (0.580)	1.21 ± 0.573 (0.673)	1.57 ± 0.387 (0.568)	1.06 ± 0.491 (0.850)	0.815 ± 0.387 (0.534)	2.15 ± 0.420 (0.496)

Notes:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
 Radiological results are presented as activity plus or minus uncertainty with MDC.
 µS/cm = micro Siemens per centimeter
 Deg C = degrees Celsius
 ft btoc = feet below top of casing
 mg/L = milligrams per liter
 N/A = Not Applicable
 NTU = Nephelometric Turbidity Unit
 pCi/L = picoCuries per liter
 su = standard unit
 TDS = total dissolved solids
 TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
 ASSOCIATED ELECTRIC COOPERATIVE, INC.
 NEW MADRID POWER PLANT - POND 003
 MARSTON, MISSOURI

Location	HAB-26-OWN				HAB-27-OWN		HAB-28-OWN		
	313.90				306.27		311.45		
Measure Point (TOC)									
Sample Name	HAB-26-OWN	HAB-26-OWN	HAB-26-OWN	DUP2-POND3-AUG23	HAB-27-OWN	HAB-27-OWN	HAB-28-OWN	HAB-28-OWN	HAB-28-OWN
Sample Date	3/3/2023	5/18/2023	8/29/2023	8/29/2023	3/1/2023	5/16/2023	3/1/2023	5/17/2023	8/30/2023
Final Lab Report Date	3/27/2023	6/12/2023	10/2/2023	10/2/2023	3/27/2023	6/2/2023	3/27/2023	6/4/2023	10/2/2023
Final Lab Report Revision Date	-	6/14/2023	-	-	-	6/14/2023	-	-	-
Final Radiation Lab Report Date	4/7/2023	6/14/2023	10/27/2023	10/27/2023	4/7/2023	7/17/2023	4/7/2023	7/14/2023	10/27/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-	-	-	-
Depth to Water (ft btoc)	47.32	44.78	55.04	55.04	38.25	35.67	43.89	41.14	53.67
Temperature (Deg C)	14.7	24.5	24.11	-	17.1	18.5	21	20.8	21.19
Conductivity, Field (µS/cm)	1297	1669	1620	-	899	937	1358	1209	968
Turbidity, Field (NTU)	3.34	15.56	10.9	-	20.76	12.68	29.89	4.24	4.0
pH (field) (su)	7.25	7.12	7.57	-	6.93	6.86	7.04	6.95	7.48
Dissolved Oxygen, Field (mg/L)	-	0.23	0.07	-	-	7.57	-	1.35	3.53
Oxidation Reduction Potential (ORP), Field (mv)	-	-128.6	-62	-	-	50.7	-	-46.1	132
Boron, Total (mg/L)	12	20	16	15	6.0	5.8	7.1	6.9	6.7
Calcium, Total (mg/L)	150	170	170	170	130	150	190	170	150
Chloride (mg/L)	12	5.9	3.7	3.7	15	18	11	4.2	12
Fluoride (mg/L)	1.11	1.00	1.09	1.10	0.741	0.743	0.434	0.592	0.436
Sulfate (mg/L)	300	300	270	270	120	120	210	210	150
pH (lab) (su)	7.33	7.74	7.47	7.54	7.22	7.27	7.32	7.43	7.23
TDS (mg/L)	870	1300	1200	1100	1400	600	900	810	760
Antimony, Total (mg/L)	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Arsenic, Total (mg/L)	0.0035	0.0099	0.012	0.012	0.0013	< 0.0010	0.0019	< 0.0010	< 0.0010
Barium, Total (mg/L)	0.090	0.20	0.092	0.088	0.10	0.12	0.14	0.12	0.12
Beryllium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cadmium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chromium, Total (mg/L)	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Cobalt, Total (mg/L)	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	< 0.00050	< 0.00050	< 0.0010	< 0.0010	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010
Lithium, Total (mg/L)	0.020	0.023	0.022	0.021	0.019	0.018	0.036	0.034	0.045
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Molybdenum, Total (mg/L)	1.1	1.1	1.1	1.2	0.41	0.48	0.63	0.62	0.35
Selenium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0011	0.0012	0.0030	< 0.0010	0.0013
Thallium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Radium 226 & 228 Combined (pCi/L)	0.400 ± 0.498 (0.851)	1.55 ± 0.376 (0.575)	2.65 ± 0.405 (0.456)	2.43 ± 0.290 (0.496)	0.432 ± 0.380 (0.546)	1.25 ± 0.396 (0.614)	1.54 ± 0.457 (0.464)	0.666 ± 0.430 (0.719)	3.57 ± 0.749 (0.602)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE III
SUMMARY OF 2023 NATURE AND EXTENT ANALYTICAL RESULTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Location	Downgradient					
	HAB-29-OWN			HAB-30-OWN		
Measure Point (TOC)	306.56			307.83		
Sample Name	HAB-29-OWN	HAB-29-OWN (A)	HAB-29-OWN(A)	HAB-30-OWN	HAB-30-OWN	HAB-30-OWN
Sample Date	3/2/2023	5/18/2023	8/29/2023	3/2/2023	5/18/2023	8/29/2023
Final Lab Report Date	3/27/2023	6/12/2023	10/2/2023	3/27/2023	6/12/2023	10/2/2023
Final Lab Report Revision Date	-	6/14/2023	-	-	6/14/2023	-
Final Radiation Lab Report Date	4/7/2023	6/14/2023	10/27/2023	4/7/2023	6/14/2023	10/27/2023
Final Radiation Lab Report Revision Date	-	-	-	-	-	-
Depth to Water (ft btoc)	41.49	38.02	46.68	41.65	38.75	48.78
Temperature (Deg C)	16.1	18.0	19.50	17	19.2	22.50
Conductivity, Field (µS/cm)	1271	1671	1820	1191	994	761
Turbidity, Field (NTU)	22.67	12.15	5.2	39.29	24.89	34.3
pH (field) (su)	6.87	6.76	6.77	7.00	7.00	7.34
Dissolved Oxygen, Field (mg/L)	-	0.17	0.23	-	0.25	0.99
Oxidation Reduction Potential (ORP), Field (mv)	-	-5.1	76	-	-13.7	118
Boron, Total (mg/L)	7.3	7.7	5.8	5.8	6.1	4.6
Calcium, Total (mg/L)	180	260	270	170	140	120
Chloride (mg/L)	6.3	5.4	< 5.0	11	16	13
Fluoride (mg/L)	0.374	0.375	0.386	0.268	< 1.25	0.331
Sulfate (mg/L)	120	130	110	140	110	100
pH (lab) (su)	7.05	7.40	7.20	7.14	7.68	7.38
TDS (mg/L)	740	1100	1200	710	640	570
Antimony, Total (mg/L)	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Arsenic, Total (mg/L)	0.0039	0.0011	< 0.0010	0.0028	0.0020	< 0.0010
Barium, Total (mg/L)	0.15	0.17	0.14	0.19	0.18	0.16
Beryllium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cadmium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chromium, Total (mg/L)	< 0.0040	0.0050	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Cobalt, Total (mg/L)	< 0.0020	0.0048	0.0021	< 0.0020	< 0.0020	< 0.0020
Lead, Total (mg/L)	< 0.00050	< 0.00050	< 0.0010	0.00086	0.00078	< 0.0010
Lithium, Total (mg/L)	0.064	0.073	0.073	0.053	0.045	0.045
Mercury, Total (mg/L)	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Molybdenum, Total (mg/L)	0.18	0.21	0.17	0.094	0.075	0.073
Selenium, Total (mg/L)	< 0.0010	< 0.0010	0.084	< 0.0010	< 0.0010	< 0.0010
Thallium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Radium 226 & 228 Combined (pCi/L)	0.139 ± 0.418 (0.714)	1.72 ± 0.443 (0.636)	3.70 ± 0.616 (0.699)	1.98 ± 0.613 (0.699)	0.777 ± 0.398 (0.632)	2.84 ± 0.507 (0.486)

Notes:

Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

N/A = Not Applicable

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE IV
BACKGROUND CONCENTRATIONS AND GROUNDWATER PROTECTION STANDARDS
DETECTED APPENDIX IV CONSTITUENTS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - POND 003
MARSTON, MISSOURI

Constituent	Background Concentration (UTL)	Groundwater Protection Standard
Arsenic (mg/L)	0.0099	0.010*
Barium (mg/L)	0.800	2*
Cobalt (mg/L)	0.005	0.006**
Fluoride (mg/L)	1.710	4.0*
Lithium (mg/L)	0.033	0.040**
Mercury (mg/L)	0.00087	0.002*
Molybdenum (mg/L)	0.010	0.100**
Radium 226 & 228 (pCi/L)	2.47	5*
Selenium (mg/L)	0.0012	0.05*

Notes:

1. Groundwater Protection Standards listed were utilized for statistical analyses for the September 2022 and February 2023 semi-annual assessment monitoring sampling events.

* Value set equal to the maximum contaminant level.

** Value set based on 40 CFR § 257.95(h)(1)

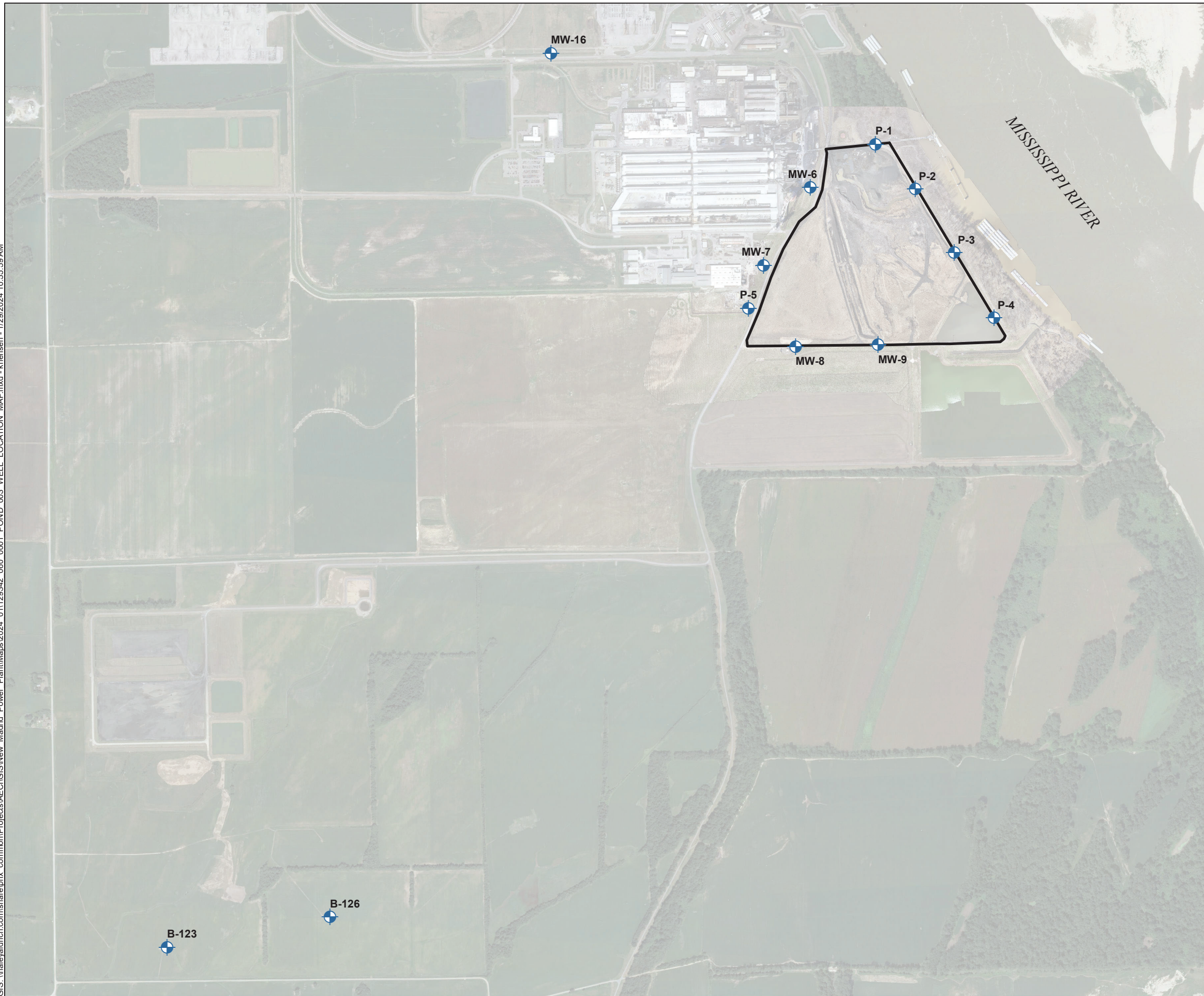
mg/L = milligrams per liter

pCi/L = picoCuries per liter



UTL = upper tolerance limit

FIGURES

GIS: \\haleyaldrich.com\share\pghx_common\Projects\AEC\GIS\New Madrid Power Plant\Maps\2024_01\129342_060_0001_POND_003_WELL_LOCATION_MAP.mxd - khensen - 1/29/2024 10:55:59 AM

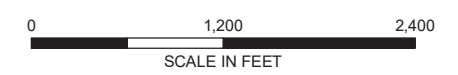


LEGEND

-  MONITORING WELL
-  POND 003 BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: GOOGLE EARTH, 6 SEPTEMBER 2021, AND UNMANNED AERIAL VEHICLE (UAV), 2 JUNE 2023



HALEY ALDRICH ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER GENERATING FACILITY
NEW MADRID COUNTY, MISSOURI

POND 003 MONITORING WELL LOCATION MAP




aeci JANUARY 2024

FIGURE 1

GIS: \\haleyaldrich.com\share\pghx_common\Projects\AEC\GIS\New Madrid Power Plant\Maps\2024_01\129342_060_002_POND_003_N&E_GROUNDWATER_MONITORING_WELL_LOCATION_MAP.mxd - 1/29/2024 11:03:50 AM



LEGEND

-  NEW NATURE AND EXTENT MONITORING WELL
-  NATURE AND EXTENT MONITORING WELL
-  POND 003 BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. LOCATIONS OF NEW NATURE AND EXTENT MONITORING WELLS MW-71, MW-7L, MW-20L, AND MW-22L ARE APPROXIMATE AND WILL BE UPDATED ONCE A SURVEY HAS BEEN COMPLETED.
3. AERIAL IMAGERY SOURCE: GOOGLE EARTH, 6 SEPTEMBER 2021, AND UNMANNED AERIAL VEHICLE (UAV), 2 JUNE 2023



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