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2019 – 2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

LINED POND
NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Associated Electric Cooperative, Inc.
Springfield, Missouri

File No. 129342-029
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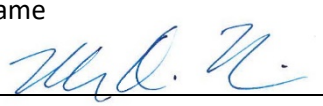

Signature

31 July 2020
Date

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1. Introduction

This 2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the inactive Lined Pond at the New Madrid Power Plant (NMPP), operated by Associated Electric Cooperative, Inc. (AECI). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule, specifically Code of Federal Regulations Title 40 (40 CFR), subsections 257.90(e) and 257.100(e), effective 19 October 2015 (Rule), including subsequent revisions. Due to the USEPA Response to Partial Vacatur effective 4 October 2016, AECI prepared and placed in the facility's operating record a notification of intent to initiate closure of the Lined Pond by 17 December 2015, in accordance with the requirement under § 257.100(e)(1). Therefore, the alternative reporting timeframes specified in § 257.100(e)(2) through (6) are applicable for the Lined Pond.

This Annual Report documents the groundwater monitoring system for the Lined Pond which is consistent with applicable sections of §§ 257.90 through 257.98, describes activities conducted between July 2019 and June 2020, and documents compliance with the Rule. The specific requirements listed in § 257.90(e)(1) through (5) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

Except as provided for in § 257.100 for inactive CCR surface impoundments, 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) of this section.

AECI has installed and certified a groundwater monitoring system at the Lined Pond at the NMPP. The Lined Pond 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 § 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).

40 CFR 257.100(e)(5)(ii)
No later than August 1, 2019, prepare the initial groundwater monitoring and corrective action report as set forth in § 257.90(e)

This Annual Report describes monitoring completed and actions taken at the NMPP Lined Pond as required by the Rule. Groundwater sampling and analysis was conducted in accordance with requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed from July 2019 through June 2020.

2.2.1 Status of the Groundwater Monitoring Program

Results of the detection monitoring statistical analysis completed in July 2019 identified 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 December 2019, and AECI is currently implementing an assessment monitoring program. The detection monitoring SSIs identified are described below in Section 2.3.4.

2.2.2 Key Actions Completed

The 2018 – 2019 Annual Groundwater Monitoring and Corrective Action Report was completed in July 2019. Statistical evaluation was completed in July 2019 on analytical data from the March 2019 detection monitoring sampling event. Appendix III SSIs were determined in July 2019; an alternative source demonstration was not successful.

An initial annual assessment monitoring sampling event was completed in December 2019 to identify detected Appendix IV constituents for subsequent semi-annual sampling events. Groundwater protection standards for detected Appendix IV constituents were established at this time. Semi-annual assessment monitoring was completed in February 2020 for detected Appendix IV constituents identified during the December 2019 annual monitoring event. Statistical analysis of the results from the February 2020 semi-annual assessment monitoring sampling event are due to be completed in July 2020 and will be reported in the next annual report.

2.2.3 Problems Encountered

No problems (i.e., problems could include damaged wells, issues with sample collection or lack of sampling, or problems with analytical analysis) were encountered at the NMPP Lined Pond from July 2019 through June 2020.

2.2.4 Actions to Resolve Problems

No problems were encountered at the NMPP Lined Pond from July 2019 through June 2020; therefore, no actions to resolve the problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for July 2020 through June 2021 include the 2019 – 2020 Annual Groundwater Monitoring and Corrective Action Report, statistical analysis of assessment monitoring analytical data collected in February 2020, and semi-annual assessment monitoring and subsequent statistical analyses, and annual assessment monitoring.

2.3 40 CFR § 257.90(e) – 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 § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the Lined Pond is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for AECI, which was placed in the facility's operating record by 17 April 2019 as required by § 257.105(h)(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;

No monitoring wells were installed or decommissioned from July 2019 to June 2020.

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 § 257.95(b), two independent assessment monitoring samples were collected from each background and downgradient well in December 2019 and February 2020. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the NMPP Lined Pond is presented in Table I of this report.

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

Initial detection monitoring statistical analyses were completed in July 2019 on groundwater samples collected in March 2019 in accordance with § 257.94(b). The analyte concentrations from the downgradient wells for each of the Appendix III constituents from the detection monitoring sampling event from each location were compared to their respective prediction limit (PL). A sample concentration greater than the PL is considered to represent a SSI. A SSI over background levels for one or more constituents listed in Appendix III were identified. A summary of the Appendix III SSIs identified in July 2019 is provided in Table II.

A successful demonstration that a source other than the CCR unit caused the SSI over background levels was not completed within 90 days of the SSI determination in accordance with 40 CFR §257.94(e)(2), and the assessment monitoring program was established by December 2019. The assessment monitoring program has been established to meet the requirements of 40 CFR §257.95.

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 §§ 257.90 through 257.95 of the Rule. It is understood that there are supplemental references in §§ 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 from July 2019 through June 2020.

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.

A successful alternate source demonstration (ASD) for detection monitoring SSIs was not completed within 90 days for this unit; therefore, no demonstration 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 has been implemented at the CCR unit since December 2019. Two rounds of assessment monitoring sampling were completed between July 2019 and June 2020. Analytical results for both downgradient and upgradient wells are provided in Table I. The background concentrations (upper tolerance limits) and groundwater protection standards established for detected Appendix IV constituents for the Lined Pond are included in Table III. The background concentrations and groundwater protection standards provided in Table III will be utilized for the statistical evaluations completed for the February 2020 semi-annual assessment monitoring sampling event.

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.

No assessment monitoring ASD or certification was completed prior to July 2020. The NMPP Lined Pond remained in assessment monitoring from December 2019 through June 2020.

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.

No assessment of corrective measures was required to be initiated from July 2019 through June 2020; 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 § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to § 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 in the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the AECI CCR website within 30 days of this Annual Report being placed in the facility's operating record [§ 257.107(d)].

TABLES

TABLE I

SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING

ASSOCIATED ELECTRIC COOPERATIVE, INC.

NEW MADRID POWER PLANT - LINED POND

NEW MADRID, MISSOURI

Location	Upgradient					
	MW-16		B-123		B-126	
Measure Point (TOC)	292.853		292.7		293.63	
Sample Name	MW-16	MW-16	B-123	B-123	B-126	B-126
Sample Date	12/19/2019	2/21/2020	12/18/2019	2/21/2020	12/18/2019	2/21/2020
Lab Data Reviewed and Accepted	1/27/2020	3/31/2020	1/27/2020	3/31/2020	1/27/2020	3/31/2020
Depth to Water (ft btoc)	17.18	10.90	13.78	11.00	18.85	12.68
Temperature (Deg C)	17.25	16.95	16.46	16.26	16.84	16.56
Conductivity (µS/cm)	869	804	640	616	444	417
Turbidity (NTU)	0.0	0.0	0.0	90.7	99.9	98.7
Boron, Total (mg/L)	--	**0.064**	--	**0.029**	--	**0.031**
Calcium, Total (mg/L)	--	**120**	--	**62**	--	**62**
Chloride (mg/L)	--	**13**	--	**3.1**	--	**3.9**
Fluoride (mg/L)	--	**1.68**	--	**0.457**	--	**0.376**
Sulfate (mg/L)	--	**56**	--	**28**	--	**27**
pH (su)	--	**7.08**	--	**7.43**	--	**7.07**
TDS (mg/L)	--	**510**	--	**270**	--	**230**
Antimony, Total (mg/L)	< 0.0030	--	< 0.0030	--	< 0.0030	--
Arsenic, Total (mg/L)	**0.0022**	**0.0024**	**0.0018**	**0.0041**	**0.0052**	**0.0040**
Barium, Total (mg/L)	**0.59**	**0.56**	**0.18**	**0.18**	**0.20**	**0.18**
Beryllium, Total (mg/L)	< 0.0010	--	< 0.0010	--	< 0.0010	--
Cadmium, Total (mg/L)	< 0.00089	--	< 0.00089	--	< 0.00089	--
Chromium, Total (mg/L)	< 0.0040	--	< 0.0040	--	<0.0040	--
Cobalt, Total (mg/L)	<0.00086	<0.00086	< 0.00086	<0.00086	**0.0012**	**0.00086**
Lead, Total (mg/L)	<0.0010	<0.0010	< 0.0010	<0.0010	**0.0010**	<0.0010
Lithium, Total (mg/L)	**0.031**	**0.030**	**0.032**	**0.017**	<0.020	**0.018**
Molybdenum, Total (mg/L)	<0.0010	<0.0010	**0.0040**	<0.0010	< 0.0010	<0.0010
Selenium, Total (mg/L)	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010
Thallium, Total (mg/L)	<0.0010	--	< 0.0010	--	< 0.0010	--
Mercury, Total (mg/L)	< 0.00020	--	< 0.00020	--	< 0.00020	--
Fluoride (mg/L)	--	**1.68**	--	**0.457**	--	**0.376**
Radium-226 & 228 Combined (pCi/L)	0.991 ±0.876 (1.50)	**1.26 +/- 0.793 (1.19)**	0.195 ± 0.601 (1.15)	0.892 +/- 0.810 (1.39)	0.832 ±0.717 (0.886)	0.469 +/- 0.556 (1.03)

TABLE I

SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING

ASSOCIATED ELECTRIC COOPERATIVE, INC.

NEW MADRID POWER PLANT - LINED POND

NEW MADRID, MISSOURI

Location	Downgradient							
	P-6				P-7		MW-8	
Measure Point (TOC)	310.88				308.6		310.628	
Sample Name	P-6	Duplicate	P-6	Duplicate	P-7	P-7	MW-8	MW-8
Sample Date	12/18/2019	12/18/2019	2/19/2020	2/19/2020	12/18/2019	2/19/2020	12/19/2019	2/19/2020
Lab Data Reviewed and Accepted	1/27/2020	1/27/2020	3/31/2020	3/31/2020	1/27/2020	3/31/2020	1/27/2020	3/31/2020
Depth to Water (ft btoc)	33.70	--	25.40	--	31.24	24.13	33.78	27.10
Temperature (Deg C)	16.62	--	16.99	--	15.81	15.93	16.82	17.00
Conductivity (µS/cm)	960	--	795	--	927	899	1358	1305
Turbidity (NTU)	0.0	--	0.0	--	0.00	0.0	0.0	0.0
Boron, Total (mg/L)	--	--	**1.9**	**1.9**	--	**0.064**	--	**33**
Calcium, Total (mg/L)	--	--	**140**	**140**	--	**160**	--	**210**
Chloride (mg/L)	--	--	**9.1**	**9.1**	--	**8.3**	--	**5.7**
Fluoride (mg/L)	--	--	<0.250	<0.250	--	<0.250	--	**0.289**
Sulfate (mg/L)	--	--	**28**	**29**	--	**86**	--	**290**
pH (su)	--	--	**6.98**	**6.96**	--	**6.97**	--	**7.21**
TDS (mg/L)	--	--	**450**	**440**	--	**550**	--	**880**
Antimony, Total (mg/L)	<0.0030	<0.0030	--	--	< 0.0030	--	< 0.0030	--
Arsenic, Total (mg/L)	< 0.0010	< 0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	**0.0045**	**0.0064**
Barium, Total (mg/L)	**0.22**	**0.22**	**0.18**	**0.18**	**0.30**	**0.29**	**0.095**	**0.097**
Beryllium, Total (mg/L)	< 0.0010	< 0.0010	--	--	< 0.0010	--	< 0.0010	--
Cadmium, Total (mg/L)	< 0.00089	< 0.00089	--	--	< 0.00089	--	<0.00089	--
Chromium, Total (mg/L)	< 0.0040	< 0.0040	--	--	<0.0040	--	<0.0040	--
Cobalt, Total (mg/L)	**0.0011**	**0.0011**	**0.0013**	**0.0014**	< 0.00086	<0.00086	**0.0018**	<0.00086
Lead, Total (mg/L)	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010
Lithium, Total (mg/L)	**0.030**	**0.029**	**0.023**	**0.022**	**0.025**	**0.020**	**0.029**	**0.024**
Molybdenum, Total (mg/L)	< 0.0010	0.002	<0.0010	<0.0010	**0.0011**	**0.0010**	**0.87**	**1.5**
Selenium, Total (mg/L)	< 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	--	<0.0010	--
Mercury, Total (mg/L)	< 0.00020	0.00025	--	--	< 0.00020	--	<0.00020	--
Fluoride (mg/L)	--	--	<0.250	<0.250	--	<0.250	--	**0.289**
Radium-226 & 228 Combined (pCi/L)	0.727 ± 0.965 (1.70)	1.04 ± 0.757 (1.20)	1.24 ± 0.840 (1.43)	0.224 ± 0.818 (1.93)	0.605 ± 1.01 (1.86)	1.18 ± 0.894 (1.55)	0.852 ± 0.823 (1.43)	0.902 +/- 0.689 (1.21)

TABLE I

SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING

ASSOCIATED ELECTRIC COOPERATIVE, INC.

NEW MADRID POWER PLANT - LINED POND

NEW MADRID, MISSOURI

Location	Downgradient					
	MW-9		MW-17		MW-18	
Measure Point (TOC)	310.237		299.197		301.19	
Sample Name	MW-9	MW-9	MW-17	MW-17	MW-18	MW-18
Sample Date	12/18/2019	2/19/2020	12/18/2019	2/19/2020	12/19/2019	2/19/2020
Lab Data Reviewed and Accepted	1/27/2020	3/31/2020	1/27/2020	3/31/2020	1/27/2020	3/31/2020
Depth to Water (ft btoc)	33.48	25.53	22.08	16.72	24.48	26.43
Temperature (Deg C)	17.10	17.39	15.06	16.17	15.25	16.3
Conductivity (µS/cm)	832	883	656	629	528	491
Turbidity (NTU)	0.0	0.0	46.00	0.00	99.9	0.0
Boron, Total (mg/L)	--	**2.6**	--	**0.028**	--	**0.025**
Calcium, Total (mg/L)	--	**130**	--	**91**	--	**65**
Chloride (mg/L)	--	**22**	--	**9.1**	--	**12**
Fluoride (mg/L)	--	**0.380**	--	<0.250	--	**0.329**
Sulfate (mg/L)	--	**100**	--	**35**	--	**36**
pH (su)	--	**7.12**	--	**6.97**	--	**6.91**
TDS (mg/L)	--	**480**	--	**400**	--	**270**
Antimony, Total (mg/L)	< 0.0030	--	< 0.0030	--	< 0.0030	--
Arsenic, Total (mg/L)	< 0.0010	<0.0010	**0.0027**	**0.0028**	**0.001**	<0.0010
Barium, Total (mg/L)	**0.080**	**0.088**	**0.27**	**0.27**	**0.16**	**0.14**
Beryllium, Total (mg/L)	< 0.0010	--	< 0.0010	--	<0.0010	--
Cadmium, Total (mg/L)	< 0.00089	--	< 0.00089	--	< 0.00089	--
Chromium, Total (mg/L)	< 0.0040	--	< 0.0040	--	< 0.0040	--
Cobalt, Total (mg/L)	< 0.00086	<0.00086	< 0.00086	<0.00086	**0.0047**	**0.0019**
Lead, Total (mg/L)	< 0.0010	<0.0010	< 0.0010	<0.0010	**0.0016**	<0.0010
Lithium, Total (mg/L)	**0.038**	**0.034**	**0.02**	<0.020	<0.020	<0.020
Molybdenum, Total (mg/L)	**0.29**	**0.30**	< 0.0010	<0.0010	< 0.0010	<0.0010
Selenium, Total (mg/L)	< 0.0010	<0.0010	< 0.0010	<0.0010	**0.0054**	<0.0010
Thallium, Total (mg/L)	< 0.0010	--	< 0.0010	--	0.001	--
Mercury, Total (mg/L)	< 0.00020	--	<0.00020	--	<0.00020	--
Fluoride (mg/L)	--	**0.380**	--	<0.250	--	**0.329**
Radium-226 & 228 Combined (pCi/L)	0.835 ± 0.756 (1.35)	0.511 +/- 0.660 (1.39)	0.992 ±0.907 (1.57)	**1.65 ± 1.08 (1.64)**	0.878 ±0.923 (1.60)	0.412 ± 0.824 (1.64)

Notes:

The December 2019 sampling event was for Appendix IV constituents only. The February 2020 sampling event included Appendix IV constituents detected in the December 2019 sampling event, and all of the Appendix III constituents.

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

µS/cm = micro Siemens per centimeter

ft btoc = feet below top of casing

Deg C = degrees Celsius

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

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

TABLE II
SUMMARY OF APPENDIX III SSIs
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - LINED POND
NEW MADRID, MISSOURI

Well ID	Statistical Analysis Completed	Constituent
MW-8	July 2019	Boron
	July 2019	Sulfate
	July 2019	Total Dissolved Solids
MW-9	July 2019	Boron
	July 2019	Chloride
P-6	July 2019	Boron

Notes:

SSIs = statistically significant increases

TABLE III
BACKGROUND CONCENTRATIONS AND GROUNDWATER PROTECTION STANDARDS
ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT - LINED POND
NEW MADRID, MISSOURI

Constituent	Background Concentration (UTL)	Groundwater Protection Standard
Arsenic (mg/L)	0.0059	0.010*
Barium (mg/L)	0.69	2*
Cobalt (mg/L)	0.0044	0.006**
Fluoride (mg/L)	2.50	4.0*
Lead (mg/L)	0.009	0.015*
Lithium (mg/L)	0.029	0.040**
Molybdenum (mg/L)	0.0046	0.100**
Radium 226 & 228 (pCi/L)	2.55	5*
Selenium (mg/L)	0.0031	0.05*

Notes:

** Value set equal to the maximum contaminant level.*

*** Value set based on Regional Screening Levels.*

mg/L = milligrams per liter

pCi/L = picoCuries per liter

UTL = upper tolerance limit

FIGURE

LEGEND

MONITORING WELL

LINED POND

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, OCTOBER 29, 2018.

N

0 1,250 2,500

SCALE IN FEET

HALEY ALDRICH

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

INACTIVE LINED POND MONITORING WELL LOCATIONS

aeci

JULY 2020

FIGURE 1

GIS FILE PATH: G:\Projects\AECI\New Madrid\GIS\MXDs\2020_07\FIG1_ANNUAL_RPT_LINED_POND.mxd — USER: dzinsmaster — LAST SAVED: 7/28/2020 1:09:47 PM