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31 January 2018  
File No. 129342-001

Associated Electric Cooperative, Inc.  
2814 South Golden Avenue  
P.O. Box 754  
Springfield, MO 65801-0754

Attention: Kim Dickerson – Senior Environmental Analyst  
Russ Weatherly – Supervisor, Land and Water Resources

Subject: 2017 Annual Groundwater Monitoring and Corrective Action Report for  
the Utility Waste Landfill  
New Madrid Power Plant  
New Madrid, Missouri

Dear Ms. Dickerson and Mr. Weatherly:

Haley & Aldrich, Inc. is pleased to submit this Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the Utility Waste Landfill (UWL) at the New Madrid Power Plant (NMPP). This Annual Report was developed in accordance with the United States Environmental Protection Agency CCR Rule effective 19 October 2015 (Rule), specifically Code of Federal Regulations Title 40, subsection § 257.90(e). The Annual Report documents the design and construction of the groundwater monitoring system for the UWL consistent with applicable sections of § 257.90 through 257.98.

This report describes activities conducted in the prior calendar year and documents compliance with the Rule. The specific requirements listed in Sections § 257.90(e)(1)-(5) of the Rule are provided below in bold/italic type, followed by a short narrative describing how the Rule has been met.

Sincerely yours,  
HALEY & ALDRICH, INC.

A handwritten signature in black ink, appearing to read "Steve Putrich", enclosed in a light blue rectangular box.

Steve Putrich, P.E.  
Project Principal

A handwritten signature in blue ink, appearing to read "Mark D. Nicholls".

Mark D. Nicholls, P.G.  
Lead Hydrogeologist

2017 ANNUAL GROUNDWATER MONITORING  
AND CORRECTIVE ACTION REPORT  
UTILITY WASTE LANDFILL  
NEW MADRID POWER PLANT  
NEW MADRID, MISSOURI

by Haley & Aldrich, Inc.  
Cleveland, Ohio

for Associated Electric Cooperative, Inc.  
Springfield, Missouri

File No. 129342-001  
January 2018



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## 1. 40 CFR § 257.90 Applicability

### 1.1 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 257.98.***

The Associated Electric Cooperative, Inc. (AECI) Utility Waste Landfill (UWL) at the New Madrid Power Plant (NMPP), which is the coal combustion residuals (CCR) management unit addressed in this Annual Groundwater Monitoring and Corrective Action Report (Annual Report), is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) § 257.90 through 257.98. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

### 1.2 40 CFR § 257.90(e)

***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 is the initial report for the NMPP UWL as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to 17 October 2017, AECI installed a groundwater monitoring system at the UWL consistent with § 257.91. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 is provided in this report. This Annual Report documents the activities completed in the calendar year 2017.

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

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

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 UWL 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 October 2017 as required by § 257.105(h)(2).

***(2) 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;***

The design and construction of the monitoring well network for the UWL at NMPP are described in the CCR Groundwater Monitoring Network Description Report dated 17 October 2017. This report was placed in the facility's operating record by 17 October 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

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

In accordance with § 257.94(b), a minimum of 9 and as many as 10 independent samples from each background and downgradient monitoring well were collected prior to 17 October 2017. A summary table including the sample names, dates of sample collection, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the UWL is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program.

***(4) 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***

Detection monitoring was conducted in accordance with § 257.94(b), and no transitions between monitoring programs occurred for the UWL in calendar year 2017.

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

This initial Annual Report documents activities conducted to comply with § 257.90 through § 257.94 of the Rule. It is understood that there are supplemental references in § 257.90 through § 257.98 to information that must be placed in the Annual Report; however, none of the activities referenced as required in the Annual Report are relevant to the groundwater monitoring program for activities completed in calendar year 2017.

**1.3 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).***

To comply with the Rule recordkeeping requirements:

- 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 on the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the AECl CCR Website within 30 days of this Annual Report being placed on the facility's operating record [§ 257.107(d)].

## **TABLES**

TABLE I  
SUMMARY OF ANALYTICAL RESULTS  
AECI New Madrid Power Plant  
UWL  
New Madrid, Missouri

Table with columns: Location, Sample Name, Sample Date, Event, Field Parameters (Temperature, Conductivity, Turbidity, pH), USEPA Appendix III Constituents (mg/L) (Boron, Calcium, Chloride, Fluoride, Sulfate, pH, TDS), USEPA Appendix IV Constituents (mg/L) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium, Mercury, Fluoride, Radium-226 & 228), and USEPA Appendix IV Constituents (pCi/L) (Radium-226 & 228 Combined). Rows are categorized by gradient (Up, Down) and monitoring well (MW-16, B-123, B-126, MW-1, MW-2, MW-3).







## FIGURES



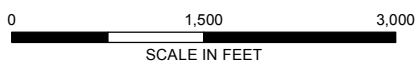
GIS FILE PATH: \\haleyaldrich.com\share\phx\_common\Projects\AECI\New Madrid\GIS\MXDs\2018\_UWL LOCATION MAP\_REV1.mxd — USER: ibruce — LAST SAVED: 1/30/2018 4:47:01 PM

**LEGEND**

-  MONITORING WELL
-  UTILITY WASTE LANDFILL (UWL) BOUNDARY

**NOTE**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, 19 MAY 2016.



ASSOCIATED ELECTRIC COOPERATIVE, INC.  
NEW MADRID POWER PLANT  
MARSTON, MISSOURI

**UTILITY WASTE LANDFILL  
MONITORING WELL  
LOCATION MAP**



JANUARY 2018  
SCALE: AS SHOWN

**FIGURE 1**