GREDELL Engineering Resources, Inc.

ENVIRONMENTAL ENGINEERING LAND - AIR - WATER

Offices in Jefferson City, Kansas City Metro and Springfield, Missouri

August 3, 2022

Ms. Sarah White
Associated Electric Cooperative, Inc.
PO Box 754
Springfield MO 65801

Re: Pond 001, Cell 1 Professional Engineering Annual Inspection of CCR Impoundment
AECI PO No. TH-103736

Dear Ms. White:

GREDELL Engineering Resources, Inc. (Gredell Engineering) conducted the annual inspection by a qualified professional engineer of Pond 001, Cell 1 at Associated Electric Cooperative's (AECI) Thomas Hill Energy Center (THEC), as required by 40 CFR 257.83 (b) to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted engineering standards. Bruce Dawson, P.E., Gredell Engineering, accompanied by Ben Gutz, AECI, conducted an on-site inspection of Pond 001, Cell 1 (Cell 1) July 18, 2022. The following is the inspection report required by 40 CFR 257.83 (b) (2).

REVIEW OF AVAILABLE INFORMATION

Per 40 CFR 257.83 (b) (1), this inspection included:

> ***(i)*** *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §§ 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§ 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections).*

Gredell Engineering reviewed the following documents as part of this inspection:

- Weekly inspection reports for 2021 and 2022 provided by AECI THEC,
- Cell 001 Closure and Reconfiguration Permit Drawings, Thomas Hill Energy Center, Clifton Hill, Missouri by Haley & Aldrich, Inc., Cleveland, Ohio, dated July 2021, Project No. 128064-017,
- Report on Periodic Structural Stability Assessment, Pond 001 – Cell 001, Thomas Hill Energy Center, Clifton Hill, Missouri by Haley & Aldrich, Inc., Cleveland, Ohio, dated 15 October 2021, reference File No. 128064-022, and
- Pond 001, Cell 1 Professional Engineering Annual Inspection of CCR Impoundment dated August 28, 2020 by Gredell Engineering,

ON-SITE OBSERVATIONS

Per 40 CFR 257.83 (b) (1), this inspection included:

> ***(ii)*** *A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures;*

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There were no visible signs of distress or malfunction of Cell 1 or its appurtenant structures at the time of this inspection. The embankment and surrounding areas were closely mowed, which provided good conditions for visual inspection.

(iii) *A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.*

The reinforced concrete principal spillway inlet structure of Cell 1 appeared to be intact, stable, and properly aligned. The structure displayed no signs of concrete spalling or cracking that would impair structural integrity, there was no visible exposed reinforcing steel, and the structure appeared to be in functional vertical and horizontal alignment. The principal spillway structure can be fitted with stop logs to control impoundment levels but no stop logs were in place at the time of this inspection. The principal spillway discharges via a 30-inch diameter reinforced concrete pipe. Direct observation of the principal spillway discharge pipe will require remote controlled inline camera inspection or confined space entry protocols and was not attempted during this inspection. The visible ends of the pipe were intact and appeared to be in good condition.

Per 40 CFR 257.83 (b) (2), the following observations are noted:

(i) *Any changes in geometry of the impounding structure since the previous annual inspection;*

Cell 1 has been reconfigured to remove the earthen baffle that formerly projected easterly from the west side of the Cell and served to prevent short-circuiting of inflow waters to the outfall structure. The cell has been regraded to an approximately rectangular plan footprint; the floor of the cell has been excavated and re-constructed with a 24" clay seal overlain by a non-woven geotextile, 14" of dense graded aggregate base, and a 5" thick asphalt working surface. The former inflow to Cell 1 has been re-routed to a new concrete dewatering tank (CDT) east of Cell 1. Cell 1 is now configured to receive only direct precipitation and discretionary flows from the CDT. There was no discernible sag, slumping, bulging or other geometric indications of adverse embankment or embankment foundation performance.

(ii) *The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;*

There is no instrumentation of Cell 1.

(iii) *The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;*

Gredell Engineering is not aware of any minimum and maximum water level and CCR records for Cell 1. Cell 1 contained a minor volume of water at the time of this inspection but was not discharging to its principal outlet structure. The water in the cell was ponding in relative low areas across the floor of the cell. Any CCR in the cell was negligible.

(iv) *The storage capacity of the impounding structure at the time of the inspection;*

Based on Cell 001 Closure and Reconfiguration Permit Drawings, Thomas Hill Energy Center, Clifton Hill, Missouri by Haley & Aldrich, Inc., Cleveland, Ohio, dated July 2021, Project No. 128064-017, Gredell Engineering estimated the available storage capacity of Cell 1 with all stop logs installed at the principal spillway inlet structure (elevation 743 feet) is about 25 acre-feet.

(v) *The approximate volume of the impounded water and CCR at the time of the inspection;*

There was no significant volume of CCR or water within Cell 1 at the time of this inspection.

(vi) *Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures;*

There were no appearances of actual or potential structural weakness of the Cell 1 structures, nor any observed existing conditions disrupting or having the potential to disrupt the operation and safety of Cell 1 and its appurtenant structures.

(vii) *Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.*

None observed.

Per 40 CFR 257.83 (b) (5):

> *If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.*

No visual evidence of a deficiency or release was identified during this inspection.

GENERAL COMMENTS and RECOMMENDATIONS

This concludes the 2022 annual inspection by a qualified professional engineer of Pond 001, Cell 1 at Associated Electric Cooperative's Thomas Hill Energy Center, as required by 40 CFR 257.83 (b). Gredell Engineering appreciates this opportunity to serve AECI THEC. If you have any questions or require additional information, please contact me at (573) 659-9078.

Sincerely,

STATE OF MISSOURI
BRUCE DAWSON
NUMBER E-22331
REGISTERED PROFESSIONAL ENGINEER

Bruce Dawson

8/3/22

Bruce Dawson, P.E.
Principal Geotechnical Engineer, Vice President

C: Thomas R. Gredell, P.E., President
Mikel C. Carlson, R.G., Principal Geologist, Vice President
Ben Gutz, AECI