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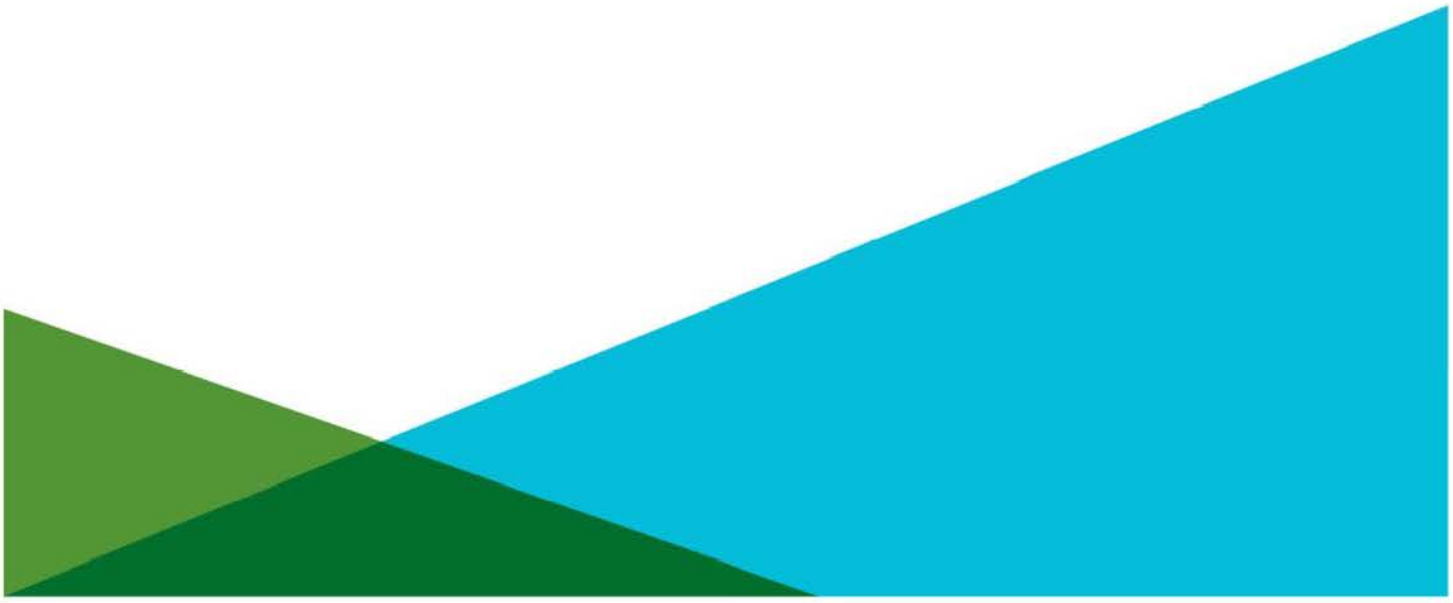
REPORT ON

INITIAL PERIODIC STRUCTURAL STABILITY ASSESSMENT
INACTIVE LINED POND
NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Associated Electric Cooperative, Inc.
New Madrid, Missouri

File No. 129342-015
April 2018



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17 April 2018
File No. 129342-015

Associated Electric Cooperative, Inc.
New Madrid Power Plant
P.O. Box 156
New Madrid, MO 63689

Attention: Ms. Jenny Burns
Environmental Analyst

Subject: Initial Periodic Structural Stability Assessment
Inactive Lined Pond
New Madrid Power Plant
New Madrid, MO

Ms. Burns:

Enclosed please find our report on the Initial Periodic Structural Stability Assessment (Assessment) for the Associated Electric Cooperative, Inc. (AECI) inactive coal combustion residuals (CCR) surface impoundment referred to as the Inactive Lined Pond (Lined Pond) located at the New Madrid Power Plant (NMPP) in New Madrid, Missouri.

This work was performed by Haley & Aldrich, Inc. (Haley & Aldrich) on behalf of AECI in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257, specifically §257.73(d). Based on the USEPA's issued CCR Rule Partial Vacatur in 2016, the inactive Lined Pond impoundment at the NMPP is subject to applicable requirements of the CCR Rule.

The scope of our work consisted of the following: 1) obtain and review readily available reports, investigations, plans and data pertaining to the Lined Pond surface impoundment; 2) visit the site to observe Lined Pond; 3) evaluate whether the design, construction, operation, and maintenance of Lined Pond are consistent with recognized and generally accepted good engineering practices; and 4) prepare and submit this report presenting the results of our assessment including recommendations.

Thank you for inviting us to complete this assessment and please feel free to contact us if you wish to discuss the contents of the report.

Sincerely yours,
HALEY & ALDRICH, INC.

Steven F. Putrich, P.E.
Project Principal

Enclosures

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Executive Summary

This report summarizes the results of our Initial Periodic Structural Stability Assessment for the Associated Electric Cooperative, Inc. (AECI) owned and operated Inactive Lined Pond (Lined Pond), including our site inspection of the unit. The Lined Pond is designated as an inactive coal combustion residuals (CCRs) surface impoundment, located at the New Madrid Power Plant in New Madrid, Missouri.

Our assessment was conducted in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Parts 257 and 261 (CCR Rule). Based on the USEPA's issued CCR Rule Partial Vacatur in 2016, the inactive Lined Pond impoundment at the NMPP is subject to applicable requirements of the CCR Rule.

The dike consists of an earthen embankment with a crest length of approximately 7,700 feet around the entire impoundment. In addition, the western embankment consists of the US Army Corps of Engineers operated and maintained Mississippi River Levee system for about 1,600 ft and the dike abuts into the Levee. The embankment is approximately 6 to 25 feet in height.

The Lined Pond was constructed for the purpose of storing fly ash, which continued between 1994 and approximately 2007. After 2007, fly ash has been directed to the on-site Utility Waste Landfill.

Dam Inspection Assessment and Recommendations

Based on conditions observed during our visual inspection of the Lined Pond, discussions with site personnel, a review of available documents and a site visit, the following deficiencies were noted:

- Unseeded areas on the downstream slope and downstream bench area of eastern embankment.
- Erosion rills less than 6 inches deep on downstream slope of eastern embankment.
- Minor erosion and rutting of the gravel access road on the southern embankment.
- Slough on downstream slope of eastern embankment.
- Grass exceeding 6 inches in height at majority of the areas on downstream slopes of eastern, southern and western embankments.
- Sparse vegetation exceeding 6 inches in height on the upstream and downstream sides of the crest of eastern embankment and downstream side of crest of western embankment.
- Accumulation of water, forming within a depression area in downstream toe area of southern embankment.

Haley & Aldrich recommends the following actions:

- Mow grass exceeding 6 inches in height on downstream slopes of eastern, southern and western embankments, and mow/cut vegetation exceeding 6 inches in height on the upstream and downstream sides of the crest of eastern embankment and downstream side of crest of western embankment.
- Repair minor ruts and erosion along the gravel access road on the crest of southern embankment.
- Seed unseeded areas of downstream slope of eastern embankment to establish vegetation.

- Re-work depressed area in the downstream toe area of southern embankment so that water will not continue to pond at the toe after a rainfall event. Property boundaries may need to be evaluated to allow for this activity to be completed.

Structural Stability Assessment

In accordance with 40 CFR §257.73(d), the owner or operator of a CCR surface impoundment must conduct initial and periodic structural stability assessments to determine whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices.

Haley & Aldrich reviewed the information provided to us and inspected the Lined Pond as described above. Based on our review of available information and observations during our inspection, we have concluded the following in accordance with 40 CFR §257.73(d):

1. §257.73(d)(1)(i) – Stable Foundations and Abutments:

   Based on review of available documents pertaining to Lined Pond and our observations during the inspection, the Lined Pond appears to have stable foundations and abutments. A Safety Factor Assessment for the Lined Pond is being completed and it will be provided under separate cover.

2. §257.73(d)(1)(ii) – Adequate Slope Protection:

   Based on our observations, the downstream slopes of southern and western embankments have an approximate slope of 3H:1V and these slopes are covered with grass. The upstream slope is exposed at the southeastern part of the pond, where parts of southern and eastern embankments have unprotected Hyperflex liner exposed on the approximately 3.0H:1.0V upstream slope of these embankments. This part of the Lined Pond is occupied with ponded water. It is understood that the downstream slope of the eastern embankment, which also has an approximate slope of 3H:1V, historically exhibited significant sloughing and these were remedied in 2012 through installation of plate-piles along this slope. During our inspection, we observed that a bench has been constructed at the lower part of the downstream slope (where it reaches approximately the Raw Water Pond water level elevation) using rip rap and this bench was covered with a compacted soil layer. Rip-rap is present along the contact between the downstream slope/bench and the water level in the Raw Water Pond. Due to repairs and re-grading along the downstream slope of eastern embankment, we observed that parts of the downstream slope of eastern embankment have not been seeded, as of the date of the inspection. Minor erosion rills (less than 6 inches in depth) were observed on the unseeded portions of the slope.

   The Lined Pond was determined to have adequate slope protection except for the unprotected liner areas on the upstream slope of eastern and southern embankments, and the unseeded portions of the downstream slope of eastern embankment.

3. §257.73(d)(1)(iii) – Dikes Mechanically Compacted:

   Based on drawings described as conforming to construction records, dikes appear to have been constructed of compacted fill. Based on explorations performed by Haley & Aldrich in 2017, the consistency of fine-grained soils encountered in embankment fill material was generally stiff. These

subsurface information and observations made during our visit indicate that the dikes were mechanically compacted.

4. §257.73(d)(1)(iv) – Height of Vegetation:

   At the time of our inspection, much of the downstream slope of eastern, southern and western embankments were covered with grassy vegetation that exceeded 6 inches in height. Sporadic and isolated bushes reaching up to 2 feet were also present in some parts of the eastern part of the crest of eastern embankment and upper parts of the downstream slope of the western embankment. In the downstream toe area of the southern embankment, but beyond the embankment toe, trees and tall bushes are present.

5. §257.73(d)(1)(v)(A) – Spillway Cover:

   The Lined Pond does not have a spillway, therefore §257.73(d)(1)(v)(A) does not apply to Lined Pond.

6. §257.73(d)(1)(v)(B) – Spillway Capacity:

   The Lined Pond does not have a spillway, therefore §257.73(d)(1)(v)(B) does not apply to Lined Pond.

7. §257.73(d)(1)(vi) – Hydraulic Structures Underlying or Passing Through Embankment:

   Two 18-inch pipes pass through the eastern embankment. Only the discharge/outfall part of the pipes were partially visible on the downstream side of eastern embankment (i.e. Raw Water Pond side). Along the alignment of these two buried pipes, no settlement of ground surface was observed on the crest, upstream slope, and downstream slope of eastern embankment.

8. §257.73(d)(1)(vii) – Inundation of Downstream Slopes:

   The Lined Pond is not located directly adjacent to the Mississippi River, however the Raw Water Pond, which forms the downstream toe area of the eastern embankment of Lined Pond, is located adjacent to Mississippi River and has the potential to be inundated under higher than normal river elevations. This could cause inundation of the downstream slope of eastern embankment of Lined Pond.

9. §257.73(d)(2) – Deficiencies and Recommendations:

   The Structural Stability Assessment did not identify any structural stability deficiencies for Lined Pond.

PREFACE

The assessment of the general condition of Lined Pond is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the described condition of Lined Pond is based on observations of field conditions at the time of inspection and other site visits, along with other data available. It is important to note that the condition of the structure depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the structure will continue to represent the condition of the structure at some point in the future.

CERTIFICATION

I certify that the Periodic Structural Stability Assessment for AECI's Inactive Lined Pond at the New Madrid Power Plant was conducted in accordance with the requirements of §257.73(d) of the USEPA's CCR Rule.

Signed: _____

Certifying Engineer

Print Name:	Steven F. Putrich
Missouri License No.:	2014035813
Title:	Project Principal
Company:	Haley & Aldrich, Inc.

Professional Engineer's Seal:

Table of Contents

Table of Contents

Page

List of Figures

1. Description of Project

1.1 GENERAL

1.1.1 Authority

Haley & Aldrich, Inc. (Haley & Aldrich) has been contracted by Associated Electric Cooperative, Inc. (AECI) to perform the Initial Periodic Structural Stability Assessment (Assessment) for the Inactive Lined Pond (Lined Pond) coal combustion residuals (CCR) surface impoundment located at New Madrid Power Plant (NMPP) in New Madrid, Missouri. This work was completed in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257, specifically §257.73(d). Based on the USEPA's issued CCR Rule Partial Vacatur in 2016, the inactive Lined Pond impoundment at the NMPP is subject to applicable requirements of the CCR Rule.

This report summarizes the results of our Initial Periodic Structural Stability Assessment for the Lined Pond, including observations from our 6 February 2018 visual inspection of the impoundment embankments.

1.1.2 Purpose of Work

The purpose of this assessment was to document whether the design, construction, operation, and maintenance of the Lined Pond are consistent with recognized and generally accepted good engineering practices. The visual inspection is intended to identify signs of distress or malfunction of the CCR surface impoundment, should they exist. This report summarizes those findings and notes conditions observed that are disrupting or have the potential to disrupt the operation and safety of the surface impoundment.

The investigation is divided into four parts: 1) obtain and review readily available reports, investigations, plans and data pertaining to the Lined Pond surface impoundment; 2) perform a visual inspection of the surface impoundment dike; 3) evaluate whether the design, construction, operation, and maintenance of the impoundment and dike are consistent with generally accepted good engineering practices; and 4) prepare and submit this report presenting the results of our evaluation, including recommendations and remedial actions.

1.1.3 Definitions

To provide the reader a better understanding of the report, definitions of commonly used terms associated with dams/dikes are provided in Appendix C. Many of these terms may be included in this report. The terms are presented under common categories associated with surface impoundments which include: 1) orientation; 2) dam/dike components; 3) hazard potential classification; and 4) miscellaneous.

1.2 DESCRIPTION OF PROJECT

1.2.1 Location

The Lined Pond is located at the NMPP in New Madrid, Missouri. The site is located about 3 miles east of Marston, Missouri. The Site is accessible from the west via State Highway EE (off US route 55) and from the north and south from Levee Road. The Lined Pond is located south of Pond 003, at North latitude 36° 30.1' and West longitude 89° 33.6', as shown on the attached Project Locus in Figure 1. The impoundment can be accessed by vehicles from earthen access roads from the NMPP. Access to the site and dikes is restricted by full time security and barriers/fences at the plant and a fence at the southwest corner of the Lined Pond.

1.2.2 Owner/Operator

The Lined Pond is owned and maintained by Associated Electric Cooperative, Inc.

	Dam Owner/Caretaker
Name	AECI New Madrid Power Plant
Mailing Address	P.O. Box 156
Town, State, Zip	New Madrid, MO 63869
Contact	Roger Neumeyer
Title	Plant Manager
Email Address	rneumeyer@aeci.org
Emergency Phone	911

1.2.3 Purpose of Lined Pond

AECI managed CCR by placing fly ash into the Lined Pond from 1994 to approximately 2007 when the plant converted to dry fly ash handling. The impoundment relied on evaporation as the main source of discharge from the unit, with no primary spillway existing (emergency flows can be diverted to the Raw Water Pond, Pond 003, or the 003 Outfall discharge channel).

1.2.4 Description of the Dam and Appurtenances

The Lined Pond is a surface impoundment with an approximate footprint of 78 acres located south of Pond 003. A site plan is shown in Figure 2. The Lined Pond was constructed in 1994. Access roads run along the perimeter of the pond and the approximate crest elevation is approximately 307 feet MSL. The impoundment is located on the east side of the US Army Corps of Engineers levee system of the Mississippi River. Immediately adjacent to the east side of the Lined Pond is the Raw Water Pond that exists as an overflow for high water elevation conditions and was constructed to act as a second phase of the Lined Pond. The Lined Pond at NMPP is currently inactive as defined by the CCR Rule.

The majority of the Lined Pond is full and contains an unused area in the southeastern corner that collects runoff. It is understood that currently, there is no inflow into the lined Pond. The Lined Pond subgrade and embankments were constructed of native soils and were overlain with 60-mil (side slopes) and 80-mil (bottom) geomembranes. Two 18 in. pipes in the southeastern corner of the pond have

historically been used to pump water from the Raw Water Pond to the Lined Pond to prevent uplift of the liner; this practice is no longer being used. These pipes have a valve control system that can be managed from the crest of the eastern embankment.

1.2.5 Standard Operational Procedures

The impoundment is operated and maintained by NMPP personnel. Maintenance of the dike includes regular mowing of the downstream slopes and downstream slopes and removing vegetation from the riprap on upstream slopes. Weekly inspections are also completed.

The NMPP personnel monitor and inspect the dike according to a series of informal, unwritten and written protocols. These protocols include:

- Observation of the impoundment embankments during normal operation;
- Inspecting the slope protection, including the vegetation and riprap;
- Monitoring the water levels; and
- Historic semi-annual inspection of the impoundments by NMPP personnel (now completed weekly).

1.2.6 Hazard Potential Classification

Hazard Potential Classification is being completed outside the scope of this report in accordance with the applicable regulations. Results will be provided under separate cover.

1.3 PERTINENT ENGINEERING DATA

1.3.1 Drainage Area

Based on the original design documents and observations from the site visit, the Lined Pond does not receive drainage from the surrounding areas, only the immediate access roads on top of the dike and direct precipitation.

1.3.2 Reservoir

The Lined Pond has an estimated surface area of approximately 78 acres and a storage volume of approximately 2.7 million cubic yards. There is an area of ponded water on the southeastern part of the impoundment. Water level of ponded water at the time of our site visit was not defined but below 293 feet msl.

1.3.3 Discharges from Lined Pond

There is no discharge into Lined Pond. Emergency flows from Lined Pond can be diverted to the Raw Water Pond through the pipes incorporated within the eastern embankment, to Pond 003, or the 003 Outfall discharge channel through pumping. Discharge occurs in accordance with the applicable NPDES permit.

1.3.4 Relevant Elevations

Elevations referenced in this report are in feet and are based on the North American Vertical Datum of 1988 (NAVD88).

The low point on crest elevation is at approximate El. 307 and the normal pool is generally at El. 293.

A.	Top of Dam	307
B.	Normal Pool	293 or lower
C.	Spillway Crest	No spillway is present
D.	Upstream Water at Time of Inspection	Below 293
E.	Spillway Type	No spillway is present
F.	Spillway Invert	No spillway is present

1.3.5 Design and Construction Records

The Lined Pond was constructed in 1994 to impound fly ash and process water. It is understood that the Lined Pond was designed by Burns & McDonnell, based on construction drawings provided by AECI.

1.3.6 Operating Records

Written operational records have not been historically maintained for the impoundment prior to the CCR Rule. AECI has been completing weekly inspections per the CCR Rule and maintains an operating record for required information.

2. Inspection

2.1 VISUAL INSPECTION

On 6 February 2018, Haley & Aldrich completed a visual inspection of the Lined Pond. The following paragraphs describe the conditions of the impoundment and dike observed during the inspection. In addition, refer to the photographs and checklist forms included in Appendices A and B, respectively for additional comments.

2.1.1 General Findings

2.1.1.1 *Upstream Slope*

Upstream slope of the dike is only visible at the southeastern part of the Lined Pond. At this area, the liner installed on the upstream slope is exposed without protection. It is understood that an attempt was made to place protective soil cover over the liner at the southwest corner of the pond, however this effort was not continued throughout the entire exposed area since placed soil did not stay stable on the smooth liner inclined at an approximately 3H:1V slope. At the time of our inspection, exposed portions of upstream slope with the liner appeared stable and no defects were visible on the liner.

2.1.1.2 *Crest*

The northern, eastern and southern embankment crests are gravel-covered roads. The western embankment crest is the US Army Corps of Engineers operated and maintained levee system, which consists of a non-gravel crest surface. The crest surrounding the Lined Pond is at an approximate elevation of 307 feet. Generally, all crests/roads were observed to be in good condition. Minor ruts and pot holes and minor erosion were observed on the southern embankment crest. In addition, sparse vegetation taller than 6 inches was observed on the upstream and downstream sides of the crest of eastern embankment and downstream side of crest of western embankment (i.e. levee).

2.1.1.3 *Downstream Slope*

The downstream slope is visible on eastern, southern and western embankments. All downstream slopes were constructed with an approximately 3H:1V slope.

On the eastern embankment, the downstream slope has historically exhibited significant surficial sloughing, and these were remedied in 2012 through installation of plate-piles along this slope. Plate-piles were not visible from the surface. During our inspection, we observed that an approximately 15-feet-wide bench has been constructed at the lower part of the downstream slope (where it reaches approximately the Raw Water Pond water level elevation) using rip-rap, and this bench was covered with a compacted soil layer. Rip-rap is present along the contact between the downstream slope/bench and the water level in the Raw Water Pond. Due to repairs and re-grading along the downstream slope of eastern embankment, we observed that parts of the downstream slope of eastern embankment have not been seeded as of the date of the inspection. Minor erosion rills (less than 6 inches in depth) were observed on the unseeded portions of the slope.

At the southern end of the downstream slope of eastern embankment, we observed sloughing which formed an irregularity on the slope surface. The irregularity formed by sloughing is approximately

15 feet long, 2 feet wide and 1 feet deep. This sloughing was observed within the grassed portion of the slope and did not appear to affect the immediate structural stability of the eastern embankment. However, we recommend that AECI monitor this area for potential further movements and undertake appropriate repairs if movements are observed.

Throughout much of the vegetated portions of the downstream slope of eastern embankment, we observed grass taller than 6 inches.

No seepage or other unusual movements were observed on the downstream slope of eastern embankment.

Downstream slopes of southern and western embankments were observed to be in good condition, with no unusual movements or seepage. Similar to downstream slope of eastern embankment. Grassy vegetation covering the downstream slopes of southern and western embankments were mostly taller than 6 inches during our inspection.

2.1.1.4 *Emergency Spillway*

Lined Pond does not have an emergency spillway.

2.1.1.5 *Downstream Area*

Downstream area along the eastern embankment consists of the Raw Water Pond. Water level at the Raw Water Pond at the time of our inspection was approximately 296 feet.

Downstream area along the southern embankment consists of a zone of dense, rooted vegetation with heights exceeding several feet and trees with flat, open farming field further south. An area of ponded water at the downstream toe area, at the western end of the southern embankment, was observed during our inspection. The ponded water appeared to have accumulated due to recent rainfall. No other ponded water or seepage was observed in the downstream area of southern embankment.

Downstream area of western embankment (i.e. levee) consists of an open field. No ponded water, seepage or unusual movement was observed in the downstream area of the western embankment.

2.2 CARETAKER INTERVIEW

On the day of the inspection, Haley & Aldrich met with AECI personnel familiar with the operations, maintenance and construction of the Lined Pond. Information provided by AECI personnel has been incorporated into this report.

2.3 OPERATION AND MAINTENANCE PROCEDURES

The impoundment is operated and maintained by NMPP personnel. Operation of the impoundment includes pumping stormwater to manage pond elevations. Maintenance of the dike includes regular mowing of grass on the downstream slopes and removing vegetation from the crest and downstream slopes. Weekly inspections are also completed. A formal operations and maintenance plan does not exist for the unit.

2.4 EMERGENCY ACTION PLAN

A written Emergency Action Plan (EAP) does not exist for Lined Pond; however, plant personnel are generally familiar with pond operations and construction. Also, the site is staffed full time and heavy earthmoving construction equipment is at the site.

2.5 OVERTOPPING POTENTIAL

Based on the inflow to the impoundment from only direct precipitation, the overtopping potential of the dam is low based on management of water within the impoundment.

3. Impoundment Inspection Assessment and Recommendations

3.1 ASSESSMENT

We provide the following assessment of the Lined Pond. The following deficiencies were observed at Lined Pond:

- Unseeded areas on the downstream slope and downstream bench area of eastern embankment.
- Erosion rills less than 6 inches deep on downstream slope of eastern embankment.
- Minor erosion and rutting of the gravel access road on the southern embankment.
- Slough on downstream slope of eastern embankment.
- Grass exceeding 6 inches in height at majority of the areas on downstream slopes of eastern, southern and western embankments.
- Sparse vegetation exceeding 6 inches in height on the upstream and downstream sides of the crest of eastern embankment and downstream side of crest of western embankment.
- Accumulation of water, forming within a depression area in downstream toe area of southern embankment.

3.2 RECOMMENDATIONS

Maintenance of the embankments surrounding the Lined Pond is required and should include cutting/mowing of vegetation on crest and downstream slope of embankments for continued ability to adequately inspect the impoundment. Mowing of the vegetation should be completed as needed to maintain healthy grass cover at less than 6 inches in height according to the current CCR Rule requirements. Maintenance activities should also address erosion and rutting on access roads on the crest of embankment if these become significant.

Shallow erosion rills that were observed on the downstream slope of eastern embankment should be monitored until seeding in these areas are completed.

Unseeded areas on the downstream slope and downstream bench area of eastern embankment should be seeded for vegetation growth.

Unprotected liner exposed on parts of the upstream slope on the eastern and southern embankments should be monitored for integrity.

The linear manifestation of a slough observed on the downstream slope of eastern embankment should be monitored for potential future movements and repairs should be made if further movements are observed.

The ponded water area in the downstream toe area of the southern slope, that formed directly adjacent to toe of the embankment, should be repaired so that water will not pond in this area.

3.3 REMEDIAL MEASURES

We recommend the following remedial measures be undertaken:

- Mow grass exceeding 6 inches in height on downstream slopes of eastern, southern and western embankments, and mow/cut vegetation exceeding 6 inches in height on the upstream and downstream sides of the crest of eastern embankment and downstream side of crest of western embankment.
- Repair minor ruts and erosion along the gravel access road on the crest of southern embankment.
- Seed unseeded areas of downstream slope of eastern embankment to establish vegetation.
- Re-work depressed area in the downstream toe area of southern embankment so that water will not continue to pond at the toe after a rainfall event. Property boundaries may need to be evaluated to allow for this activity to be completed.

4. Structural Stability Assessment

In accordance with 40 CFR §257.73(d), the owner or operator of a CCR surface impoundment must conduct initial and periodic structural stability assessments to determine whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices.

Haley & Aldrich reviewed the information provided to us and inspected the Lined Pond as described above. Based on our review of available information and observations during our inspection, we have concluded the following in accordance with 40 CFR §257.73(d):

1. §257.73(d)(1)(i) – Stable Foundations and Abutments:

   Based on review of available documents pertaining to Lined Pond and our observations during the inspection, the Lined Pond appears to have stable foundations and abutments. A Safety Factor Assessment for the Lined Pond is being completed and it will be provided under separate cover.

2. §257.73(d)(1)(ii) – Adequate Slope Protection:

   Based on our observations, the downstream slopes of southern and western embankments have an approximate slope of 3H:1V and these slopes are covered with grass. The upstream slope is exposed at the southeastern part of the pond, where parts of southern and eastern embankments have unprotected Hyperflex liner exposed on the approximately 3.0H:1.0V upstream slope of these embankments. This part of the Lined Pond is occupied with ponded water. It is understood that the downstream slope of the eastern embankment, which also has an approximate slope of 3H:1V, historically exhibited significant sloughing and these were remedied in 2012 through installation of plate-piles along this slope. During our inspection, we observed that a bench has been constructed at the lower part of the downstream slope (where it reaches approximately the Raw Water Pond water level elevation) using rip rap and this bench was covered with a compacted soil layer. Rip-rap is present along the contact between the downstream slope/bench and the water level in the Raw Water Pond. Due to repairs and re-grading along the downstream slope of eastern embankment, we observed that parts of the downstream slope of eastern embankment have not been seeded, as of the date of the inspection. Minor erosion rills (less than 6 inches in depth) were observed on the unseeded portions of the slope.

   The Lined Pond was determined to have adequate slope protection except for the unprotected liner areas on the upstream slope of eastern and southern embankments, and the unseeded portions of the downstream slope of eastern embankment.

3. §257.73(d)(1)(iii) – Dikes Mechanically Compacted:

   Based on drawings described as conforming to construction records, dikes appear to have been constructed of compacted fill. Based on explorations performed by Haley & Aldrich in 2017, the consistency of fine-grained soils encountered in embankment fill material was generally stiff. These subsurface information and observations made during our visit indicate that the dikes were mechanically compacted.

4. §257.73(d)(1)(iv) – Height of Vegetation:

   At the time of our inspection, much of the downstream slope of eastern, southern and western embankments were covered with grassy vegetation that exceeded 6 inches in height. Sporadic and isolated bushes reaching up to 2 feet were also present in some parts of the eastern part of the crest of eastern embankment and upper parts of the downstream slope of the western embankment. In the downstream toe area of the southern embankment, but beyond the embankment toe, trees and tall bushes are present.

5. §257.73(d)(1)(v)(A) – Spillway Cover:

   The Lined Pond does not have a spillway, therefore §257.73(d)(1)(v)(A) does not apply to Lined Pond.

6. §257.73(d)(1)(v)(B) – Spillway Capacity:

   The Lined Pond does not have a spillway, therefore §257.73(d)(1)(v)(B) does not apply to Lined Pond.

7. §257.73(d)(1)(vi) – Hydraulic Structures Underlying or Passing Through Embankment:

   Two 18-inch pipes pass through the eastern embankment. Only the discharge/outfall part of the pipes were partially visible on the downstream side of eastern embankment (i.e. Raw Water Pond side). Along the alignment of these two buried pipes, no settlement of ground surface was observed on the crest, upstream slope, and downstream slope of eastern embankment.

8. §257.73(d)(1)(vii) – Inundation of Downstream Slopes:

   The Lined Pond is not located directly adjacent to the Mississippi River, however the Raw Water Pond, which forms the downstream toe area of the eastern embankment of Lined Pond, is located adjacent to Mississippi River and has the potential to be inundated under higher than normal river elevations. This could cause inundation of the downstream slope of eastern embankment of Lined Pond.

9. §257.73(d)(2) – Deficiencies and Recommendations:

   The Structural Stability Assessment did not identify any structural stability deficiencies for Lined Pond.

5. References

1. Burns & McDonnell (1995). Ash Disposal Facility Construction Drawing Y42 titled "Ash Pond Grading Plan Cell No. 1 - Revision 3". 9 March 1995.

2. Burns & McDonnell (1993). Ash Disposal Facility Construction Drawing Y44 titled "Typical Sections and Details - Revision 2". 18 June 1993.

3. Burns & McDonnell (1993). Ash Disposal Facility Construction Drawing Y50 titled "Miscellaneous Details - Revision 1". 21 May 1993.

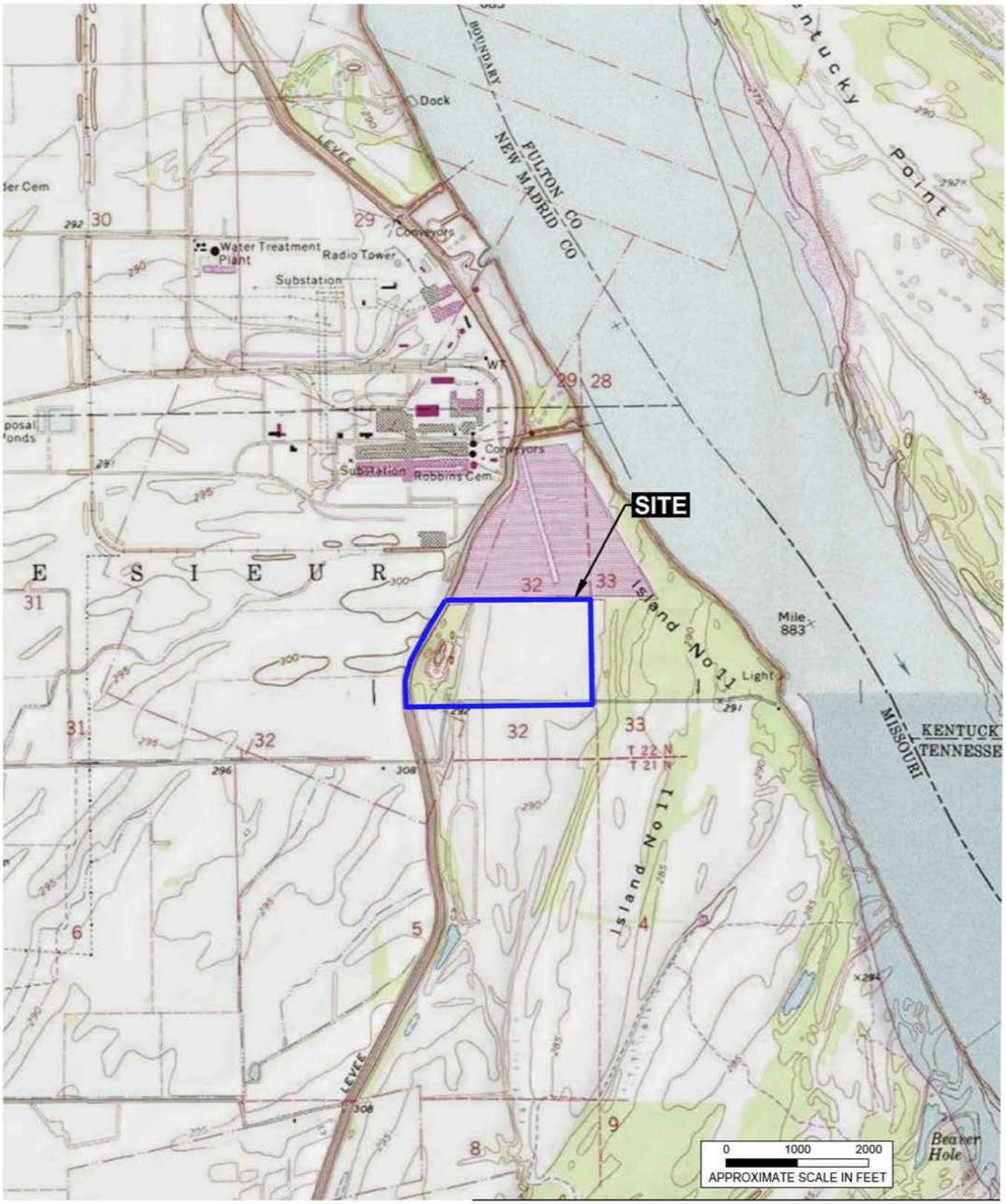
4. Associated Electric Cooperative, Inc. (2017). Lined Ash Pond Dam Safety Inspection Checklists, Date of Inspection: 19 July 2017.

5. Geotechnology, Inc. (2009). Stability Evaluation Slag Pond 1 and Ash Pond 2 AECI New Madrid Power Generating Facility, New Madrid County, Missouri. 22 June 2009.

6. GZA GeoEnvironmental, Inc. (2011). Final Report - Round 7 Dam Assessment, Associated Electric Cooperative, Inc. New Madrid Power Plant Ash Pond 1 & 2 and Slag Pond 1 & 2 Impoundments, New Madrid County, Missouri. 3 June 2011.

7. Haley & Aldrich, Inc. (2017). Data Report on Subsurface Investigation and Laboratory Testing - Lined Pond Closure, New Madrid Power Plant, Marston, Missouri. 2 November 2017.

8. Slope Reinforcement Technology, LLC (2012). Raw Water Pond Slope Repair Drawings. 27 January 2012.



MAP SOURCE: ESRI

SITE COORDINATES: 36°30'14"N, 89°33'36"W

HALEY ALDRICH

LINED POND STRUCTURAL STABILITY ASSESSMENT
AECI, NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

SITE LOCUS

SCALE: AS SHOWN
FEBRUARY 2018

FIGURE 1

POSTOLOWSKI, KEVIN Printed: 2/14/2018 11:07 AM Layout: FIG 1 (2018)
Z:\CLE_COMMON\PROJECTS\129342_AECI-NMPP\CAD\LINED POND\FIGURES\129342_005_FIG-1_LOCUS.DWG

LEGEND

APPROXIMATE LIMITS OF LINED POND

NOTES:

1. BACKGROUND IMAGE IS DATED 2 AUGUST 2014 FROM ESRI GIS.

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

LINED POND STRUCTURAL STABILITY ASSESSMENT
AECI, NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

SITE PLAN

SCALE: AS SHOWN
FEBRUARY 2018

FIGURE 2

LEGEND

APPROXIMATE LIMITS OF LINED POND

NO — PHOTO LOCATION DIRECTION

NOTES:

1. BACKGROUND IMAGE IS DATED 2 AUGUST 2014 FROM ESRI GIS.
2. FIELD INSPECTION PERFORMED 6 FEBRUARY 2018.

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

LINED POND STRUCTURAL STABILITY ASSESSMENT
AECI, NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

PHOTO LOCATION PLAN

SCALE: AS SHOWN
FEBRUARY 2018

FIGURE 3

POSTOLOWSKI, KEVIN Printed: 2/14/2018 11:03 AM Layout: FIG 3
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APPENDIX A

Photographs

Photo 01:
View of repaired downstream slope of eastern embankment (view towards South).

Photo 02:
An unseeded portion of the downstream slope of eastern embankment (view towards northern abutment area).

Photo 03:
Rip-rap placed on lower part of downstream slope of eastern embankment.

Photo 04:
Grassy vegetation taller than 6 inches on downstream slope of eastern embankment.

Photo 05:
View of erosion rills (less than 6 inches deep) at an unseeded portion of downstream slope of eastern embankment.

Photo 06:
View of filled portion and rip-rap along downstream slope of eastern embankment.

Photo 07:
View of the two conduit pipes running from Lined Pond to Raw Water Pond through the eastern embankment, exposed on the Raw Water Pond side.

Photo 08:
View of some of the unseeded areas along the downstream slope of eastern embankment (view towards South).

Photo 09:
View of downstream slope of eastern embankment from the south end. A linear slough on the grassed portion of the slope is visible in the lower right part of the photograph.

Photo 10:
Crest of eastern embankment (view towards North).

Photo 11:
Northern half of the crest of eastern embankment (view towards North).

Photo 12:
Crest of northern embankment (view towards West).

Photo 13:
Crest of northern embankment (view towards East).

Photo 14:
Crest of northern embankment as seen in the vicinity of air compressor building (view towards East).

Photo 15:
Crest of western embankment (i.e. US Army Corps of Engineers levee) near northern abutment (view towards North).

Photo 16:
Crest of western embankment (i.e. US Army Corps of Engineers levee) (view towards South).

Photo 17:
Crest of western embankment (i.e. US Army Corps of Engineers levee) (view towards North).

Photo 18
Crest of southern embankment (view towards West).

Photo 19:
Crest of southern embankment (view towards West).

Photo 20:
Exposed liner on upstream slope of eastern and southern embankments (view towards Southwest).

Photo 21:
Exposed liner on upstream slope of eastern embankment (view towards North).

Photo 22:
Exposed liner on upstream slope of eastern and southern embankments (view towards Southeast).

Photo 23:
Downstream slope of western embankment (i.e. US Army Corps of Engineers levee) (view towards South).

Photo 24:
Bushes (up to 1 to 2 feet tall) along the upper portion of the upstream slope of western embankment (i.e. US Army Corps of Engineers levee).

Photo 25:
Grassy vegetation (taller than 6 inches) on downstream slope of western embankment (i.e. US Army Corps of Engineers levee).

Photo 26
Downstream slope of southern embankment (view towards East).

Photo 27:
Ponded water in downstream toe area of southern embankment, at the western end of the embankment.

Photo 28:
Downstream slope of southern embankment (view towards East).

Photo 29:
Downstream slope of southern embankment (view towards West).

Photo 30:
Downstream slope of southern embankment (view towards East).

APPENDIX B

Inspection Checklist

DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM:	Lined Pond	STATE ID #:	NONE
REGISTERED: (YES/NO)	No	NID ID #:	N/A
STATE SIZE CLASSIFICATION:	N/A	STATE HAZARD CLASSIFICATION:	N/A
		CHANGE IN HAZARD CLASSIFICATION REQUESTED?: (YES/NO)	No

DAM LOCATION INFORMATION

CITY/TOWN:	New Madrid	COUNTY/STATE:	*New Madrid/Missouri*
DAM LOCATION: (street address if known)	41 St. Jude Park, Marston, MO	ALTERNATE DAM NAME:	N/A
USGS QUAD.:	New Madrid, MO-KY	LAT.: 36° 30.4' N	LONG.: 89° 33.5' W
DRAINAGE BASIN:	N/A	RIVER:	Mississippi River
IMPOUNDMENT NAME(S):	Inactive Lined Pond		

GENERAL DAM INFORMATION

TYPE OF DAM:	Earthen and Bermed	OVERALL LENGTH (FT):	7700
PURPOSE OF DAM:	Sedimentation and Storage Basin	NORMAL POOL STORAGE (ACRE-FT):	125
YEAR BUILT:	1994	MAXIMUM POOL STORAGE (ACRE-FT):	1875
STRUCTURAL HEIGHT (FT):	25	EL. NORMAL POOL (FT):	293.0
HYDRAULIC HEIGHT (FT):	3	EL. MAXIMUM POOL (FT):	307.0 (minimum crest elevation)
RESERVOIR SURFACE AREA (ACRES):	78	WINTER DRAWDOWN (FT BELOW NORMAL POOL)	0.0
PUBLIC ROAD ON CREST:	No	DRAWDOWN VOL. (AC-FT)	0.0
PUBLIC BRIDGE OVER SPILLWAY:	No		

NAME OF DAM: Lined Pond | STATE ID #: None

INSPECTION DATE: February 6, 2018 | NID ID #: N/A

INSPECTION SUMMARY

DATE OF INSPECTION: February 6, 2018 | DATE OF PREVIOUS INSPECTION: July 19, 2017

TEMPERATURE/WEATHER: Sunny, 88 | ARMY CORPS PHASE I: No (YES/NO) | If YES, date

CONSULTANT: Haley & Aldrich, Inc. | PREVIOUS ALT. PHASE I: No (YES/NO) | If YES, date

BENCHMARK/DATUM: NAVD88

OVERALL PHYSICAL CONDITION OF DAM: Good | DATE OF LAST REHABILITATION: N/A

SPILLWAY CAPACITY: N/A

EL. POOL DURING INSP.: Below 293 | EL. TAILWATER DURING INSP.: 296

PERSONS PRESENT AT INSPECTION

NAME	TITLE/POSITION	REPRESENTING
Tayfun Gurdal	Technical Specialist	Haley & Aldrich, Inc
Jason Pokorny	Senior Project Manager	Haley & Aldrich, Inc

NAME OF DAM:	Lined Pond	STATE ID #:	None
INSPECTION DATE:	February 6, 2018	NID ID #:	N/A

OWNER:	ORGANIZATION	Associated Electric Cooperative,	CARETAKER:	ORGANIZATION	Associated Electric Cooperative, Inc.
	NAME/TITLE	Mr. Dennis Cox		NAME/TITLE	Mr. Dennis Cox
	STREET	P.O. Box 156		STREET	P.O. Box 156
	TOWN, STATE, ZIP	New Madrid, MO 63869		TOWN, STATE, ZIP	New Madrid, MO 63869
	PHONE			PHONE	
	EMERGENCY PH. #			EMERGENCY PH. #	
	FAX			FAX	
	EMAIL			EMAIL	
	OWNER TYPE	Private			

PRIMARY SPILLWAY TYPE	Mechanical Pump w/ Conduit as Secondary		
SPILLWAY LENGTH (FT)	N/A	SPILLWAY CAPACITY (CFS)	N/A
AUXILIARY SPILLWAY TYPE	N/A	AUX. SPILLWAY CAPACITY (CFS)	N/A
NUMBER OF OUTLETS	One	OUTLET(S) CAPACITY (CFS)	Unknown
TYPE OF OUTLETS	Pump	TOTAL DISCHARGE CAPACITY (CFS)	Unknown
DRAINAGE AREA (SQ MI)	0.15	SPILLWAY DESIGN FLOOD (PERIOD/CFS)	Unkown
HAS DAM BEEN BREACHED OR OVERTOPPED? (YES/NO):	No	IF YES, PROVIDE DATE(S)	
FISH LADDER (LIST TYPE IF PRESENT)	No		
DOES CREST SUPPORT PUBLIC ROAD? (YES/NO)	No	IF YES, ROAD NAME:	
PUBLIC BRIDGE WITHIN 50' OF DAM? (YES/NO):	No	IF YES, ROAD/BRIDGE NAME: MHD BRIDGE NO. (IF APPLICABLE)	

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

EMBANKMENT (U/S SLOPE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S SLOPE	1. SLIDE, SLOUGH, SCARP	None observed	X		
	2. SLOPE PROTECTION TYPE AND COND.	U/S slopes are covered with liner, however there are areas where liner is not covered.		X	
	3. SINKHOLE/ANIMAL BURROWS	None observed	X		
	4. EMB.-ABUTMENT CONTACT	None observed	X		
	5. EROSION	None observed	X		
	6. UNUSUAL MOVEMENT	None observed	X		
	7. VEGETATION (PRESENCE/CONDITION)	None observed	X		

ADDITIONAL COMMENTS: Liner exposed/unprotected along portions of eastern and southern embankments. It is understood that soil can not be placed on exposed areas of liner on slope due to smooth liner surface on 3H:1V slope.

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

EMBANKMENT (CREST)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	1. SURFACE TYPE	Gravel access road, western crest surface is levee's non-gravel surface.	X		
	2. SURFACE CRACKING	None observed	X		
	3. SINKHOLES, ANIMAL BURROWS	None observed	X		
	4. VERTICAL ALIGNMENT (DEPRESSIONS)	None observed	X		
	5. HORIZONTAL ALIGNMENT	None observed	X		
	6. RUTS AND/OR PUDDLES	Minor rutting and erosion on southern crest road.		X	
	7. VEGETATION (PRESENCE/CONDITION)	Sparse vegetation taller than 6 inches			X
	8. ABUTMENT CONTACT	Abutments in good condition	X		

ADDITIONAL COMMENTS: Minor rutting and minor erosion at some places on southern crest. Sparse vegetation taller than 6 inches on the d/s side of crest of western embankent and the d/s and u/s side of crest of eastern embankment.

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

EMBANKMENT (D/S SLOPE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S SLOPE	1. WET AREAS (NO FLOW)	None observed	X		
	2. SEEPAGE	None observed	X		
	3. SLIDE, SLOUGH, SCARP	Sloughing on southern end of downstream slope of eastern embankment.		X	
	4. EMB.-ABUTMENT CONTACT	In good condition	X		
	5. SINKHOLE/ANIMAL BURROWS	None observed	X		
	6. EROSION	Erosion rills less than 6 inches deep on unseeded d/s slope areas on eastern embankment		X	
	7. UNUSUAL MOVEMENT	None observed	X		
	8. VEGETATION (PRESENCE/CONDITION)	Grassy vegetation taller than 6 inches present on most areas of d/s slopes			X

ADDITIONAL COMMENTS: Sloughing on d/s slope of eastern embankment is ~20 ft long, ~2 ft wide and ~1ft deep.

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

PRIMARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Mechanical pump	X		
	WEIR TYPE	None present	X		
	SPILLWAY CONDITION	Mechanical pump not working at time of inspection			X
	TRAINING WALLS	None present	X		
	SPILLWAY CONTROLS AND CONDITION	None present	X		
	UNUSUAL MOVEMENT	None present	X		
	APPROACH AREA	Fair	X		
	DISCHARGE AREA	Fair	X		
	DEBRIS	None present	X		
	WATER LEVEL AT TIME OF INSPECTION	Below 293	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

OUTLET WORKS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
OUTLET WORKS	TYPE	N/A	X		
	INTAKE STRUCTURE	N/A	X		
	TRASHRACK	N/A	X		
	PRIMARY CLOSURE	N/A	X		
	SECONDARY CLOSURE	N/A	X		
	CONDUIT	N/A	X		
	OUTLET STRUCTURE/HEADWALL	N/A	X		
	EROSION ALONG TOE OF DAM	None	X		
	SEEPAGE/LEAKAGE	None	X		
	DEBRIS/BLOCKAGE	None	X		
	UNUSUAL MOVEMENT	None	X		
	DOWNSTREAM AREA	Regularly mowed.	X		
	MISCELLANEOUS				

ADDITIONAL COMMENTS:

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

DOWNSTREAM AREA

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	1. ABUTMENT LEAKAGE	None Present	X		
	2. FOUNDATION SEEPAGE	None Present	X		
	3. SLIDE, SLOUGH, SCARP	None Present	X		
	4. WEIRS	None Present	X		
	5. DRAINAGE SYSTEM	None Present	X		
	6. INSTRUMENTATION	None Present	X		
	7. VEGETATION	Grass taller than 6 inches in most areas of downstream of western and southern slopes.			X
	8. ACCESSIBILITY	Gravel access road along crest. Full time security and fence	X		
	9. DOWNSTREAM HAZARD DESCRIPTION				
	10. DATE OF LAST EAP UPDATE				

ADDITIONAL COMMENTS:

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

INSTRUMENTATION

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
INSTR.	1. PIEZOMETERS	P6 through P8, MW8, MW9 in good condition (not for stability monitoring purposes)	X		
	2. OBSERVATION WELLS	None present	X		
	3. STAFF GAGE AND RECORDER	None present	X		
	4. WEIRS	None present	X		
	5. INCLINOMETERS	None present	X		
	6. SURVEY MONUMENTS	None present	X		
	7. DRAINS	None present	X		
	8. FREQUENCY OF READINGS	No measurements are taken	X		
	9. LOCATION OF READINGS		X		

ADDITIONAL COMMENTS:

NAME OF DAM: Lined Pond STATE ID #: None

INSPECTION DATE: February 6, 2018 NID ID #: N/A

UNDERLYING HYDRAULIC STRUCTURES/PIPES

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
UNDERLYING HYDRAULIC STRUCTURES /PIPES	TYPE	Two 18" pipes through embankment	X		
	INLET	Inlet on u/s slope not visible (under water level)	X		
	CONDUIT	Outfall on d/s side partially visible - in good condition.	X		
	OUTLET STRUCTURE/HEADWALL	Fair	X		
	EROSION ALONG STRUCTURE	None present	X		
	SEEPAGE/LEAKAGE	None present	X		
	DEBRIS/BLOCKAGE	Outfall on d/s side partially visible - no blockage could be observed	X		
	UNUSUAL MOVEMENT	No settlement or uneven ground on embankment and slopes observed	X		
	DOWNSTREAM AREA	Raw water pond	X		
	MISCELLANEOUS				

ADDITIONAL COMMENTS:

Note: Use additional sheets for additional outlets.

APPENDIX C

Definitions

COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions, refer to the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, the Department of the Interior Bureau of Reclamation, or the Federal Emergency Management Agency.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate there from including but not be limited to spillways; reservoirs and their rims; low level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

Size Classification

Large – structure with a height greater than 40 feet or a storage capacity greater than 1,000 acre-feet.

Intermediate – structure with a height between 15 and 40 feet or a storage capacity of 50 to 1,000 acre-feet.

Small – structure with a height between 6 and 15 feet and a storage capacity of 15 to 50 acre-feet.

Non-Jurisdictional – structure less than 6 feet in height and having a storage capacity of less than 15 acre-feet.

Hazard Classification
(In the event the impoundment should fail, the following would occur):

Less Than Low Hazard Potential - Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

Low Hazard Potential - Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

Significant Hazard Potential - Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

High Hazard Potential - Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

General

EAP – Emergency Action Plan - Shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. On million U.S. gallons = 3.068 acre feet

Height of Dam – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

Condition Rating

Unsafe - Major structural, operational, and maintenance deficiencies exist under normal operating conditions.

Poor - Significant structural, operation and maintenance deficiencies are clearly recognized for normal loading conditions.

Fair - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters.

Satisfactory - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.

Good - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF.