

FOUR CORNERS POWER PLANT LINED DECANT WATER POND - Periodic Structural Integrity Assessment

Periodic Hazard Potential Classification
Periodic Structural Stability Assessment
Periodic Safety Factor Assessment

October 2021
AECOM Project 60664563

Prepared for:

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Attachment

Attachment A: AECOM, 2016. *Final Summary Report, Structural Integrity Assessment: Lined Decant Water Pond, Four Corners Power Plant, Fruitland, New Mexico.*
Prepared for: Arizona Public Service, AECOM Job No. 60445844, August 2016.

1. Introduction

This periodic update to the Structural Integrity Assessment for the Lined Decant Water Pond (LDWP) at Four Corners Power Plant operated by Arizona Public Service (APS) has been prepared in accordance with the requirements of Title 40 of the Code of Federal Regulations Part 257 (40 CFR 257) (“the Coal Combustion Residuals [CCR] Rule” or “the Rule”) and the specific requirements within 40 CFR § 257.73 for periodic (every 5 years) assessment regarding structural integrity.

2. Methodology

The methodology used to prepare this 2021 Periodic Assessment of Hazard Potential Classification, Structural Stability Assessment, and Periodic Safety Factor Assessment for the LDWP at the Four Corners Power Plant is for the certifying Qualified Professional Engineer (QPE) to:

- a. Perform a documented review of the 5 years of annual inspection reports since 2016, the most recent of which is:
 - i. APS, 2020. Annual CCR Impoundment and Landfill Inspection Report: Four Corners Power Plant Lined Ash Impoundment, Lined Decant Water Pond, Combined Waste Treatment Pond, and Dry Fly Ash Disposal Area. Generation Engineering, Phoenix, AZ.
- b. Perform a documented review of each major component of the contributing technical information from:
 - i. AECOM, 2016. Final Summary Report, Structural Integrity Assessment: Lined Decant Water Pond, Four Corners Power Plant, Fruitland, New Mexico. Prepared for: Arizona Public Service, AECOM Job No. 60445844, August 2016 (hereafter referred to as the “2016 Report” and incorporated and referenced directly as Attachment A to this document); and
- c. Consider and document whether the 2016 Report and its conclusions:
 - i. Meet the current reporting requirements of the Rule;
 - ii. Reflect the current condition of the structure, as known to the QPE and documented in the annual inspections;
 - iii. Are compromised by any identified issues of concern; and
 - iv. Are consistent with the standard of care of professionals performing similar evaluations in this region of the country; and
- d. Identify any additional analyses, investigations, inspections, and/or repairs that should be completed in order to complete this 2021 Periodic Assessment.

This report documents the results of these considerations, incorporates the 2016 Report as an Appendix, identifies any additional technical investigation or evaluations (if needed), and presents an updated certification by the QPE.

3. 2017–2021 Annual Inspection Reports

Information relevant to the general site conditions and current adequacy and performance of the LDWP embankment and outlet works have been considered. No issues were identified during the annual inspections that would affect the performance of the system and its compliance, as described in the 2016 Report, with the various requirements of the CCR Rule relative to (1) hazard potential classification, (2) structural stability, or (3) safety factor assessment.

Several issues have emerged and been documented in the annual list of “Observed Conditions” over the last five years of reports. The most consistently observed, or significant, conditions are: (1) the pond liner being pulled out of anchor trench in the central portion of the West Embankment; (2) sloughs and rills on the West Embankment slope; and (3) small tears and holes in the geomembrane liner, above the pond water level.

Each of the five annual inspection reports document the same specific, limited location at which the pond liner appeared to have been pulled out from the anchor trench. There is no record that the incidence worsened, nor was corrected, over the reporting period. There is no reason to believe that the capacity of the liner to limit seepage from the pond to the embankment has been compromised. AECOM does not believe that this condition affects the stability or structural integrity of the LDWP embankment.

APS launched a campaign in 2019 to repair minor sloughs and to fill erosion rills in the West Embankment. Sloughs and rills may continue to appear and need to be repaired periodically; however, the rates and locations do not provide concern relative to the stability or structural integrity of the LDWP embankment.

Small tears and holes in the exposed HDPE geomembrane of the pond liner, above the normal operating pond water level, may be expected to occur after 15-plus years of exposure to ultraviolet radiation. With benefit of a lower, secondary HDPE liner, there is no reason to believe that these small holes or tears could contribute to sufficient short-term seepage to affect the stability or structural integrity of the LDWP embankment.

The Interstitial Water Evacuation pump has failed intermittently during the reporting period. During some outages, sufficient water has leaked through defects in the primary liner to allow the primary liner to float, or “whale back”. The presence of a lower, secondary HDPE liner provides confidence that this occasional condition does not provide concern relative to the stability or structural integrity of the LDWP embankment.

The 2017-2021 Annual Inspection Reports also provide information on minimum and maximum values for various types of geotechnical instrumentation installed within the embankments and foundations. Periodically, deviations or technical issues may be identified that limit or alter readings and these instances are reported in the Annual Inspection Reports. For the LDWP, the

instruments consist of standpipe piezometers and surface settlement monuments. The records, including the SM-7 and SM-9 settlement records, were reviewed and no significant, adverse trends that would cause structural instability or change in safety factor.

4. 2016 Certification – Review by Section

Other than as described in the remainder of this section, the details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

4.1 “1.4 Facility Description”

The LDWP is no longer an operating CCR surface impoundment. APS provided notification, dated April 10, 2021, of its intent to close the LDWP.

The LDWP and Lined Ash Impoundment (LAI) are contiguous and have been operated as a single CCR management unit since original construction in 2003; therefore, there remain two inflows to the LDWP from the LAI that either evaporate in the LDWP or can be pumped back to the Plant. The first flow is a gravity flow from the LAI decant tower, which is the primary means of dewatering the LAI in advance of final closure; the second flow is a pumped flow from an internal toe drain within the LAI that removes entrained water from the LAI.

APS intends to close the LDWP and its content in place by dewatering, then folding in the geosynthetic liner system, filling and/ or regrading to provide an integrated closure contour for the entire LAI/LDWP complex, and, finally, by installing an evapotranspiration soil cover.

4.2 “2 Hazard Potential Classification”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

Based on a review of the information presented in the 2016 Report, the LDWP impoundment currently satisfies the criteria for Significant Hazard Potential classification.

4.3 “3 History of Construction”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

4.4 “4 Structural Stability Assessment”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

AECOM assesses that the design, construction, operation, and maintenance of the LDWP are consistent with recognized and generally accepted good engineering practice for the maximum volume of CCR and CCR wastewater that can be impounded therein.

4.5 “5 Safety Factor Assessment”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

AECOM is not aware of any new information that would warrant reevaluation of any material properties, cross-section configurations, or piezometric conditions of the perimeter embankment.

The calculated factors of safety for the three critical cross sections along the LDWP perimeter embankment exceeded the required minimum values for the long-term, maximum storage pool; the maximum surcharge pool; and the seismic (pseudo-static) loading conditions.

4.6 “6 Conclusions”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

5. Recommended Additional Technical Investigations or Evaluations

None identified and none recommended.

6. Conclusion

The 2016 Report and its conclusions meet the current reporting requirements of the Rule, reflect the current condition of the structure as known to the QPE and documented in the annual inspections, are not compromised by any identified issues of concern, and are consistent with the standard of care of professionals performing similar evaluations in this region of the country.

7. Limitations

This report is for the sole use of APS on this project only and is not to be used for other projects. In the event that conclusions based upon the data presented in this report are made by others, such conclusions are the responsibility of others.

The Periodic Structural Integrity Assessment presented in this report is based on the 2016 Report and relies and incorporates any Limitations expressed in that report.

The Certification of Professional Opinion in this report is limited to the information available to AECOM at the time this Assessment was performed in accordance with current practice and the standard of care. Standard of care is defined as the ordinary diligence exercised by fellow practitioners in this area performing the same services under similar circumstances during the same period. Professional judgments presented herein are primarily based on information from

previous reports that have been assumed to be accurate, knowledge of the site, and partly on our general experience with dam safety evaluations performed on other dams.

No warranty or guarantee, either written or implied, is applicable to this work. The use of the word “certification” and/or “certify” in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

8. Certification Statement

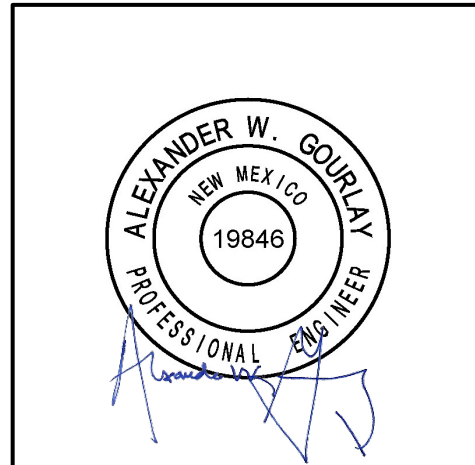
Certification Statement for:

- 40 CFR § 257.73(a)(2)(ii) – Periodic Hazard Potential Classification for an Existing CCR Surface Impoundment
- 40 CFR § 257.73(d)(3) – Periodic Structural Stability Assessment for an Existing CCR Surface Impoundment
- 40 CFR § 257.73(e)(2) – Periodic Safety Factor Assessment for an Existing CCR Surface Impoundment

I, Alexander W. Gourlay, being a Registered Professional Engineer in good standing in the State of New Mexico, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the periodic hazard potential classification, periodic structural stability assessment, and periodic safety factor assessment provided in this Periodic Structural Integrity Assessment Report, and referencing the 2016 Report, were conducted in accordance with the requirements of 40 CFR § 257.73.

Alexander W. Gourlay, P.E.
Printed Name

October 11, 2021
Date



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