

FOUR CORNERS POWER PLANT LINED DECANT WATER POND

Periodic Inflow Design Flood Control System Plan

October 2021
AECOM Project 60664563

Prepared for:

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Attachment

Attachment A: AECOM, 2016, *Four Corners Power Plant, Lined Decant Water Pond, Inflow Design Flood Control System Plan, FC_InflowFlood_009_20161017*, August 31, 2016.

1. Introduction

This Periodic Inflow Design Flood Control System Plan for the Lined Decant Water Pond 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 requirement of 40 CFR § 257.82(c)(4) that “(t)he owner or operator of the CCR unit must prepare periodic inflow design flood control system plans required by paragraph (c)(1) of this section every five years.”

2. Methodology

The methodology used to prepare this 2021 Periodic Inflow Design Flood Control System Plan for the Lined Decant Water Pond (LDWP) at the Four Corners Power Plant is for the certifying Qualified Professional Engineer (QPE) to:

Identify and review the hydrologic design basis references used for the 2016 Plan and verify applicability for use in 2021.

- a. Perform a documented review of each major component of the contributing technical information from:
 - i. AECOM, 2016, Four Corners Power Plant, Lined Decant Water Pond, Inflow Design Flood Control System Plan, FC_InflowFlood_009_20161017, August 31, 2016, (hereafter referred to as the “2016 Plan” and incorporated and referenced directly as Attachment A to this document).
- b. Consider and document whether the 2016 Plan 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
- c. Identify any additional analyses, investigations, inspections, and/or repairs that should be completed in order to complete this 2021 Recertification.

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

3. Applicability of 2016 Plan Hydrologic Design Basis

In 2016, the LDWP was an active pond, receiving gravity flow of decant water from Flue Gas Desulfurization (FGD) slurries discharged to the Lined Ash Impoundment (LAI). The LDWP also received several other minor discharges. In April 2021, APS published a notice of intent to close the LDWP and the LAI and to cease external discharge to both. Continued flow from the LAI to the LDWP is permitted after the notice of cessation of discharge because they have been operated as a contiguous CCR multi-unit.

The gravity flows from the LAI decant system decreased after April 2021. Significant flow typically now occur only when APS pumps water from the LAI free water pond, in the southwest corner of the LAI, to the decant tower to allow it to drain to the LDWP. As a result, the water level in the LDWP is significantly lowered and, at times, does not cover the high end of the sloped pond bottom. The current “normal” operating level of the LDWP is approximately 5207 feet (NGVD29), one foot higher than the high end of the bottom, or 2.9 feet lower than the NMOSE-permitted Maximum Operating Storage Level of 5209.9 feet (NGVD29).

In 2016, and in 2021, studies have assigned the Significant Hazard Potential classification to the LDWP. 40 CFR §257.82(a)(3)(ii) requires that, for a Significant Hazard Potential CCR surface impoundment, the Inflow Design Flood (IDF) is the 1,000-year flood.

In 2016, APS elected to demonstrate capacity to store and/or pass the IDF by presenting similar, earlier calculations of a 72-hour PMP flood storage/routing through the LAI to the LDWP. The 72-hour PMP was estimated to have a precipitation depth of 10.9 inches, which is significantly greater than the precipitation estimate for the 1000-year flood event (“less than 4 inches”). The LAI and LDWP are both formed by perimeter embankments and therefore receive runoff only from direct precipitation, although the LAI may drain to the LDWP by the gravity decant tower. The 2016 hydrologic design basis requires that the LDWP be able to store the IDF on the LDWP and drained from the LAI because the outlet from the LAI to the LDWP is ungated.

Although for the 2021 Periodic Inflow Design Flood Control System Plan for the LAI, APS elected to provide a new calculation to demonstrate capacity of the LAI itself to store the 1,000-year flood IDF, the LDWP in 2021 retains the capacity to store the 72-hour PMP volumes from both the LAI and the LDWP, so the demonstration in the 2016 Plan for LDWP remains valid and does not require an update.

Therefore, this section of the 2016 Plan adequately represents current conditions and satisfies the requirements of the Rule.

4. 2016 Plan – Review by Section

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

4.1 “§257.82 Hydrologic and Hydraulic capacity requirements for CCR surface impoundments”

The details presented in this section of the 2016 Plan accurately describe the requirements of the Rule.

4.2 “Overview”

In April 2021, APS ceased discharges to the LAI and LDWP combined CCR multi-unit. APS intends to close the LDWP by dewatering and then “closure in place” with an evapotranspiration soil cover, within the time frames allowed by the Rule for a surface impoundment of this size.

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

4.3 “§257.82 (a)(1)(2)(3) Hydrologic and Hydraulic capacity requirements for CCR surface impoundments”

A separate 2021 Periodic Hazard Potential Study confirms the assignment of the Significant Hazard Potential classification to the LDWP. Therefore, this aspect of the 2016 Plan adequately represents current conditions and satisfies the requirements of the Rule.

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

4.4 “§257.82 (b) Hydrologic and Hydraulic capacity requirements for CCR surface impoundments”

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

4.5 “§257.82 (c)(1)(2)(3)(4)(5) Hydrologic and Hydraulic capacity requirements for CCR surface impoundments”

The owner or operator continues to acknowledge and will comply with these requirements.

Per the requirement of §257.82 (c)(4), this document constitutes the “every five years” Periodic Inflow Design Flood Control System Plan.

A certification of this Periodic Inflow Design Flood Control System Plan by a QPE is included in this document per the requirement of §257.82(c)(5).

4.6 “§257.82 (d) Hydrologic and Hydraulic capacity requirements for CCR surface impoundments”

The owner or operator continues to acknowledge and will comply with these requirements.

5. Recommended Additional Technical Investigations or Evaluations

None identified and none recommended.

6. Conclusion

The 2016 Plan and its conclusions, as amended by the analyses presented in this 5-Year periodic revision, 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 document 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 document are made by others, such conclusions are the responsibility of others.

The Periodic Inflow Design Flood Control System Plan presented in this report is based on the 2016 Plan and relies and incorporates any Limitations expressed in that document.

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

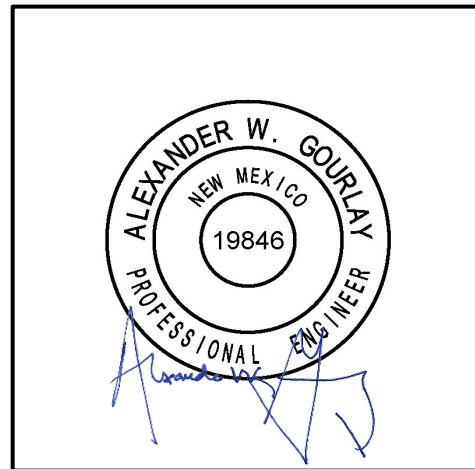
Certification Statement for:

- Certification Statement 40 CFR § 257.82(c)(5) – Periodic Inflow Design Flood Control System Plan for an Existing CCR Surface Impoundment.
- CCR Unit: Arizona Public Service; Four Corners Power Plant; Lined Decant Water Pond

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 information contained in this Periodic Inflow Design Flood Control System Plan dated October 2021, including the technical content in Attachments A, meets the requirements of 40 CFR § 257.81.

Alexander W. Gourlay, P.E.
Printed Name

October 11, 2021
Date



Attachment A:

AECOM, 2016, *Four Corners Power Plant, Lined Decant Water Pond, Inflow Design Flood Control System Plan, FC_InflowFlood_009_20161017*, August 31, 2016.

ATTACHMENT A

**AECOM, 2016, *Four Corners Power Plant, Lined Decant Water Pond,*
Inflow Design Flood Control System Plan,
*FC_InflowFlood_009_20161017, August 31, 2016.***

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