CCR Rule Report: Periodic Inflow Design Flood Control System Plan

Bottom Ash Pond 1
Laramie River Station
Wheatland, Wyoming

Basin Electric Power Cooperative
Bismarck, North Dakota

Project number: 60788384

October 12, 2026

Delivering a better world

Quality information

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Revision History

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Table of Contents

1. Introduction 5
2. Hydrologic and Hydraulic Analyses 6
   2.1 Inflow Design Flood Control Systems (§ 257.82(a)) 6
   2.2 Discharge from the CCR Unit (§ 257.82(b)) 6
3. Certification Statement 8

1. Introduction

This Coal Combustion Residuals (CCR) Rule Report documents that the periodic inflow design flood control system plan for Bottom Ash Pond 1 at the Basin Electric Power Cooperative Laramie River Station meets the requirements specified in 40 Code of Federal Regulations (CFR) § 257.82.

Bottom Ash Pond 1 is an existing CCR surface impoundment as defined by 40 CFR § 257.53. The initial inflow design flood control system plan for Bottom Ash Pond 1 was completed on October 13, 2016. The CCR Rule[1] requires that a periodic inflow design flood control system plan for an existing CCR surface impoundment be prepared every five years. The date of completion of the first subsequent plan was October 12, 2021. Therefore, this second Periodic Inflow Design Flood Control System Plan has been completed by October 12, 2026. The plan must document how the inflow design flood control system has been designed and constructed to meet the requirements of 40 CFR § 257.82.

The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the inflow design flood control system meets the requirements of 40 CFR § 257.82.

[1] U.S. Environmental Protection Agency (USEPA) (2015). *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule*, 40 CFR Part 257. Federal Register, Volume 80, Subpart D, April 17, 2015.

2. Hydrologic and Hydraulic Analyses

40 CFR § 257.82
(a) The owner or operator of an existing … CCR surface impoundment … must design, construct, operate, and maintain an inflow design flood control system as specified in paragraphs (a)(1) and (2) of this section.

(1) The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section.

(2) The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood specified in paragraph (a)(3) of this section.

(3) The inflow design flood is:

(i) For a high hazard potential CCR surface impoundment, …, the probable maximum flood;

(ii) For a significant hazard potential CCR surface impoundment, …, the 1,000-year flood;

(iii) For a low hazard potential CCR surface impoundment, …, the 100-year flood; or

(iv) For an incised CCR surface impoundment, the 25-year flood.

(b) Discharge from the CCR unit must be handled in accordance with the surface water requirements under § 257.3-3.

Analyses completed for the hydrologic and hydraulic assessments of the Bottom Ash Pond 1 are described in the following subsection. Data and analysis results in the following subsections are based on spillway design information shown on design drawings, construction information, topographic surveys, and information about operational and maintenance procedures provided by Basin Electric Power Cooperative. The analysis approach and results of the hydrologic and hydraulic analyses are presented in the following subsections.

At this time, as determined under 40 CFR § 257.73(a)(2), Bottom Ash Pond 1 is considered to have a significant hazard potential classification.

2.1 Inflow Design Flood Control Systems (§ 257.82(a))

In accordance with the requirements of 40 CFR § 257.82(a)(3), a Periodic Inflow Design Flood Control System Plan was developed for Bottom Ash Pond 1. This was accomplished by evaluating the effects of a 24-hour duration storm for the 1,000-year Inflow Design Flood (IDF) using a HydroCAD computer model. The computer model evaluated the ability of Bottom Ash Pond 1 to collect and control the 1,000-yr IDF under existing operational and maintenance procedures. Rainfall data for the 1,000-yr IDF was obtained from the Applied Weather Associates (AWA) Probable Maximum Precipitation (PMP) study for Wyoming, which supersedes values provided in Hydrometeorological Reports (HMRs) 49, 51, 55A, and 57. The rainfall depth given in the AWA PMP study is 5.8 inches.

The HydroCAD model results for the Bottom Ash Pond 1 indicate that the CCR unit has sufficient storage capacity to adequately manage inflows during peak discharge conditions created by the 1,000-yr IDF. The peak water surcharge elevation ranges between elevation 4562.4 to 4563.4 feet during the IDF based on a starting water surface elevation of 4561.7 – 4562.7 feet, and the minimum crest elevation of Bottom Ash Pond 1 dike is between Elevation 4563.0 and Elevation 4565.0 feet. Depending on ranges of water level and variability in perimeter berm crest elevations, overtopping may be possible. Consequently, normal operating levels must be restricted to be a minimum distance of 1 foot below the lowest point in the perimeter embankment crest to prevent overtopping and to meet the requirements of the regulation.

Based on this evaluation, Bottom Ash Pond 1 meets the requirements outlined in the regulation § 257.82(a).

2.2 Discharge from the CCR Unit (§ 257.82(b))

Note that § 257.82(b) references 40 CFR § 257.3-3, which states the following:

(a) For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.
(b) For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.
(c) A facility or practice shall not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act, as amended.

(d) Definitions of the terms Discharge of dredged material, Point source, Pollutant, Waters of the United States, and Wetlands can be found in the Clean Water Act, as amended, 33 U.S.C. 1251 et seq., and implementing regulations, specifically 33 CFR part 323 (42 FR 37122, July 19, 1977).

The handling of discharge was evaluated by reviewing design drawings, operational and maintenance procedures, conditions observed in the field by AECOM, and the inflow design flood control system plan developed per § 257.82(a).

Based on this evaluation, Bottom Ash Pond 1 does not discharge into waters of the United States. Pond water from Bottom Ash Pond 1 is evaporated or pumped to the Laramie River Station for use in plant operations. Hydraulic and hydrologic analyses performed as part of the periodic inflow design flood control system plan found that Bottom Ash Pond 1 adequately manages outflow during the 1000-year IDF, as overtopping of Bottom Ash Pond 1 embankments is not expected.

Therefore, discharge into waters of the United States is not expected, and Bottom Ash Pond 1 meets the requirements in § 257.82(b).

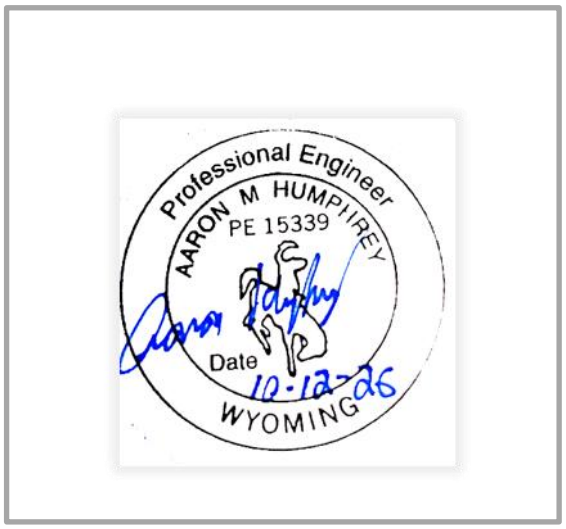
3. Certification Statement

CCR Unit: Basin Electric Power Cooperative; Laramie River Station; Bottom Ash Pond 1

I, Aaron Humphrey, being a Registered Professional Engineer in good standing in the State of Wyoming, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this CCR Rule Report has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the initial inflow design flood control plan dated October 12, 2026 meets the requirements of 40 CFR § 257.82.

Aaron M Humphrey

Printed Name

October 12, 2026

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