

CCR Rule Report: Periodic Inflow Design Flood Control System Plan

East Emergency Pond
Laramie River Station
Wheatland, Wyoming

Basin Electric Power Cooperative
Bismarck, North Dakota

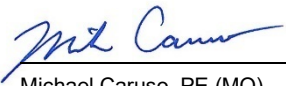
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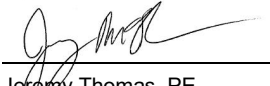
October 12, 2021

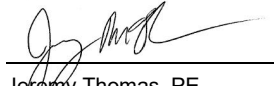
Quality information

Prepared by

Paulo Florio
Geotechnical Staff

Checked by

Michael Caruso, PE (MO)
Civil Engineer

Verified by

Jeremy Thomas, PE
Associate

Approved by

Jeremy Thomas, PE
Associate

Revision History

Revision	Revision date	Details	Authorized	Name	Position

Distribution List

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Prepared for:

Basin Electric Power Cooperative
Bismarck, North Dakota

Prepared by:

AECOM
2985 South Ridge Road, Suite B
Green Bay, Wisconsin 54304
aecom.com

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1. Introduction

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

The East Emergency Pond is an existing CCR surface impoundment as defined by 40 CFR § 257.53. Initial inflow design flood control system plan for East Emergency Pond was completed on October 13, 2016. The CCR Rule¹ 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 initial assessment is the basis for establishing the deadline to complete the first subsequent assessment. Therefore, this first Periodic Inflow Design Flood Control System Assessment has been completed by October 12, 2021. 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.

The owner or operator must prepare a periodic inflow design flood control system plan every five years.

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 East Emergency Pond are described in the following subsections. Data and analysis results in the following subsections are based on 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), the East Emergency Pond 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 the East Emergency Pond. This was accomplished by evaluating the effects of a 24-hour duration design storm for the 1,000-year Inflow Design Flood (IDF) using an AutoCAD Civil3D computer model. The computer model evaluated the ability of the East Emergency Pond to collect and control the 1,000-yr IDF under existing operational and maintenance procedures. The East Emergency Holding Pond is currently undergoing retrofitting in preparation to closure. As part of the construction, two service roads were built across the pond, dividing the pond north-to-south into three independent sections: West, Central and East. Each section was modeled independently.

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 Civil3D model results for each section of the East Emergency Pond indicate that each section of 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, IDF based starting water surface elevation, and minimum crest elevation of each section of the East Emergency Pond are presented in Table 1.

Table 1. Effect of 1,000-Year Storm on Each Section of the East Emergency Holding Pond Impoundment

Impoundment Section	Normal Operating Pool ¹ (Feet, NGVD29)	1,000-Year Flood Pool (Feet, NGVD29)	Embankment Design Crest ² (Feet, NGVD29)
East Emergency Pond (West)	4537.0	4537.5	4540.0
East Emergency Pond (Central)	4537.0	4537.5	4540.0
East Emergency Pond (East)	4537.0	4538.4	4540.0

¹ Normal Operating Pool elevation were conservatively estimated considering a freeboard of 3.0 feet.

² Embankment Design Crest elevation were obtained from recent topographic data.

Each section of the East Emergency Holding Pond provide adequate freeboard remaining after reaching peak water surcharge elevation; therefore, overtopping is not expected.

Based on this evaluation, the East Emergency Pond meets the requirements in § 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 evaluation of discharge was based on review of 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, the East Emergency Pond does not discharge into waters of the United States. Discharge from the East Emergency Pond is 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 the East Emergency Pond adequately manages outflow during the 1000-year IDF, as overtopping of the East Emergency Pond embankments is not expected.

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

3. Certification Statement

CCR Unit: Basin Electric Power Cooperative; Laramie River Station; East Emergency Pond

I, Jeremy Thomas , 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, 2021 meets the requirements of 40 CFR § 257.82.

Jeremy Thomas
Printed Name

October 12, 2021
Date

