



Submitted to
Dynergy Midwest Generation,
LLC
1500 Eastport Drive
Collinsville, IL 62234

Submitted by
AECOM
1001 Highlands Plaza Drive West
Suite 300
St. Louis, MO 63110

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CCR Rule Report:
Initial Inflow Design Flood Control
System Plan

For

Bottom Ash Pond

At Baldwin Energy Complex

1 Introduction

This Coal Combustion Residual (CCR) Rule Report documents that the initial inflow design flood control system plan for Bottom Ash Pond at the Dynegy Midwest Generation, LLC Baldwin Energy Complex meets the requirements specified in 40 Code of Federal Regulations (CFR) §257.82. The Bottom Ash Pond is located near Baldwin, Illinois in Randolph County, approximately 0.9 miles southwest of the Baldwin Energy Complex. The Bottom Ash Pond serves as the primary wet impoundment for sluiced bottom ash and other non-CCR wastewaters produced at the Baldwin Energy Complex.

The Bottom Ash Pond is an existing CCR surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the initial inflow design flood control system plan for an existing CCR surface impoundment be prepared by October 17, 2016. 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 and be supported by appropriate engineering calculations.

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 an inflow design flood control system plan every five years.

2 Initial Inflow Design Flood Control System Plan

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 initial inflow design flood control system plan of the Bottom Ash Pond are described in the following subsections. Data and analysis results in the following subsection are based on spillway design information shown on design drawings, construction information, topographic surveys, information about operational and maintenance procedures provided by Dynegy Midwest Generation, LLC, and field measurements collected by AECOM. The analysis approach and results of the hydrologic and hydraulic analyses are presented in the following subsections.

The Bottom Ash Pond has a significant hazard potential, based on the initial hazard potential classification assessment performed by Stantec in 2016 in accordance with §257.73(a)(2).

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

An initial inflow design flood control system plan, supported by a hydraulic and hydrologic analysis, was developed for the Bottom Ash Pond by evaluating the effects of a 24-hour duration design storm for the 1,000-year Inflow Design Flood (IDF) using a hydrologic HydroCAD (Version 10) computer model and a starting water surface elevation of 415.8 feet. The computer model evaluated the Bottom Ash Pond's ability to collect and control the 1,000-year IDF under existing operational and maintenance procedures. Rainfall data for the 1,000-year IDF was obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14. The NOAA Atlas 14 rainfall depth is 11.2 inches.

The HydroCAD model results for the Bottom Ash Pond indicate that the CCR unit has sufficient storage capacity and spillway structures to adequately manage (1) flow into the CCR unit during and following the peak discharge of the 1,000-year IDF and (2) flow from the CCR unit to collect and control the peak discharge resulting from the 1,000-year IDF. The peak water surcharge elevation is 418.7 feet during the IDF, and the minimum crest elevation of the Bottom Ash Pond dike, outside of the riprap-lined emergency spillway (invert elevation of 417.6 feet), is 419.0 feet. Therefore, uncontrolled overtopping is not expected.

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

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

40 CFR §257.82(b) provides that the discharge from the CCR unit must be handled in accordance with the surface water requirements under 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, outflow from the Bottom Ash Pond is ultimately routed through two separate NPDES-permitted outfalls into the Kaskaskia River. One NPDES outfall is located downstream from the non-CCR Tertiary Pond, and accepts flow from the primary and emergency spillways of the Bottom Ash Pond through the Secondary Pond. The second NPDES outfall is rarely used and associated with the non-CCR Cooling Pond, which accepts clear water from the Bottom Ash Pond pump station during heavy rainfall events. Hydraulic and hydrologic analyses performed as part of the initial inflow design flood control system plan found that the Bottom Ash Pond adequately manages outflow during the 1,000-year IDF.

Therefore, discharge of pollutants in violation of the NPDES permit is not expected as discharge is routed and controlled through the existing spillway system and NPDES-permitted outfalls during both normal and IDF conditions. Based on this evaluation, the Bottom Ash Pond meets the requirements in §257.82(b).

3 Certification Statement

CCR Unit: Dynegy Midwest Generation, LLC; Baldwin Energy Complex; Bottom Ash Pond

I, Victor A. Modeer, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this CCR Rule Report, and the underlying data in the operating record, 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 system plan dated October 13, 2016 meets the requirements of 40 CFR §257.82.

Victor A Modeer Jr
Printed Name

10/13/16
Date



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1001 Highlands Plaza Drive West
Suite 300
St. Louis, MO 63110
1-314-429-0100