Prepared for

Dynegy Midwest Generation, LLC
1500 Eastport Plaza Drive
Collinsville, Illinois 62234

INITIAL CCR INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN

VERMILION POWER PLANT
NEW EAST ASH POND
OAKWOOD, ILLINOIS

Prepared by

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Project Number CHE8404A

October 2021

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TABLE OF CONTENTS

1. INTRODUCTION

Dynegy Midwest Generation, LLC (Dynegy) is the owner of inactive coal-fired Vermilion Power Plant (VPP), also referred to as Vermilion Power Station, located approximately 13-miles Northwest of Danville, Illinois. The New East Ash Pond (NEAP) is an inactive surface impoundment storing coal combustion residuals (CCR). The owner must prepare an Inflow Design Flood Control System Plant that meets the requirements of *35 Ill. Admin Code 845 Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments* (herein referred to as *Section 845*).

NEAP is an existing CCR surface impoundment as defined by *Section 845.120*, This Inflow Design Flood Control System Plan addresses the requirements of *Section 845.510(c)* for the NEAP.

1.1. Facility Information

Facility:	Vermilion Power Plant 10188 East 2150 North Rd Oakwood, IL 61858
Owner/Operator:	Dynegy Midwest Generation, LLC 1500 Eastport Plaza Drive Collinsville, IL 62234

2. INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN

Section 845.510(c)(1): Content of the Plan. The owner or operator must prepare initial and annual inflow design flood control system plans for the CCR surface impoundment. These plans must document how the inflow design flood control system has been designed and constructed to meet the requirements of this Section. Each plan must be supported by appropriate engineering calculations.

Section 845.510(c)(2): Amendment of the Plan. The owner or operator of the CCR surface impoundment may amend the written inflow design flood control system plan at any time. The owner or operator must amend the written inflow design flood control system plan whenever there is a change in conditions that would substantially affect the written plan in effect.

Analyses completed for the initial inflow design flood control system plan of the NEAP are described in the following subsections. Data and analysis results in the following subsections are based on spillway design information shown on design drawings, construction information, topographic surveys, information about operational and maintenance pocesures provided by Dynegy. The analysis approach and results of the hydrologic and hydraulic analyses are presented in the following subsections.

2.1. Initial Inflow Design Flood Control Systems (Section 845.510(a))

Section 845.510(a): The owner or operator of an existing or new CCR surface impoundment or any lateral expansion of a CCR surface impoundment must design, construct, operate, and maintain an inflow design flood control system as specified in subsections (a)(1) and (2).

1. The inflow design flood control system must adequately manage flow into the CCR surface impoundment during and following the peak discharge of the inflow design flood specified in subsection (a)(3).

2. The inflow design flood control system must adequately manage flow from the CCR surface impoundment to collect and control the peak discharge resulting from the inflow design flood specified in subsection (a)(3).

3. The inflow design flood, at a minimum, is:

A. For a Class 1 CCR surface impoundment, as determined under Section 845.440(a), the probable maximum flood;

B. For a Class 2 CCR surface impoundment, as determined under Section 845.440(a), the 1000-year flood; or

C. For an incised CCR surface impoundment, the 25-year flood.

The NEAP is a Class 2 CCR surface impoundement based on the certified documentation of initial hazard potential classification (Luminant, October 2021), in accordance with *Section 845.440*.

An initial inflow design flood control system plan, supported by a hydraulic and hydrologic analysis, was developed for the NEAP by evaluating the effects of a 24-hour duration design storm for the 1,000-year Inflow Design Flood (IDF) using a hydrologic HEC-HMS (Version 4.8) computer model and a starting water surface elevation of 589.0 feet (NAVD 88). Per the June 22, 2021 Illinois Attorney General (IAG) Interim Order (Order), *II. Interim Injunction Relief (2)(b); Within forty-five (45) days of the entry of this Order, Defendant shall submit to Illinois EPA, for it review and approval, a written scope of work for the removal of free water and dewatering of the Ponds at the Site, including a proposed schedule for implementation.* Therefore, the starting water surface elevation was set at the bottom elevation of the NEAP (589.0 feet) when evaluating the 1,000-year IDF as the IAG Order requires removal of free water from NEAP as part of its normal operating condition.

The computer model evaluated the NEAP ability to collect and control the 1,000-year IDF under existing operatrional and maintenance procedures. Rainfall data for the 1,000-year IDF was obtained from the National Oceanic and Atmosheric Administration (NOAA) Precipitation Frequency Distribution Server (PFDS), which is an online interactive map that provides NOAA Atlas 14 rainfall data for a selected location. The NOAA Atlas 14 rainfall depth is 10.5 inches at NEAP per the PFDS for the 1,000-year, 24-hour rainfall event.

The HEC-HMS model results for the NEAP 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 601.6 feet (NAVD 88), and the minimum crest elevation of the NEAP dike is 620.0 feet (NAVD 88). Therefore, overtopping of the NEAP dike is not expected during the evaluated 1,000-year IDF.

Based on this evaluation, the NEAP meets the requirements in *Section 845.510(a)*.

2.2. Discharge from the CCR Surface Impoundment (Section 845.510(b))

Section 845.510(a): Discharge from the CCR surace impoundment must be handled in accordance with the surface water requirements in Section 845.110(b)(3) and 35 Ill. Adm. Code Subtitle C.

Section 845.110(b): Any CCR surface impoundment or lateral expansion of a CCR surface impoundment is subject to the following requirements:

3. *Rivers, Lakes and Streams Act [615 ILCS 5/23 and 23(a)] and 17 Ill. Adm. Code 3702.*

The handling of discharge was evaluated by reviewing design drawings, operational and maintenance procedures, and the inflow design flood control system plan developed per *Section 845.510(a)*.

Based on this evaluation, outflow from the NEAP is ultimately routed through a NPDES-permitted discharge into the Middle Fork Vermilion River via its secondary settling pond non-CCR surface impoundment. Hydraulic and hydrologic analyses performed as part of the initial inflow design flood control system plan found that the NEAP adequately manages flow during the 1,000-year IDF, as overtopping of the NEAP embankment is not expected during the evaluated IDF.

Therefore, discharge of pollutants in violation of the NPDES permit is not expected during normal and IDF conditions as all discharge is routed through the existing spillway system and NPDES-permitted outfall.

Based on this evaluation, the NEAP meets the requirements in *Section 845.510(b)*.

3. CERTIFICATION

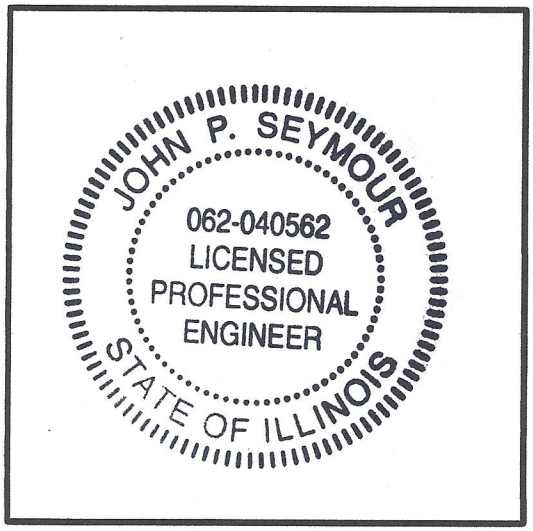
CCR Unit: Dynegy Midwest Generation, LLC; Vermilion Power Plant, New East Ash Pond

I, John Seymour, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify in accordance with Section 845.510(c)(3) to the best of my knowledge, information, and belief, that the information contained in this plan has been prepared in accordance with the accepted practice of engineering and that, for the above referenced CCR Unit, this initial inflow design flood control system plan meets the requirements of *Section 845.510*.

John Seymour
Printed Name

John Seymour 10/22/2021
Signature Date

062.040562 Illinois 30 November 2021
Registration Number State Expiration Date



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