

CCR Rule Report:

**Run-on and Run-off  
Control System Plan**

Coffeen Power Station

CCR Landfill, Montgomery County,  
Illinois

*Submitted to Illinois Power Generating Company  
October 2016*

**Table of Contents**

**1. Introduction..... 1**  
    1.1 Site Description ..... 1  
    1.2 Design Criteria..... 1  
**2. Run-on Control ..... 2**  
**3. Run-off Control ..... 2**  
**4. Surface Water Management Structures ..... 3**  
**5. Operation and Maintenance ..... 3**  
**6. NPDES Permitting ..... 3**  
**7. Conclusion ..... 3**  
**8. References ..... 4**  
**9. Certification Page ..... 5**

**Appendices**

Appendix A CCR Landfill Layout Figure

*Copyright © 2016 by Hanson Professional Services Inc. All rights reserved. This document is intended solely for the individual or the entity to which it is addressed. The information contained in this document shall not be duplicated, stored electronically, or distributed, in whole or in part, by anyone other than the recipient without the express written permission of Hanson Professional Services Inc., 1525 S. Sixth St., Springfield, IL 62703, (217) 788-2450, www.hanson-inc.com. Unauthorized reproduction or transmission of any part of this document is a violation of federal law. Any concepts, designs and project approaches contained herein are considered proprietary. Any use of these concepts and approaches by others is considered a violation of copyright law.*

## **Run-on and Run-off Control System Plan**

### **1. Introduction**

In accordance with 40 CFR 257.81(c), the owner or operator of a Coal Combustion Residuals (CCR) landfill must prepare an initial surface water run-on and run-off control system plan no later than October 17, 2016, and revise the plan every five years. This plan addresses the surface water management for the Coffeen Power Station's CCR Landfill (CCR Landfill). The surface water controls are designed to collect and route run-off from the final landfill cover and from the CCR Landfill during operation in accordance with 40 CFR 257.81.

#### **1.1 Site Description**

The CCR Landfill is located south of Coffeen, Illinois, east of the Coffeen Lake State Fish and Wildlife Area and is part of the Coffeen Power Station in Montgomery County, Illinois. More specifically, the facility is located within Section 10 of East Fork Township, Township 7 North, Range 3 West of the Third Principal Meridian.

The CCR Landfill consists of an approximately 21-acre active area. Refer to Appendix A for a figure of the CCR Landfill layout.

Surface water management features for the CCR Landfill include:

- Run-on from undisturbed areas;
- Run-off from disturbed areas;
- Run-on/run-off from temporary and intermediate CCR Landfill cover;
- Perimeter ditches;
- Perimeter berms;
- Outfall structure and haul road culvert; and
- Southwest Detention Pond and associated discharge structures.

The CCR Landfill is a permit-exempt facility designed, constructed and operated in compliance with all applicable requirements of 35 Ill. Adm. Code 811, 812 and 815. An initial facility report is on file with the Illinois Environmental Protection Agency (IEPA). The stormwater management design of the CCR Landfill was done in compliance with Illinois Environmental Protection Agency regulations found in 35 Ill. Adm. Code Section 811.103. These regulations are equal to or more stringent than the requirements set forth in 40 CFR 257.81. Design calculations were performed for the interim and fully constructed and closed conditions, allowing for phased expansion as needed.

#### **1.2 Design Criteria**

The 40 CFR 257.81 requirements for run-on and run-off controls for CCR landfills follow.

The owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill must design, construct, operate and maintain:

1. A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 25-year, 24-hour storm; and

2. A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 25-year, 24-hour storm.

In addition, run-off from the active portion of the CCR unit must be handled in accordance with U.S. Environmental Protection Agency (USEPA) rules governing the discharge of surface water (see 40 CFR Part 257.3-3).

The CCR Landfill is designed, constructed, operated and maintained using criteria either equivalent to or in exceedance of the requirements of 40 CFR 257.81.

## **2. Run-on Control**

The CCR Rule defines run-on to mean any liquid that drains over land onto any part of a CCR landfill or any lateral expansion of a CCR landfill. In surface water hydrology, run-on is a quantity of surface run-off, or excess rain, snowmelt or other sources of water that flows from an upstream catchment area onto a specific downstream location. The CCR Rule requires that a CCR landfill be designed, constructed, operated and maintained to prevent flow onto the active portion of a CCR landfill during the peak discharge from a 25-year, 24-hour storm. The USEPA has adopted this requirement to minimize the amount of surface water entering a CCR landfill and minimize disruption of a CCR landfills operation because of stormwater inflow.

Surface water run-on is prohibited from entering the CCR Landfill by perimeter berms, which allow flow to be directed around the CCR Landfill. This surface water discharges into the Southwest Detention Pond. The Southwest Detention Pond discharges to Coffeen Lake at National Pollutant Discharge Elimination System (NPDES) Outfall 018.

## **3. Run-off Control**

The CCR Rule defines run-off to mean any liquid that drains over land from any part of a CCR landfill. Effectively, run-off is the portion of rainwater, snowmelt or other liquid that does not infiltrate CCR material and travels overland. Typically, run-off is the product of the inability of water to infiltrate into soil because of the saturation or infiltration rate capacity being exceeded. The CCR Rule requires that a CCR landfill be designed, constructed, operated and maintained to collect and control at least the water volume resulting from a 25-year, 24-hour storm. The owner or operator must design, construct, operate and maintain a CCR landfill in such a way that the maximum run-off rate generated from a 25-year, 24-hour storm must be collected through hydraulic structures, such as drainage ditches, toe drains, swales or other means, and controlled so as to not adversely affect the condition of the CCR landfill. The USEPA has promulgated these requirements to minimize the detention time of run-off on a CCR landfill and minimize infiltration into a CCR landfill, dissipate stormwater run-off velocity and minimize erosion of CCR landfill slopes.

Run-off from the active CCR Landfill flows to the perimeter of the active area and is carried southward by perimeter ditches, which flow to the Outlet Structure. A culvert has been installed across the perimeter ditch to allow hauling of CCR material into the active area. The Outlet Structure is a 42-inch diameter culvert pipe that discharges through the southern perimeter berm into the Southwest Detention Pond. The Southwest Detention Pond discharges to Coffeen Lake at NPDES Outfall 018.

Once the CCR Landfill reaches design capacity, a final composite cover system will be installed, covering the perimeter ditches, sideslopes and top of the CCR Landfill, preventing run-off from

contacting CCR material. Run-off from the final cover and active area would flow to the Outfall Structure.

A support document for the March 2008 Coffeen Power Station NPDES permit modification, including discharge calculations, is included in Appendix B.5 of the "Run-on Run-off Control System Documentation for Coffeen Power Station CCR Landfill" in the Coffeen Power Station operating record.

#### **4. Surface Water Management Structures**

Calculations for perimeter ditches, the Outlet Structure, culverts and Southwest Detention Pond are discussed in greater detail in Appendix B of the "Run-on Run-off Control System Documentation for Coffeen Power Station CCR Landfill" in the Coffeen Power Station operating record. These stormwater management structures are designed, constructed, operated and maintained to safely carry at least the maximum run-off rate from the 25-year, 24-hour design event.

#### **5. Operation and Maintenance**

Routine maintenance activities, including repair of scoured areas, removal of debris and excess sediment buildup and restoration or revegetation of areas to prevent erosion, are performed on an as-needed basis.

Inspections by site personnel are performed to identify areas having surface water scouring or excessive erosion. Areas observed to have excessive erosion or scouring are assessed to identify the cause of the erosion or scouring. Remedial measures such as regrading, reseeding and placement of more effective erosion control methods are implemented as necessary. Prior to reaching final grades, some areas may require additional channels, berms, straw bales or silt fences to provide temporary drainage and sediment control.

#### **6. NPDES Permitting**

The stormwater discharge from the CCR Landfill flows into the Southwest Detention Pond, which intermittently discharges into Coffeen Lake in accordance with NPDES Permit No. IL0000108. The Southwest Detention Pond is an NPDES-permitted outfall structure, thereby meeting the requirements of 40 CFR 257.3-3 as necessitated by 40 CFR 257.81(b).

#### **7. Conclusion**

The CCR Landfill design, construction, operation and maintenance is in compliance with the requirements of 40 CFR 257.81 for the following reasons:

- The run-on control system is designed to prevent flow onto the active portion of the CCR unit during at minimum, the 100-year, critical duration storm event. This exceeds the 25-year, 24-hour storm requirements of 40 CFR 257.81.
- The run-off from the active portion of the CCR unit is designed to collect and control the water volume resulting from at minimum, the 100-year, critical storm event. This exceeds the 25-year, 24-hour storm requirements of 40 CFR 257.81.

- Discharge to Outfall 018 from the Southwest Detention Pond is permitted under NPDES Permit No. IL0000108, thereby satisfying the requirement that run-off from the active portion of the CCR Landfill is handled according to USEPA rules governing the discharge of surface water (see 40 CFR Part 257.3-3).

This document serves as the initial plan. The plan and revisions must be certified by a qualified Professional Engineer and entered into Coffeen Power Station's operating record.

## **8. References**

Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule, 40 CFR 257 (April 17, 2015).

## **9. Certification Page**

**COFFEEN POWER STATION CCR LANDFILL  
ILLINOIS POWER GENERATING COMPANY  
INITIAL RUN-ON AND RUN-OFF CONTROL SYSTEM SUMMARY AND CERTIFICATION**

40 CFR 257.81 requires the owner or operator of an existing CCR landfill to design, construct, operate and maintain:

- A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 25-year, 24-hour storm; and
- A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 25-year, 24-hour storm.

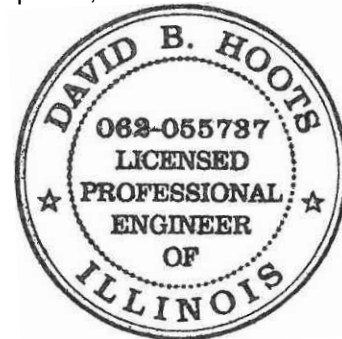
In addition, run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under 40 CFR Part 257.3-3.

As a qualified Professional Engineer as defined by 40 CFR 257 Subpart D, I certify that I have personally examined and am familiar with the design information contained in the Coffeen Power Station's CCR Landfill Run-on and Run-off Control System Plan and supporting document, the Run-on Run-off Control System Documentation for the Coffeen Power Station, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete.

I certify that the **Coffeen Power Station CCR Landfill** Run-on and Run-off Control System Plan meets or exceeds the requirements set forth by 40 CFR 257.81 as published on April 17, 2015.

David B. Hoots, P.E.  
Hanson Professional Services Inc.  
1525 South Sixth Street  
Springfield, IL 62703-2886  
(217) 788-2450  
Registration No. 062.055737

Seal:



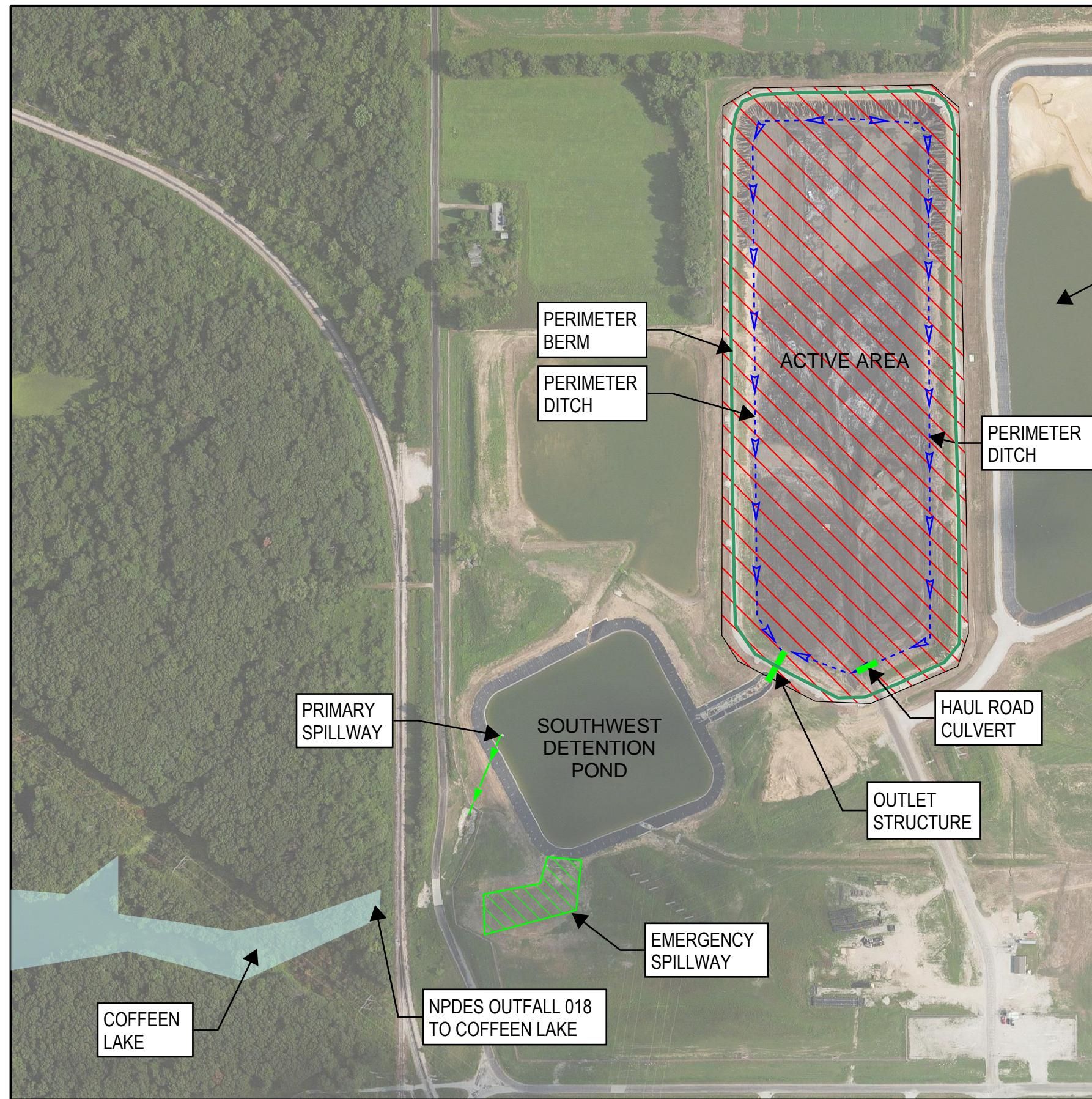
Signature: 

Date: 10/13/2016, LICENSE EXPIRES 11/30/2017



**Appendix A**  
**CCR Landfill Layout Figure**

SEP 26, 2016 1:08 PM H00TS01267  
C:\USERS\H00TS01267\APPDATA\LOCAL\TEMP\ACPUBLISH\_1636\COFFEEN\_RORO\_MAP.DWG



GYPSUM MANAGEMENT  
FACILITY GYPSUM STACK  
POND

PERIMETER  
BERM

PERIMETER  
DITCH

ACTIVE AREA

PERIMETER  
DITCH

PRIMARY  
SPILLWAY

SOUTHWEST  
DETENTION  
POND

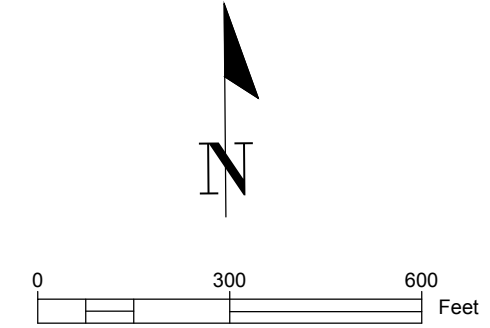
HAUL ROAD  
CULVERT

OUTLET  
STRUCTURE

COFFEEN  
LAKE

NPDES OUTFALL 018  
TO COFFEEN LAKE

EMERGENCY  
SPILLWAY



© Copyright Hanson Professional Services Inc. 2016

CCR LANDFILL LAYOUT FIGURE

COFFEEN CCR LANDFILL  
COFFEEN POWER STATION  
MONTGOMERY COUNTY, ILLINOIS



15E0143 -DATE: 10/13/2016

FIGURE NO. 1