MWG

Midwest Generation, LLC

Will County Generating Station

2024 Inflow Design Flood Control System Plan for South Ash Pond 2 & South Ash Pond 3

Revision 0

October 13, 2024

Issue Purpose: Use

Project No.: A12661.189

55 East Monroe Street
Chicago, IL 60603-5780 USA
312-269-2000
www.sargentlundy.com

Sargent & Lundy

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report presents the 2024 inflow design flood control system plan for South Ash Pond 2 and South Pond 3 at Midwest Generation, LLC's (MWG) Will County Generating Station ("Will County" or the "Station"). This annual plan, prepared by Sargent & Lundy (S&L) on behalf of MWG, documents how the inflow design flood control systems for South Ash Pond 2 and South Pond 3 have been designed and constructed to meet the hydrologic and hydraulic capacity requirements for coal combustion residual (CCR) surface impoundments promulgated by 35 Ill. Adm. Code 845.510.

To complete this assessment, S&L re-evaluated the bases of the most recent hydrologic and hydraulic calculations prepared for South Ash Ponds 2 and 3, which were completed in October 2021. These calculations were performed using a 1,000-year design storm and by conservatively assuming (1) no rainfall abstraction (*i.e.*, the full precipitation depth over a pond's catchment area was assumed to enter the pond); (2) the surface water elevations in the ponds at the time of the design storm event were at the ponds' respective maximum design operating levels (589 feet above mean sea level (amsl)); and (3) the hydraulic structures downstream of the ponds were full at the time of the storm event. To verify that the results of the 2021 hydrologic and hydraulic calculations were still valid, S&L determined (1) whether any changes to the calculation inputs have occurred since October 2021, and (2) whether identified changes warrant updating the calculations. Where no changes were noted for a given input, or where identified changes were determined to have no impact to the results and conclusions of the 2021 hydrologic and hydraulic calculations, the previous evaluation of that input was considered to still be valid for this 2024 inflow design flood control system plan.

Since October 2021, the Station has taken South Ash Ponds 2 and 3 out of service. Currently, the only water entering the ponds is direct precipitation (i.e., rain or snow) and run-off from the crests of the ponds' dikes. Moreover, Will County routinely dewaters the ponds to minimize the volume of water impounded in the ponds. Since last year's inflow design flood control system plan was issued, the Station's dewatering efforts have limited the maximum surface water elevations in South Ash Ponds 2 and 3 to 588.30 feet above mean sea level (amsl) and 583.50 feet amsl, respectively. Meanwhile, per the ponds' 2024 hazard potential classification assessment prepared in accordance with 35 Ill. Adm. Code 845.440(a)(1), South Ash Ponds 2 and 3 remain classified as Class 2 CCR surface impoundments; therefore, the inflow design flood event for both ponds remains the 1,000-year storm per 35 Ill. Adm. Code 845.510(a)(3). Finally, there have been no significant modifications to the embankments for South Ash Ponds 2 and 3 (mass excavations, mass fill placement, *etc*.) since the latest hydrologic and hydraulic calculations were completed.

Other than changes to the operational status of South Ash Pond 2 (cessation of all CCR and non-CCR wastestreams), there have been no significant modifications to South Ash Ponds 2 and 3 and no changes to the ponds' inflow design flood event since the latest hydrologic and hydraulic calculations were prepared in

2021. Therefore, the results and conclusions documented for South Ash Ponds 2 and South Ash Pond 3's inflow design flood control systems in the 2021 inflow design flood control system plan remain valid.

Table ES-1 presents the results from the hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3 at Will County in accordance with 35 Ill. Adm. Code 845.510(c)(1). Based on these results, water entering South Ash Ponds 2 and 3 during the inflow design flood event will not overtop the ponds' dikes. Assuming the water levels in the ponds are at their maximum design operating levels (elevation 589.00 feet) at the time of the design storm event, the freeboard in each pond during the design event was estimated to be 0.15 foot. Considering the Station has ceased power generating operations, no longer sends any wastestreams to South Ash Ponds 2 and 3, and routinely dewaters the ponds to minimize the accumulation of water from direct precipitation (i.e., rain or snow) and run-off from the crests of the ponds' dikes, these results are conservative for the ponds' present conditions.

Table ES-1 – Summary of Hydrologic & Hydraulic Assessment Results for South Ash Ponds 2 & 3

CCR Surface Impoundment	Illinois Hazard Potential Classification	Inflow Design Flood	Maximum Surface Water Elevation	Pond Crest Elevation
South Ash Pond 2	Class 2	1,000 Year	590.35 feet	590.50 feet
South Ash Pond 3	Class 2	1,000 Year	590.35 feet	590.50 feet

1.0 PURPOSE & SCOPE

1.1 PURPOSE

South Ash Pond 2 and South Ash Pond 3 at Midwest Generation, LLC's (MWG) Will County Generating Station ("Will County" or the "Station") are existing coal combustion residual (CCR) surface impoundments that are regulated by the Illinois Pollution Control Board's "Standards for the Disposal of Coal Combustion Residuals in CCR Surface Impoundments." These regulations are codified in Part 845 to Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code 845, Ref. 1) and are also referred to herein as the "Illinois CCR Rule." Pursuant to 35 Ill. Adm. Code 845.510(c)(1), MWG must prepare an annual inflow design flood control system plan documenting how the inflow design flood control systems for South Ash Ponds 2 and 3 have been designed and constructed to meet the hydrologic and hydraulic capacity requirements for CCR surface impoundments promulgated by 35 Ill. Adm. Code 845.510.

This report documents the 2024 inflow design flood control system plan prepared in accordance with the Illinois CCR Rule by Sargent & Lundy (S&L) on behalf of MWG for South Ash Ponds 2 and 3 at Will County. This report:

- Lists the inputs and assumptions used to determine whether South Ash Ponds 2 and 3 can manage the inflow design flood,
- Discusses the methodology used to prepare the 2024 inflow design flood control system plan,
- Summarizes the results of the 2021 hydrologic and hydraulic calculations performed to support the conclusion of whether South Ash Ponds 2 and 3 meet the hydrologic and hydraulic requirements for CCR surface impoundments promulgated by the Illinois CCR Rule,
- Evaluates potential changes to the inputs used in the 2021 hydrologic and hydraulic calculations to determine whether new or updated calculations are warranted, and
- Provides the results of the hydrologic and hydraulic calculations used to determine whether South Ash Ponds 2 and 3 can manage the inflow design flood.

1.2 SCOPE

In addition to being regulated under the Illinois CCR Rule, Will County's South Ash Ponds 2 and 3 are also regulated by the U.S. Environmental Protection Agency's (EPA) "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," 40 CFR Part 257 Subpart D (Ref. 2), also referred to herein as the "Federal CCR Rule." Per the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act, South Ash Ponds 2 and 3 will continue to be subject to both the Illinois and Federal CCR Rules until the U.S. EPA approves the Illinois EPA's CCR permit program; the Illinois EPA has yet to publish a timeline for submitting its proposed CCR permit program to the U.S. EPA for approval. However, the scope of this 2024 inflow flood control system plan is strictly limited to demonstrating compliance with the Illinois CCR Rule. Pursuant to 40 CFR 257.82(c)(4), the next inflow design flood control system plan for

demonstrating compliance with the Federal CCR Rule is not required until 2026, five years after the last periodic plan was completed (2021).

2.0 INPUTS

Ash Pond Operations & Inflow Design Flood Control Systems

The operating and physical conditions for South Ash Ponds 2 and 3 and for their inflow design flood control systems were based on the following inputs:

- Discussions with MWG personnel.
- The ponds' initial federal inflow design flood control system plan (Ref. 3).
- The 2023 annual inspection report prepared for the CCR surface impoundments in accordance with 35 Ill. Adm. Code 845.540(b) (Ref. 9).
- The weekly inspection reports prepared in accordance with 35 Ill. Adm. Code 845.540(a) since the 2023 inflow design flood control system plan was issued (Ref. 10).

Inflow Design Flood Event

Per the ponds' 2024 hazard potential classification assessment (Ref. 4), South Ash Ponds 2 and 3 are classified as Class 2 CCR surface impoundments pursuant to 35 Ill. Adm. Code 845.440(a)(1). Therefore, the inflow design flood event for both ponds is based on the 1,000-year storm (Ref. 1, § 845.510(a)(3)). Per the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 (Ref. 5), the precipitation depth for the 1,000-year, 24-hour storm event at the Will County site is 13.3 inches.

Site Topography

Topographic data for South Ash Ponds 2 and 3 and the surrounding areas was obtained from the U.S. Department of Agriculture's (USDA) National Digital Elevation Program (Ref. 6). This topography reflects elevation data collected in 2010 at a 1-meter resolution.

Aerial Images

Historical and recent aerial images of the Station and surrounding areas were obtained from Google Earth Pro (Ref. 7).

3.0 ASSUMPTIONS

There are no assumptions in this document that require verification.

4.0 METHODOLOGY

The inputs for the latest hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3, which were completed in October 2021, were reviewed to determine if any changes have occurred since these calculations were completed. Identified changes were then evaluated to determine if updates to these

calculations were warranted. If no changes were identified, or if identified changes were determined to have no impact to the results and conclusions of these calculations, then the latest hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3 were considered to still be valid for this 2024 inflow design flood control system plan.

5.0 HYDROLOGIC & HYDRAULIC ASSESSMENT

5.1 SUMMARY OF 2021 HYDROLOGIC & HYDRAULIC CALCULATIONS

The latest hydrologic and hydraulic calculations for Will County's South Ash Ponds 2 and 3 were completed in October 2021. The inputs, methodology, and results of these calculations are documented in the ponds' 2021 inflow design flood control system plan (Ref. 8). As stated in the 2021 plan, these calculations were performed by conservatively assuming (1) no rainfall abstraction (*i.e.*, the full design precipitation depth over a pond's catchment area was assumed to enter the pond); (2) the surface water elevations in the ponds at the time of the design storm event were at the ponds' respective maximum design operating levels (589 feet above mean sea level (amsl)); and (3) the hydraulic structures downstream of the ponds were full at the time of the storm event. The results of this 2021 assessment indicated that water entering the ponds during the inflow design flood event would not overtop the ponds' dikes. Based on the preceding design inputs and assumptions, the freeboards for South Ash Ponds 2 and 3 during the design event were each estimated to be 0.15 foot. Based on these results, it was concluded that the ponds have adequate hydraulic capacities to retain the 1,000-year flood event without water overtopping the ponds' dikes and were therefore in conformance with 35 Ill. Adm. Code 845.510(a).

5.2 CHANGES TO INPUTS FOR 2021 HYDROLOGIC & HYDRAULIC CALCULATIONS

The following subsections summarize the evaluation conducted to determine if changes to the inputs used in the latest hydrologic and hydraulic calculations for South Ash Ponds 2 and 3 have occurred since the calculations were completed in 2021 that warrant updating the calculations.

5.2.1 CHANGES IN ASH POND OPERATIONS & INFLOW DESIGN FLOOD CONTROL SYSTEMS

South Ash Ponds 2 and 3 were historically used by the Station to manage ash sluice water, slag tank overflow, stormwater overflow from the South Area Runoff Basin, and recycled sludge from the Station's wastewater treatment clarifiers. In early October 2020, Will County took South Ash Pond 3 out of service for routine cleaning. In April 2021, MWG filed a notice of intent to close South Ash Pond 3 in accordance with the Federal CCR Rule's closure criteria (Ref. 2, § 257.102). After Unit 4 was retired in June 2022, and following subsequent cleaning, isolating, and securing of ash-handling equipment, South Ash Pond 2 was only used to manage stormwater overflow from the South Area Runoff Basin. In December 2022, the Station re-routed South Area Runoff Basin overflow to the North Area Runoff Basin, thereby ceasing all flows to South Ash Pond 2. On January 12, 2023, MWG filed a notice of intent to close South Ash Pond 2. Currently,

the only water entering South Ash Ponds 2 and 3 is direct precipitation (i.e., rain or snow) and run-off from the crests of the ponds' dikes. Closure construction activities will commence at both South Ash Ponds 2 and 3 upon receipt of closure construction permits from the Illinois EPA in accordance with Subpart B of the Illinois CCR Rule.

As noted in the latest annual inspection report (Ref. 9), both South Ash Pond 2 and South Ash Pond 3 had less than 1 foot of water when the inspection was performed in September 2023. Moreover, the Station routinely dewaters the ponds to minimize the accumulation of water from direct precipitation (i.e., rain or snow) and run-off from the crests of the ponds' dikes. To dewater South Ash Ponds 2 and 3, the Station pumps accumulated rainwater over the overflow weir into the concrete overflow trough at the west end of each pond. Each trough drains into a common 48-in.-diameter culvert that drains into a wet well at the Station's Recycle Pump Station. Pumps in the Recycle Pump Station wet well subsequently convey water into a 36-in.-diameter pressure main, thence into a 16-in.-diameter blowdown line to the Station's wastewater treatment system. Treated effluent from the wastewater treatment system is then discharged through a permitted National Pollutant Discharge Elimination System outfall (Ref. 3).

As noted in the weekly inspections reports prepared in accordance with 35 Ill. Adm. Code 845.540(a) for South Ash Ponds 2 and 3 since the 2023 inflow design flood control system plan (Ref. 10), the Station's dewatering efforts have limited the water level in South Ash Pond 3 to at most 2.2 feet; no water was observed above the CCR remaining in South Ash Pond 2 since last year's assessment. This corresponds to maximum surface water elevations of 588.30 feet and 583.50 feet in South Ash Ponds 2 and 3, respectively.

Except for the elimination of all CCR and non-CCR wastestreams into South Ash Pond 2, operating conditions at South Ash Ponds 2 and 3 have not changed since the latest hydrologic and hydraulic calculations were prepared in 2021. Because the 2021 hydrologic and hydraulic calculations were based on conservatively assuming the surface water in both ponds was at each pond's respective maximum design operating level (elevation 589.00 feet), and because the ponds no longer receive any wastestreams from the Station and are routinely dewatered to minimize the water levels in the ponds, there have been no significant changes to the operations of the Will County ash ponds that warrant updating the 2021 hydrologic and hydraulic calculations.

5.2.2 CHANGES IN ASH POND TOPOGRAPHY

Based on correspondence with station personnel, review of the 2023 annual inspection report (Ref. 9), and reviews of Google Earth aerial images (Ref. 7), there have been no significant modifications to the embankments for South Ash Ponds 2 and 3 (mass excavations, mass fill placement, *etc*.) since the latest hydrologic and hydraulic calculations were completed in 2021. Therefore, the topographic data (Ref. 6) and the original construction drawings for the ponds (Ref. 3) used in these calculations are unchanged and remain valid for use in this 2024 assessment.

5.2.3 CHANGES TO INFLOW DESIGN FLOOD EVENT

Per the ponds' 2024 hazard potential classification assessment (Ref. 4), South Ash Ponds 2 and 3 are both classified as Class 2 CCR surface impoundments pursuant to 35 Ill. Adm. Code 845.440(a)(1), the same hazard potential classifications the ponds were assigned in 2021. Therefore, the inflow design flood event for both ponds remains the 1,000-year storm (Ref. 1, § 845.510(a)(3)). As documented in the ponds' 2021 inflow design flood control system plan (Ref. 8), the precipitation value for the 1,000-year, 24-hour storm event used in the latest hydrologic and hydraulic calculations completed for South Ash Ponds 2 and 3 was 13.3 inches per NOAA's Atlas 14. As stated in Section 2.0, NOAA's 1,000-year, 24-hour precipitation value for the Will County site remains 13.3 inches. Therefore, the inflow design flood event used in the 2021 hydrologic and hydraulic calculations is unchanged and remains valid for use in this 2024 assessment.

5.3 RESULTS

Other than changes to the operational status of South Ash Pond 2 (cessation of all CCR and non-CCR wastestreams), there have been no significant modifications to South Ash Ponds 2 and 3 and no changes to the ponds' inflow design flood event since the latest hydrologic and hydraulic calculations were prepared in 2021. Therefore, the results and conclusions documented for South Ash Pond 2's and South Ash Pond 3's inflow design flood control systems in the 2021 inflow design flood control system plan remain valid.

Table 5-1 summarizes the results from the hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3. Based on these results, water entering South Ash Ponds 2 and 3 during the inflow design flood event will not overtop the ponds' dikes. Assuming the water levels in the ponds are at their maximum design operating levels (elevation 589.00 feet) at the time of the design storm event, the freeboard in each pond during the design event was estimated to be 0.15 foot. Considering the Station has ceased power generating operations, no longer sends any wastestreams to South Ash Ponds 2 and 3, and routinely dewaters the ponds to minimize the accumulation of water from direct precipitation (i.e., rain or snow) and run-off from the crests of the ponds' dikes, these results are conservative for the ponds' present conditions.

Table 5-1 – Summary of Hydrologic & Hydraulic Assessment Results for South Ash Ponds 2 & 3

CCR Surface Impoundment	Illinois Hazard Potential Classification	Inflow Design Flood	Maximum Surface Water Elevation	Pond Crest Elevation
South Ash Pond 2	Class 2	1,000 Year	590.35 feet	590.50 feet
South Ash Pond 3	Class 2	1,000 Year	590.35 feet	590.50 feet

6.0 CONCLUSIONS

Based on the results in Table 5-1, Will County's South Ash Pond 2 and South Ash Pond 3 have adequate hydraulic capacities to retain the 1,000-year flood event without water overtopping the ponds' dikes. Therefore, South Ash Ponds 2 and 3 are able to collect and control the inflow design flood event specified in 35 Ill. Adm. Code 845.510(a)(3).

7.0 CERTIFICATION

I certify that:

- This inflow design flood control system plan was prepared by me or under my direct supervision.
- The work was conducted in accordance with the requirements of 35 Ill. Adm. Code 845.510.
- I am a registered professional engineer under the laws of the State of Illinois.

Certified By: Thomas J. Dehlin Date: October 13, 2024

Seal:

Digitally signed by Thomas Dehlin
Date: 2024.10.13 11:34:35-05'00'

8.0 REFERENCES

1. Illinois Pollution Control Board. “Standards for Disposal of Coal Combustion Residuals in CCR Surface Impoundments.” 35 Ill. Adm. Code 845. Accessed September 27, 2024.
2. U.S. Environmental Protection Agency. “Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments.” 40 CFR Part 257 Subpart D. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D. Accessed September 27, 2024.
3. Geosyntec Consultants. “Inflow Design Flood Control System Plan, South Ash Pond 2S and South Ash Pond 3S, Will County Station.” October 2016.
4. Sargent & Lundy. “2024 Hazard Potential Classification Assessment for South Ash Pond 2 & South Ash Pond 3.” Rev. 0. S&L Project No. A12661.189. October 2024.
5. National Oceanic and Atmospheric Administration. “Point Precipitation Frequency Estimates.” NOAA Atlas 14, Volume 2, Version 3.
6. U.S. Department of Agriculture, Natural Resources Conservation Service, National Geospatial Center of Excellence. “LiDAR Elevation Dataset – Bare Earth DEM – 1 Meter.” 2010. Processed June 2021.
7. Google Earth Pro v7.3.0.3832. Accessed September 27, 2024.
8. Sargent & Lundy. “Inflow Design Flood Control System Plan for South Ash Pond 2 and South Ash Pond 3” Rev. 0. S&L Project No. 12661-124. October 2021.
9. Civil & Environmental Consultants, Inc. “Annual Inspection Report, Ash Ponds 2S and 3S, Will County Station.” CEC Project 302-771.0423. September 30, 2023.
10. Midwest Generation, LLC. “IL Weekly and Monthly Inspection.” 2023 Week 42 through 2024 Week 38. Accessed via https://midwestgenerationllc.com/illinois-ccr-rule-compliance-data-and-information/.