solutions and action

Wisconsin Power and Light Company
Edgewater Generation Station
CCR Surface Impoundment Annual Inspection Report
154.018.012.006
Report issued: December 21, 2016

Hard Hat Services
ph: 877-630-7428
hardhatinc.com
932 N. Wright St., Suite 160
Naperville, IL 60563

Executive Summary

This annual inspection report has been prepared in accordance with the requirements of the United States Environmental Protection Agency published Final Rule for Hazardous and Solid Waste Management System – Disposal of Coal Combustion Residual (CCR) from Electric Utilities (40 CFR Parts 257 and 261, also known as CCR Rule) and Extension of Compliance Deadlines for Certain Inactive Surface Impoundments.

This annual inspection report has been prepared to assess the condition of existing CCR surface impoundments. Primarily, the annual inspection report is focused on the structural stability of the CCR surface impoundments and to ensure that the operation and maintenance of the existing CCR surface impoundments is in accordance with recognized and generally accepted good engineering standards.

932 N. Wright Street, Suite 160, Naperville, IL 60563 | (877) 630-7428 hardhatinc.com

Table of Contents

1. INTRODUCTION 1
1.1 CCR Rule Applicability 1
1.2 Annual Inspection Applicability 1
2. FACILITY DESCRIPTION 3
2.1 EDG Slag Pond 4
2.2 EDG North A-Pond 5
2.3 EDG South A-Pond 6
2.4 EDG B-Pond 6
3. ANNUAL INSPECTION REPORTING CRITERIA 8
3.1 EDG Slag Pond 8
3.1.1 Changes in Geometry (§257.83(b)(2)(i)) 8
3.1.2 Existing Instrumentation (§257.83(b)(2)(ii)) 8
3.1.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii)) 9
3.1.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv)) 10
3.1.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v)) 11
3.1.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi)) 12
3.1.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii)) 12
3.2 EDG North A-Pond 13
3.2.1 Changes in Geometry (§257.83(b)(2)(i)) 13
3.2.2 Existing Instrumentation (§257.83(b)(2)(ii)) 13
3.2.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii)) 14
3.2.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv)) 15
3.2.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v)) 16
3.2.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi)) 17
3.2.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii)) 18
3.3 EDG South A-Pond 18
3.3.1 Changes in Geometry (§257.83(b)(2)(i)) 18

3.3.2 Existing Instrumentation (§257.83(b)(2)(ii)) 18
3.3.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii)) 19
3.3.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv)) 21
3.3.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v)) 21
3.3.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi)) 22
3.3.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii)) 23
3.4 EDG B-Pond 23
3.4.1 Changes in Geometry (§257.83(b)(2)(i)) 23
3.4.2 Existing Instrumentation (§257.83(b)(2)(ii)) 24
3.4.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii)) 24
3.4.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv)) 26
3.4.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v)) 26
3.4.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi)) 27
3.4.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii)) 28
4. CERTIFICATION 29

1. INTRODUCTION

This annual inspection report has been prepared in accordance with the requirements of §257.83(b) of the United States Environmental Protection Agency (USEPA) published Final Rule for Hazardous and Solid Waste Management System – Disposal of Coal Combustion Residual (CCR), herein referenced as the CCR Rule.

1.1 CCR Rule Applicability

The CCR Rule requires annual inspections by a qualified professional engineer (PE) for existing CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more or the existing CCR surface impoundment has a height of 20 feet or more (40 CFR §§ 257.73(b), 257.73(d) and 257.83(b)).

1.2 Annual Inspection Applicability

The Wisconsin Power and Light Company (WPL), Edgewater Generating Station (EDG) in Sheboygan, Wisconsin has four existing CCR surface impoundments that meet the requirements of Section 1.1, identified as follows:

- EDG Slag Pond
- EDG North A-Pond
- EDG South A-Pond
- EDG B-Pond

The annual inspection of the existing CCR surface impoundments at EDG was completed by a qualified PE on October 24th, 2016. The annual inspection was completed to ensure that the design, construction, operation, and maintenance of the existing CCR surface impoundments at EDG are consistent with recognized and generally accepted good engineering standards.

The annual inspection of the existing CCR surface impoundments at EDG included a review of available information regarding the status and condition of the existing CCR surface impoundment. The information reviewed included all relevant files available in the operating record at the time of the annual inspection, as well as all relevant publicly accessible internet site entries. These files for the existing CCR surface impoundments at EDG include, but is not limited to, CCR surface impoundment design and construction information (history of construction), hazard potential classification, structural stability assessment, safety factor assessment, hydrologic and hydraulic capacities (inflow flood control plan), results of 7-day inspections and instrumentation monitoring by a qualified person, and results of the previous annual inspection.

The annual inspection also included a visual inspection of the existing CCR surface impoundments in order to identify signs of distress or malfunction of the existing CCR surface impoundments and appurtenant structures. Additionally, the visual inspection included hydraulic structures underlying the base of the existing CCR surface impoundments or passing through the dikes of the existing CCR surface impoundments for structural integrity and continued safe and reliable operation.

2. FACILITY DESCRIPTION

The following sub-sections provide a summary description of the facility and existing CCR surface impoundments located at EDG.

EDG is located on the south edge of the City of Sheboygan, Wisconsin along the western shore of Lake Michigan in Sheboygan County, at 3739 Lakeshore Drive, Sheboygan, Wisconsin.

EDG is a fossil-fueled electric generating station that initiated operations in 1930. EDG consists of two steam electric generating units (Unit 4 and Unit 5). A third steam electric generating unit (Unit 3) was removed from service in 2015. Sub-bituminous coal is the primary fuel used at EDG for producing steam. The burning of coal produces CCR byproducts. The CCR at EDG is categorized into five types: precipitator fly ash, slag, bottom ash, economizer ash, and scrubber byproducts.

The Unit 4 precipitator fly ash is collected by Unit 4's electrostatic precipitators and sent to an on-site storage silo located southwest of the generating plant. The precipitator fly ash is then transported off-site for either beneficial reuse or for disposal at the EDG I-43 CCR landfill. The Unit 5 precipitator fly ash is collected by Unit 5's electrostatic precipitators and sent to a separate on-site storage silo located southwest of the generating plant. Unit 5's precipitator fly ash is then transported off-site for beneficial reuse or for disposal at the EDG I-43 CCR landfill.

The slag at EDG is produced from Unit 4 and is sluiced from the generating plant to a surface impoundment identified as the EDG Slag Pond. The EDG Slag Pond is located southwest of the generating plant.

Byproducts from the circulating dry scrubber (CDS) system are transported offsite for disposal at the EDG I-43 CCR Landfill.

General Facility Information:

Date of Initial Facility Operations:	1930
WPDES Permit Number:	WI-0001589-07-0
Latitude / Longitude:	43°42'58.15"N 87°42'22.54"W
Nameplate Ratings:	Unit 1 (Retired)
	Unit 2 (Retired)
	Unit 3 (Retired)
	Unit 4 351 MW
	Unit 5 414 MW

2.1 EDG Slag Pond

The EDG Slag Pond is located southwest of the generating plant and north of the EDG North A-Pond. The EDG Slag Pond receives influent flow from the generating plant via the Unit 4 boiler slag tanks. The water-slag slurry discharges into the southwest portion of the EDG Slag Pond. The slag is dredged out of the EDG Slag Pond and stockpiled in a containerized area adjacent to the existing CCR surface impoundment for dewatering. The slag is then screened to separate the coarsely graded material from the finely graded material prior to being transported off-site for beneficial reuse. The water in the EDG Slag Pond flows to the southwest where it gravity flows through a V-notch weir and through a four feet wide concrete structure into a 48-inch diameter corrugated metal pipe. The water from the EDG Slag Pond, which combines with flows from the EDG North A-Pond and EDG South A-Pond in the 48-inch diameter corrugated metal pipe, flows to the south into the northwest corner of the EDG B-Pond.

2.2 EDG North A-Pond

The EDG North A-Pond is located southwest of the generating plant and south of the EDG Slag Pond. Historically, the EDG North A-Pond has received influent flows from the surge tank. Water in the surge tank includes excess process water from the Unit 5 hydrobin, steam water treatment reject water, and water from the facility floor drains. Therefore, the EDG North A-Pond has likely received residual bottom ash from the hydrobin system, de minimis quantities of fly ash from routine maintenance operations, coal fines, and other materials from the plant floor drains. The water was pumped from the surge tank to the EDG North A-Pond via a 10-inch diameter steel pipe. The steel pipe, at a location northeast of the EDG North A-Pond, splits into two separate 10-inch diameter pipes. Each pipe then discharged into the northeast corner of both the EDG North A-Pond and EDG South A-Pond. Currently, EDG North A-Pond does not receive operational process discharges from the generating plant, although it still has the ability to be routed to the EDG North A-Pond.

Previously, water within the EDG North A-Pond flowed to the west. The EDG North A-Pond discharge consists of an 18-inch diameter corrugated plastic pipe located in the southwest corner of the existing CCR surface impoundment. The water would flow through the corrugated plastic pipe to the west into a concrete sluice box. The water within the sluice box flows through a Parshall flume prior to discharging into a 48-inch diameter corrugated metal pipe, which also receives influent flow from the EDG Slag Pond and EDG South A-Pond, prior to gravity flowing to the south into the northwest corner of the EDG B-Pond. Presently, no water within the EDG North A-Pond discharges through the 18-inch diameter corrugated plastic pipe as the pipe has been plugged.

2.3 EDG South A-Pond

The EDG South A-Pond is located southwest of the generating plant and south of the EDG North A-Pond. As currently configured, the EDG South A-Pond receives influent flows from the surge tank. Water in the surge tank includes excess process water from the Unit 5 hydrobin, steam water treatment reject water, and water from the facility floor drains. Therefore, the EDG North A-Pond has likely received residual bottom ash from the hydrobin system, de minimis quantities of fly ash from routine maintenance operations, coal fines, and other materials from the plant floor drains. The water is pumped from the surge tank to the EDG South A-Pond via a 10-inch diameter steel pipe. The steel pipe, at a location northeast of the EDG North A-Pond, splits into two separate 10-inch diameter pipes. Each pipe then discharges into the northeast corner of both the EDG North A-Pond and EDG South A-Pond. Note, the EDG North A-Pond no longer receives operational process flows from the generating plant.

The water within the EDG South A-Pond flows to the west. The EDG South A-Pond consists of an 18-inch diameter corrugated plastic pipe located in the northwest corner of the existing CCR surface impoundment. The water flows through the corrugated plastic pipe to the west into a concrete sluice box. The water within the sluice box flows through a Parshall flume prior to discharging into a 48-inch diameter corrugated metal pipe, which also receives influent flow from the EDG Slag Pond, prior to gravity flowing to the south into the northwest corner of the EDG B-Pond.

2.4 EDG B-Pond

The EDG B-Pond is located southwest of the generating plant and south of the EDG South A-Pond. The EDG B-Pond receives influent flow via a 48-inch diameter corrugated metal pipe from the EDG Slag Pond and EDG South A-

Pond. Additionally, the EDG B-Pond receives storm water drainage from a part of the closed ash landfill west of the EDG B-Pond. The storm water from the closed ash landfill discharges into the west side of the EDG B-Pond via a small corrugated plastic pipe.

The water in the EDG B-Pond flows to the east through an overflow weir wet well structure. The elevated weir prevents CCR that has settled in the EDG B-Pond from flowing out of the impoundment. The water gravity flows to the east through a 24-inch diameter corrugated metal pipe where it discharges into the west side of the EDG C-Pond. The water in the EDG C-Pond gravity flows to the east into the EDG F-Pond. The water in the EDG F-Pond flows through the facility's Wisconsin Pollution Discharge Elimination System (WPDES) Outfall 004 and discharges into Lake Michigan. As determined by WPL, process water discharging from the EDG B-Pond does not contain a significant quantity of CCR, and downstream impoundments contain only de minimis quantities of CCR.

932 N. Wright Street, Suite 160, Naperville, IL 60563 | (877) 630-7428 hardhatinc.com

3. ANNUAL INSPECTION REPORTING CRITERIA

The following sub-sections address the annual inspection reporting criteria per §257.83(b)(2) of the CCR Rule for the existing CCR surface impoundments located at EDG.

3.1 EDG Slag Pond

3.1.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, and discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no identified changes in the geometry since the previous annual inspection.

3.1.2 Existing Instrumentation (§257.83(b)(2)(ii))

Instrumentation that supports the operation of the EDG Slag Pond includes a staff gauge in order to monitor the water elevation of the CCR surface impoundment. The instrumentation was installed during the week of October 17, 2016, and is located in the southwest corner of the EDG Slag Pond adjacent to the hydraulic structure.

Prior to the annual inspection, there was no staff gauge water elevation data that was available for review due to the instrumentation had not yet been installed. However, the water elevation recorded at the time of the staff gauge installation was 604.85 feet.

3.1.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the EDG Slag Pond since the previous annual inspection were determined using information that was collected during the

annual inspection, as well as from historical information that was previously provided from WPL.

At the time of the annual inspection a survey was completed in order to determine the present surface water elevation of the CCR surface impoundment. Additionally, depth measurements from the water surface to the top of CCR/sediment were obtained in order to determine present depths/elevations.

The historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG Slag Pond, as well as the most recent topographic/bathymetric survey of the EDG Slag Pond completed by Cornerstone Surveying and Mapping (2016). Reviewing the information provided within the above mentioned documents, as well as the data collected during the annual inspection, the following minimum, maximum, and present depths and elevations were approximated for the impounded CCR and water:

- At the time of the annual inspection, the water surface elevation of the EDG Slag Pond was surveyed to be 604.85 feet, 4.15 feet below the crest of the north and east embankments of the CCR surface impoundment, which had an elevation of approximately 609 feet at the lowest point of the embankments.
- At the time of the annual inspection, the water depths that were measured within the CCR surface impoundment varied between 0.60 feet and 2.65 feet.
- From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured varied between an elevation of 604.25 feet and 602.20 feet.

- From the 2011 ash pond evaluation, a soil boring installed along the south embankment of the EDG Slag Pond encountered CCR from the ground surface to a bottom elevation of approximately 589 feet. The depth of the EDG Slag Pond varied between 604.25 feet and 602.20 feet. Comparing the results from the water depth measurements at the time of the annual inspection to the 2011 ash pond evaluation soil boring data, the deposition thickness varied between 15.25 feet and 13.20 feet.

3.1.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was calculated based on the acreage of the CCR surface impoundment in the area where water was present, and the approximate depth of water within that area of the CCR surface impoundment. The water depth measurements of the CCR surface impoundment were collected at the time of the annual inspection.

From the 2016 topographic/bathymetric survey data, the area of the water surface of the CCR surface impoundment was 0.6 acres. From the water depth data that was collected during the annual inspection, the average water depth within the CCR surface impoundment was 1.34 feet. Thus, the storage capacity within the EDG Slag Pond at the time of the annual inspection was approximately 1,300 cubic yards.

3.1.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume) within the EDG Slag Pond at the time of the annual inspection was determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL. Historical information provided from WPL included an ash pond evaluation prepared for

EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG Slag Pond, as well as the most recent topographic/bathymetric survey of the EDG Slag Pond completed by Cornerstone Surveying and Mapping (2016).

The surveyed elevation of the top of water within the CCR surface impoundment at the time of the annual inspection was 604.85 feet. From the 2016 topographic/bathymetric survey of the EDG Slag Pond, the average elevation of the top of CCR/sediment outside the footprint of the water surface was approximately 607 feet. From the 2011 ash pond evaluation, a soil boring installed along the south embankment of the EDG Slag Pond encountered CCR from the ground surface to a bottom elevation of approximately 589 feet. Thus, the interior storage height of the EDG Slag Pond (water portion) was 15.85 feet and the interior storage height of the CCR/sediment located outside the footprint of the water surface was approximately 18 feet.

The surface area of the EDG Slag Pond, in the area where water was present, was 0.6 acres. Thus, the volume of impounded CCR and water within the EDG Slag Pond, within the area where water was present, was approximately 15,000 cubic yards. The surface area of the EDG Slag Pond, in the area located outside of the footprint of the water portion, was 0.9 acres. Thus, the volume of impounded CCR within the EDG Slag Pond, in the area located outside of the footprint of the water portion, was approximately 26,000 cubic yards. The total volume of impounded CCR and water within the EDG Slag Pond at the time of the annual inspection was approximately 41,000 cubic yards.

3.1.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and

inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment. Additionally, there were no identified issues with the structural integrity of the hydraulic structures (four feet wide concrete overflow weir and 48-inch diameter corrugated metal pipe) associated with the EDG Slag Pond.

Regarding the existing conditions of the EDG Slag Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

3.1.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no other identified changes that have affected the stability or operation of the EDG Slag Pond since the previous annual inspection.

3.2 EDG North A-Pond

3.2.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, and discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and

inspection activities of the existing CCR surface impoundment, there have been no identified changes in the geometry since the previous annual inspection.

3.2.2 Existing Instrumentation (§257.83(b)(2)(ii))

Instrumentation that supports the operation of the EDG North A-Pond includes a Parshall flume discharge structure and equipment to measure the flow of the combined discharged water of the EDG North A-Pond and EDG South A-Pond, as well as a staff gauge in order to monitor the water elevation of the EDG North A-Pond. The Parshall flume and flow metering equipment is located west of the EDG North A-Pond and EDG South A-Pond and is not associated with the WPDES Outfall at EDG. The staff gauge is located in the southwest corner of the CCR surface impoundment.

The flow data associated with the EDG North A-Pond and EDG South A-Pond (e.g. maximum daily flow), since the previous annual inspection, was provided by WPL for 2015 and 2016 (October 01, 2015 through December 09, 2016). Reviewing the provided flow data, the maximum daily flow recorded was 3.05 million gallons (March 2016).

Prior to the annual inspection, there was no staff gauge water elevation data that was available for review due to the instrumentation had not yet been installed. However, the water elevation recorded at the time of the staff gauge installation was 606.37 feet.

3.2.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the EDG North A-Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL.

At the time of the annual inspection a survey was completed in order to determine the present surface water elevation of the CCR surface impoundment. Additionally, depth measurements from the water surface to the top of CCR/sediment were obtained in order to determine present depths/elevations.

The historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG North A-Pond, as well as the most recent topographic/bathymetric survey of the EDG North A-Pond completed by Cornerstone Surveying and Mapping (2016). Reviewing the information provided within the above mentioned documents, as well as the data collected during the annual inspection, the following minimum, maximum, and present depths and elevations were approximated for the impounded CCR and water:

- At the time of the annual inspection, the water surface elevation of the EDG North A-Pond was surveyed to be 606.37 feet, 4.63 feet below the crests of the surrounding embankments of the CCR surface impoundment, which had an elevation of approximately 611 feet at the lowest point of the embankments.
- At the time of the annual inspection, the water depths that were measured within the CCR surface impoundment varied between 0.40 feet and 1.75 feet.
- From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured varied between an elevation of 605.97 feet and 604.62 feet.
- From the 2011 ash pond evaluation, soil borings installed along the north, west, and south embankments of the EDG North A-Pond encountered CCR from the ground surface to an average bottom

elevation of approximately 588. The depth of the EDG North A-Pond varied between 605.97 feet and 604.62 feet. Comparing the results from the water depth measurements at the time of the annual inspection to the 2011 ash pond evaluation soil boring data, the deposition thickness varied between 17.97 feet and 16.62 feet.

3.2.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was calculated based on the acreage of the CCR surface impoundment in the area where water was present, and the approximate depth of water within that area of the CCR surface impoundment. The water depth measurements of the CCR surface impoundment were collected at the time of the annual inspection.

From the 2016 topographic/bathymetric survey data, the area of the water surface of the CCR surface impoundment was 1.0 acres. From the water depth data that was collected during the annual inspection, the average water depth within the CCR surface impoundment was 1.17 feet. Thus, the storage capacity within the EDG North A-Pond at the time of the annual inspection was approximately 1,900 cubic yards.

3.2.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume) within the EDG North A-Pond at the time of the annual inspection was determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL. Historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG North A-Pond, as well as the most recent

topographic/bathymetric survey of the EDG North A-Pond completed by Cornerstone Surveying and Mapping (2016).

The surveyed elevation of the top of water within the CCR surface impoundment at the time of the annual inspection was 606.37 feet. From the 2016 topographic/bathymetric survey of the EDG North A-Pond, the average elevation of the top of CCR/sediment outside the footprint of the water surface was approximately 608 feet. From the 2011 ash pond evaluation, soil borings installed along the north, west, and south embankments of the EDG North A-Pond encountered CCR from the ground surface to an average bottom elevation of approximately 588. Thus, the interior storage height of the EDG North A-Pond (water portion) was 18.37 feet and the interior storage height of the CCR/sediment located outside the footprint of the water surface was 20 feet.

The surface area of the EDG North A-Pond, in the area where water was present, was 1.0 acres. Thus, the volume of impounded CCR and water within the EDG North A-Pond, within the area where water was present, was approximately 30,000 cubic yards. The surface area of the EDG North A-Pond, in the area located outside of the footprint of the water portion, was 0.85 acres. Thus, the volume of impounded CCR within the EDG North A-Pond, in the area located outside of the footprint of the water portion, was approximately 27,000 cubic yards. The total volume of impounded CCR and water within the EDG North A-Pond at the time of the annual inspection was approximately 57,000 cubic yards.

3.2.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and

inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment. Additionally, there were no identified issues with the structural integrity of the hydraulic structure (18-inch diameter corrugated plastic pipe) associated with the EDG North A-Pond.

Regarding the existing conditions of the EDG North A-Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

3.2.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no other identified changes that have affected the stability or operation of the EDG North A-Pond since the previous annual inspection.

3.3 EDG South A-Pond

3.3.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, and discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and

inspection activities of the existing CCR surface impoundment, there have been no identified changes in the geometry since the previous annual inspection.

3.3.2 Existing Instrumentation (§257.83(b)(2)(ii))

Instrumentation that supports the operation of the EDG South A-Pond includes a Parshall flume discharge structure and equipment to measure the flow of the combined discharged water of the EDG North A-Pond and EDG South A-Pond, as well as a staff gauge in order to monitor the water elevation of the EDG South A-Pond. The Parshall flume and flow metering equipment is located west of the EDG North A-Pond and EDG South A-Pond and is not associated with the WPDES Outfall at EDG. The staff gauge is located in the northwest corner of the CCR surface impoundment.

The flow data associated with the EDG North A-Pond and EDG South A-Pond (e.g. maximum daily flow), since the previous annual inspection, was provided by WPL for 2015 and 2016 (October 01, 2015 through December 09, 2016). Reviewing the provided flow data, the maximum daily flow recorded was 3.05 million gallons (March 2016).

Prior to the annual inspection, there was no staff gauge water elevation data that was available for review due to the instrumentation had not yet been installed. However, the water elevation recorded at the time of the staff gauge installation was 608.86 feet.

3.3.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the EDG South A-Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL.

At the time of the annual inspection a survey was completed in order to determine the present surface water elevation of the CCR surface impoundment. Additionally, depth measurements from the water surface to the top of CCR/sediment were obtained in order to determine present depths/elevations.

The historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG South A-Pond, the most recent topographic survey of the EDG South A-Pond completed by Cornerstone Surveying and Mapping (2016), as well as a coal pile runoff pond study by Burns & McDonnell (2015) which included the most recent bathymetric survey data of the EDG South A-Pond. Reviewing the information provided within the above mentioned documents, as well as the data collected during the annual inspection, the following minimum, maximum, and present depths and elevations were approximated for the impounded CCR and water:

- At the time of the annual inspection, the water surface elevation of the EDG South A-Pond was surveyed to be 608.86 feet, 2.14 feet below the crests of the surrounding embankments of the CCR surface impoundment, which had an elevation of approximately 611 feet at the lowest point of the embankments.
- At the time of the annual inspection, the water depths that were measured within the CCR surface impoundment varied between 0.05 feet in the eastern half of the CCR surface impoundment and 7.1 feet in the western half of the CCR surface impoundment.
- From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured varied between an elevation of 608.81 feet and 601.76 feet.

- From the 2011 ash pond evaluation, soil borings installed along the north, west, and south embankments of the EDG South A-Pond encountered CCR from the ground surface to an average bottom elevation of approximately 585. The depth of the EDG South A-Pond varied between 608.81 feet and 601.76 feet. Comparing the results from the water depth measurements at the time of the annual inspection to the 2011 ash pond evaluation soil boring data, the deposition thickness varied between 23.81 feet and 16.76 feet.

3.3.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was calculated based on the acreage of the CCR surface impoundment in the area where water was present, and the approximate depth of water within that area of the CCR surface impoundment. The water depth measurements of the CCR surface impoundment were collected at the time of the annual inspection.

From the 2016 topographic survey data, the area of the water surface of the CCR surface impoundment was 1.75 acres. From the water depth data that was collected during the annual inspection, the average water depth within the CCR surface impoundment was 3.55 feet. Thus, the storage capacity within the EDG South A-Pond at the time of the annual inspection was approximately 10,000 cubic yards.

3.3.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume) within the EDG South A-Pond at the time of the annual inspection was determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL. Historical information provided from WPL included an ash pond evaluation prepared for

EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG South A-Pond, the most recent topographic survey of the EDG South A-Pond completed by Cornerstone Surveying and Mapping (2016), as well as a coal pile runoff pond study by Burns & McDonnell (2015) which included the most recent bathymetric survey data of the EDG South A-Pond.

The surveyed elevation of the top of water within the CCR surface impoundment at the time of the annual inspection was 608.86 feet. From the 2016 topographic survey of the EDG South A-Pond, the average elevation of the top of CCR/sediment outside the area of the water surface was approximately the same elevation as the surveyed water surface at the time of the annual inspection. From the 2011 ash pond evaluation, soil borings installed along the north, west, and south embankments of the EDG South A-Pond encountered CCR from the ground surface to an average bottom elevation of approximately 585. Thus, the interior storage height of the EDG South A-Pond was 23.86 feet.

The surface area of the EDG South A-Pond, in the area where both water and CCR was present, was 1.9 acres. Thus, the total volume of impounded CCR and water within the EDG South A-Pond at the time of the annual inspection was approximately 73,000 cubic yards.

3.3.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment.

Additionally, there were no identified issues with the structural integrity of the hydraulic structure (18-inch diameter corrugated plastic pipe) associated with the EDG South A-Pond.

Regarding the existing conditions of the EDG South A-Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

3.3.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no other identified changes that have affected the stability or operation of the EDG South A-Pond since the previous annual inspection.

3.4 EDG B-Pond

3.4.1 Changes in Geometry (§257.83(b)(2)(i))

After conducting the annual inspection, as well as review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, and discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no identified changes in the geometry since the previous annual inspection.

3.4.2 Existing Instrumentation (§257.83(b)(2)(ii))

Instrumentation that supports the operation of the EDG B-Pond includes a staff gauge in order to monitor the water elevation of the CCR surface

impoundment. The instrumentation was installed during the week of October 17, 2016, and is located in the northwest corner of the EDG B-Pond.

Prior to the annual inspection, there was no staff gauge water elevation data that was available for review due to the instrumentation had not yet been installed. However, the water elevation recorded at the time of the staff gauge installation was 598.23 feet.

3.4.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii))

The approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the EDG B-Pond since the previous annual inspection were determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL.

At the time of the annual inspection a survey was completed in order to determine the present surface water elevation of the CCR surface impoundment. Additionally, depth measurements from the water surface to the top of CCR/sediment were obtained in order to determine present depths/elevations.

The historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG B-Pond, the most recent topographic survey of the EDG B-Pond completed by Cornerstone Surveying and Mapping (2016), as well as a coal pile runoff pond study by Burns & McDonnell (2015) which included the most recent bathymetric survey data of the EDG B-Pond. Reviewing the information provided within the above mentioned documents, as well as the data collected during the annual inspection, the following

minimum, maximum, and present depths and elevations were approximated for the impounded CCR and water:

- At the time of the annual inspection, the water surface elevation of the EDG B-Pond was surveyed to be 598.23 feet, 9.77 feet below the crests of the south and east embankments of the CCR surface impoundment, which had an elevation of approximately 608 feet at the lowest point of the embankments.
- At the time of the annual inspection, the water depths that were measured within the CCR surface impoundment varied between 2.4 feet and 7.2 feet.
- From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured varied between an elevation of 595.83 feet and 591.03 feet.
- From the 2011 ash pond evaluation, soil borings installed along the north and west embankments of the EDG B-Pond encountered CCR from the ground surface to an average bottom elevation of approximately 583 feet. The bottom elevation of the EDG B-Pond varied between 595.83 feet and 591.03 feet. Comparing the results from the water depth measurements at the time of the annual inspection to the 2011 ash pond evaluation soil boring data, the deposition thickness varied between 12.83 feet and 8.03 feet.

3.4.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the annual inspection was calculated based on the acreage of the CCR surface impoundment in the area where water was present, and the approximate depth of water within that area of the CCR surface impoundment.

The water depth measurements of the CCR surface impoundment were collected at the time of the annual inspection.

From the 2016 topographic survey data, the area of the water surface of the CCR surface impoundment was 2.0 acres. From the water depth data that was collected during the annual inspection, the average water depth within the CCR surface impoundment was 5.83 feet. Thus, the storage capacity within the EDG B-Pond at the time of the annual inspection was approximately 19,000 cubic yards.

3.4.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v))

The volume of impounded CCR and water (i.e. total volume) within the EDG B-Pond at the time of the annual inspection was determined using information that was collected during the annual inspection, as well as from historical information that was previously provided from WPL. Historical information provided from WPL included an ash pond evaluation prepared for EDG by Miller Engineers & Scientists (2011) which included soil boring data in the area of the EDG B-Pond, the most recent topographic survey of the EDG B-Pond completed by Cornerstone Surveying and Mapping (2016), as well as a coal pile runoff pond study by Burns & McDonnell (2015) which included the most recent bathymetric survey data of the EDG B-Pond.

The surveyed elevation of the top of water within the CCR surface impoundment at the time of the annual inspection was 598.23 feet. From the 2011 ash pond evaluation, soil borings installed along the north and west embankments of the EDG B-Pond encountered CCR from the ground surface to an average bottom elevation of approximately 583 feet. Thus, the interior storage height of the EDG B-Pond was 15.23 feet.

The surface area of the EDG B-Pond, in the area where both water and CCR was present, was 2.0 acres. Thus, the total volume of impounded CCR and water within the EDG B-Pond at the time of the annual inspection was approximately 49,000 cubic yards.

3.4.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, as well as conducting the on-site visual inspection of the existing CCR surface impoundment, there have been no identified appearances of an actual or potential structural weakness of the existing CCR surface impoundment. Additionally, there were no identified issues with the structural integrity of the hydraulic structure (concrete overflow weir and 24-inch diameter corrugated metal pipe) associated with the EDG B-Pond.

Regarding the existing conditions of the EDG B-Pond, there were no existing conditions identified along the upstream and downstream slopes of the embankments that were disrupting or have the potential to disrupt the operation and safety of the existing CCR surface impoundment.

3.4.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii))

After review of available information provided by EDG pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with EDG facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the existing CCR surface impoundment, there have been no other identified changes that have affected

the stability or operation of the EDG B-Pond since the previous annual inspection.

4. CERTIFICATION

To meet the requirements of 40 CFR 257.83(b), I Mark W. Loerop hereby certify that I am a licensed professional engineer in the State of Wisconsin; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in 40 CFR 257.83(b).

By: _____

Name: Mark Loerop

Date: Dec 21, 2016