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Interstate Power and Light Company

Ottumwa Generation Station

CCR Surface Impoundment Annual Inspection Report

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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 and inactive 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 CCR surface impoundments is in accordance with recognized and generally accepted good engineering standards.

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1. INTRODUCTION

This annual inspection report has been prepared in accordance with the requirements of §257.83(b) and §257.100(a) 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 both existing and inactive CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more or the CCR surface impoundment has a height of 20 feet or more (40 CFR §§ 257.73(b), 257.73(d), 257.83(b) and 257.100(a)).

1.2 Annual Inspection Applicability

The Interstate Power and Light Company (IPL), Ottumwa Generating Station (OGS) in Ottumwa, Iowa has two CCR surface impoundments, one existing and one inactive, that meet the requirements of Section 1.1. The existing CCR surface impoundment is identified as the OGS Ash Pond and the inactive CCR surface impoundment is identified as the OGS Zero Liquid Discharge (ZLD) Pond.

The annual inspection of the CCR surface impoundments at OGS was completed by a qualified PE on June 7th and 8th, 2017. The annual inspection was completed to ensure that the design, construction, operation, and maintenance of the CCR surface impoundments at OGS are consistent with recognized and generally accepted good engineering standards.

The annual inspection of the CCR surface impoundments at OGS included a review of available information regarding the status and condition of the CCR surface impoundments. The information reviewed included all relevant files available in the operating record at the time of the annual inspection, as well as the Alliant Energy CCR Rule Compliance Data and Information website entries for OGS (ccr.alliantenergy.com). These files for the CCR surface impoundments at OGS included, 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 CCR surface impoundments in order to identify signs of distress or malfunction of the CCR surface impoundments and appurtenant structures. Additionally, the visual inspection included hydraulic structures underlying the base of the CCR surface impoundments or passing through the dikes of the CCR surface impoundments for structural integrity and continued safe and reliable operation.

2. FACILITY DESCRIPTION

The following sub-section provides a summary description of the facility, as well as a description of the CCR surface impoundments located at OGS.

OGS is located approximately ten miles northwest of Ottumwa, Iowa on the western shore of the Des Moines River in Wapello County, at 20775 Power Plant Road, Ottumwa, Iowa. The McNeese Wildlife Area is located to the southeast of OGS. Middle Avery Creek, which flows to the northeast into the Des Moines River, is located to the south and east of OGS.

OGS is a fossil-fueled electric generating station consisting of one steam electric generating unit. Sub-bituminous coal is the primary fuel for producing steam. The burning of coal produces a by-product of CCR. The CCR at OGS is categorized into three types; bottom ash, fly ash, and flue gas desulfurization (scrubber) byproducts. The fly ash also can be subdivided into two types, economizer fly ash and precipitator fly ash.

General Facility Information:

Date of Initial Facility Operations:	1981
IDNR CCR Units State ID No.	90-UDP-01-15
NPDES Permit Number:	IA90-001-01
Latitude / Longitude:	41°5'53"N 92°33'17"W
Site Coordinates:	Section 26, Township 73 North, Range 15 West
Unit Nameplate Ratings:	Unit 1 (1981) 674 MW

2.1 OGS Ash Pond (Existing CCR Surface Impoundment)

The OGS Ash Pond is located east of the generating plant on the eastern portion of the site. The OGS Ash Pond receives influent flows from the generating plant floor drains, oil/water separator, boiler blow down water, solid contact unit sludge, sluiced CCR (bottom ash and economizer fly ash), recirculating media sanitary treatment plant, and surface water runoff from the generating site proper.

The sluiced CCR is discharged into the west end of the OGS Ash Pond. The sluiced CCR is discharged into a collection pad area where the majority of CCR is recovered. A dozer is used to scrape the collection pad and push the CCR into a stockpile for dewatering. Once dewatered, the CCR may be loaded into over-the-road haul trucks for transporting off-site. The sluiced water from the CCR drains into a narrow channel that flows into the southwest portion of the OGS Ash Pond. Routine maintenance dredging of the narrow channel occurs as the CCR settles out in the channel.

The water in the OGS Ash Pond from other sources flows to the east and discharges through the facility's National Pollutant Discharge Elimination System (NPDES) Outfall 001, located in the northeast corner of the OGS Ash Pond. NPDES Outfall 001 consists of a concrete discharge structure with a six foot wide overflow weir and includes a Parshall flume and instrumentation to measure the flow of the discharged water. The water flows through the NPDES Outfall 001 and discharges into an unnamed creek. The unnamed creek flows into the Des Moines River downstream of the water intake structure and before the confluence of Middle Avery Creek.

2.2 OGS Zero Liquid Discharge Pond (Inactive CCR Surface Impoundment)

The OGS ZLD Pond is located northeast of the generating plant and north of the OGS Ash Pond. The OGS ZLD Pond historically received influent flows from the generating plant that consisted of boiler wash water, air heater wash (fly ash), turbine chemical cleaning water, and boiler chemical cleaning water. Presently, the OGS ZLD Pond acts as a storm water detention pond with the only influent sources being precipitation, storm water runoff from the adjacent hydrated fly ash pile, storm water runoff from the surrounding embankments, and emergency overflow from the Coal Pile Runoff Pond via a 24-inch diameter high density polyethylene culvert. The OGS ZLD Pond does not discharge through any regulated outfall. The water within the OGS ZLD Pond either exfiltrates into the ground or evaporates. Two 48-inch diameter concrete culverts, located along the south embankment, previously connected the OGS ZLD Pond to the OGS Ash Pond prior to being permanently sealed off with concrete.

3. ANNUAL INSPECTION REPORTING CRITERIA

The following sub-sections address the annual inspection reporting criteria per §257.83(b)(2) and §257.100(a) of the CCR Rule for the CCR surface impoundments located at OGS.

3.1 OGS Ash Pond (Existing CCR Surface Impoundment)

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 OGS pertaining to the status and condition of the existing CCR surface impoundment, and discussions with OGS 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 OGS Ash Pond includes the following:

- *Parshall flume discharge structure and equipment to measure the flow of the discharged water through the NPDES Outfall 001.* The instrumentation is located in the northeast corner of the OGS Ash Pond within the Polishing Pond area of the CCR surface impoundment. The flow data associated with the NPDES Outfall 001 discharge (i.e. maximum daily flow), since the previous annual inspection, was provided by IPL for 2016/2017 (November 01, 2016 through May 31, 2017). Reviewing the provided flow data, the maximum daily flow

recorded through NPDES Outfall 001 was 4.06 million gallons (April 2017).

- *Staff gauges to monitor the water elevation of the CCR surface impoundment.* The original staff gauge, which is located in the northeast corner of the OGS Ash Pond within the Polishing Pond area of the CCR surface impoundment, was installed in September 2016 and has since been replaced with a new staff gauge. The new staff gauge, installed in May 2017, is located in the northeast corner of the OGS Ash Pond outside the Polishing Pond area in the large open area of the CCR surface impoundment.

The staff gauge water elevation data, since the previous annual inspection, was provided by IPL for both the original and new staff gauges. The staff gauge measurements were collected at the same time as the 7-day inspections. The water elevation data for the original staff gauge included measurements collected between November 09, 2016 through May 24, 2017. The water elevation data for the new staff gauge included measurements collected between May 31, 2017 through June 21, 2017. After review of the provided staff gauge water elevation data, the maximum water elevation recorded within the Polishing Pond area of the OGS Ash Pond was 675.71 feet (April/May 2017). The maximum water elevation recorded within the large open area of the OGS Ash Pond was 675.83 feet (May 2017).

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 OGS Ash 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 IPL.

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. It should be noted that at the time of the annual inspection the facility was in an outage and the OGS Ash Pond was receiving below normal influent flows. The reduction in influent flows resulted in a lower water elevation, as well as decreased water depths, than what would be observed during normal facility operations.

The historical information provided from IPL included staff gauge water elevation data since the previous annual inspection, a drawing of the original site grading plan contours prepared by Black & Veatch (1976) which show the original contours prior to the construction of the OGS Ash Pond, as well as the most recent topographic/bathymetric survey of the OGS Ash Pond completed by French-Reneker-Associates (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:

- OGS Ash Pond - Large Open Area of Impounded Water
 - At the time of the annual inspection, the water surface elevation of the large open area of impounded water within the CCR surface impoundment was surveyed to be 675.59 feet, approximately 6.41 feet below the crest of the east embankment

of the CCR surface impoundment, which had an elevation of approximately 682 feet at the lowest point of the embankment.

- At the time of the annual inspection, the water depth that was measured within the large open area of impounded water within the CCR surface impoundment varied between 0.00 feet (water surface) in the southwest portion of the CCR surface impoundment and 11.55 feet in the eastern portion of the CCR surface impoundment adjacent to the Polishing Pond area. Note, at the time of the annual inspection two of the water depth measurement locations in the southwest portion of the CCR surface impoundment were located outside the footprint of the impounded water due to the lower water elevation.
- From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured within the large open area of impounded water within the CCR surface impoundment varied between an elevation of 675.59 feet (water surface) in the southwest portion of the CCR surface impoundment to an elevation of 664.04 feet in the eastern portion of the CCR surface impoundment.
- From staff gauge water elevation data provided by IPL since the previous annual inspection, the minimum water elevation within the large open area of the OGS Ash Pond was recorded to be 675.53 feet. The maximum water elevation within the large open area of the OGS Ash Pond was recorded to be 675.83 feet.
- From the 1976 drawing of the original site grading plan contours, the original bottom contour elevations varied from

west to east within the existing area of impounded water within the CCR surface impoundment. The depth of the OGS Ash Pond varied between an elevation of 674 feet near the western portion of the CCR surface impoundment to an elevation of 656 feet in the eastern portion of the CCR surface impoundment adjacent to the Polishing Pond area. Comparing the results from the water depth measurements at the time of the annual inspection to the 1976 original site grading plan bottom contour elevations, the deposition thickness increased from 1.59 feet in the western portion of the CCR surface impoundment to 8.04 feet in the eastern portion of the CCR surface impoundment.

- OGS Ash Pond – Polishing Pond Area
 - At the time of the annual inspection, the water surface elevation of the Polishing Pond area of the CCR surface impoundment was surveyed to be 674.38 feet, approximately 7.62 feet below the crest of the east embankment of the CCR surface impoundment and approximately 1.21 feet below the water surface elevation of the large open area of impounded water within the CCR surface impoundment.
 - At the time of the annual inspection, the water depth that was measured within the Polishing Pond area of the CCR surface impoundment varied between 6.15 feet and 7.75 feet.
 - From the water depth measurements at the time of the annual inspection, the elevation of the top of CCR/sediment that was measured within the Polishing Pond area of the CCR surface

impoundment varied between an elevation of 668.23 feet to an elevation of 666.63 feet.

- From staff gauge water elevation data provided by IPL since the previous annual inspection, the minimum water elevation within the Polishing Pond area of the OGS Ash Pond was recorded to be 674.91 feet. The maximum water elevation within the Polishing Pond area of the OGS Ash Pond was recorded to be 675.71 feet.
- From the 1976 drawing of the original site grading plan contours, the bottom contour elevation within the Polishing Pond area was approximately 658 feet. Comparing the results from the water depth measurements at the time of the annual inspection to the 1976 original site grading plan bottom contour elevations, the deposition thickness in the Polishing Pond area was approximately 9.43 feet.
- OGS Ash Pond - Out of Water Area
 - Of the approximately 39 acres that makes up the surface area of the OGS Ash Pond, approximately 22 acres consists of CCR/sediment and does not normally consist of impounded water. The out of water area is generally located in the southwestern, western, and northwestern portions of the CCR surface impoundment. At the time of the annual inspection an additional 5.3 acres of CCR/sediment was located outside the normal footprint of impounded water due to the lower water elevation, which increased the out of water area to approximately 27.3 acres. From the 1976 drawing of the original

site grading plan contours, the average bottom contour elevation within the western portion of the CCR surface impoundment was approximately 675 feet.

- o From both the 2016 topographic/bathymetric survey of the OGS Ash Pond and the 2017 survey of the water surface elevation at the time of the annual inspection, the elevation of the top of CCR/sediment varied between 677 feet near the large open area of impounded water and 705 feet in the northwest portion of the OGS Ash Pond in the CCR operational area. Comparing the 2016 topographic/bathymetric survey top of CCR/sediment elevations, as well as the 2017 survey of the water surface elevation at the time of the annual inspection, to the 1976 drawing of the original site grading plan contour elevations, the deposition thickness of the OGS Ash Pond in the areas that did not consist of impounded water at the time of the annual inspection varied between 2 feet and 30 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 large open 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. Note, at the time of the annual inspection the facility was in an outage which resulted in a water elevation approximately 0.62 feet lower than the water elevation that was surveyed during the previous annual inspection. The lower water elevation

resulted in a decrease in the water surface area, as well as a decrease in average water depth, thus resulting in a decrease in available storage capacity.

From both the 2016 topographic/bathymetric survey of the OGS Ash Pond and the 2017 survey of the water surface elevation at the time of the annual inspection, the area of the water surface of the CCR surface impoundment was approximately 11.7 acres. From the water depth data that was collected during the annual inspection, the average water depth within the CCR surface impoundment was approximately 4.71 feet. Thus, the storage capacity within the OGS Ash Pond at the time of the annual inspection was approximately 89,000 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 OGS Ash 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 IPL. Historical information provided from IPL included a drawing of the original site grading plan contours prepared by Black & Veatch (1976), as well as the most recent topographic/bathymetric survey of the OGS Ash Pond completed by French-Reneker-Associates (2016). Note, at the time of the annual inspection the facility was in an outage and therefore the CCR surface impoundment water elevation was approximately 0.62 feet lower than the water elevation that was surveyed during the previous annual inspection. The lower water elevation resulted in a decrease in storage capacity (i.e. water volume), thus resulting in a decrease in total volume of impounded CCR and water at the time of the annual inspection.

The water surface elevation of the large open area of impounded water within the CCR surface impoundment that was surveyed at the time of the annual inspection was 675.59 feet. From the 2016 topographic/bathymetric survey of the OGS Ash Pond, the average elevation of the top of CCR/sediment outside the footprint of the water surface, which includes the bottom ash pile, was estimated to be approximately 681 feet. From the 1976 drawing of the original site grading plan contours, the bottom contour elevation that was present prior to the construction of the OGS Ash Pond was approximately 662 feet in the large open area of impounded water and 675 feet in the area outside the footprint of the water surface. Thus, the interior storage height of the OGS Ash Pond (water portion) was approximately 13.59 feet and the interior storage height of the CCR/sediment located outside the footprint of the water surface was approximately 6 feet.

The surface area of the OGS Ash Pond, in the area where water was present, was approximately 11.7 acres. Thus, the volume of impounded CCR and water within the OGS Ash Pond, within the area where water was present, was approximately 257,000 cubic yards. The surface area of the OGS Ash Pond, in the area located outside of the footprint of the water portion, which includes the bottom ash pile, was approximately 27.3 acres. Thus, the volume of impounded CCR within the OGS Ash Pond, in the area located outside of the footprint of the water portion, was approximately 264,000 cubic yards. The total volume of impounded CCR and water within the OGS Ash Pond at the time of the annual inspection was approximately 521,000 cubic yards.

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

After review of available information provided by OGS pertaining to the status and condition of the existing CCR surface impoundment, discussions with OGS

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 (NPDES Outfall 001) associated with the OGS Ash Pond.

Regarding the existing conditions of the OGS Ash 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. At the time of the annual inspection, the upstream and downstream slopes of the embankments of the CCR surface impoundment were well maintained.

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

After review of available information provided by OGS pertaining to the status and condition of the existing CCR surface impoundment, as well as discussions with OGS 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 OGS Ash Pond since the previous annual inspection.

3.2 OGS Zero Liquid Discharge Pond (Inactive CCR Surface Impoundment)

3.2.1 Changes in Geometry (§257.83(b)(2)(i) and §257.100(a))

After conducting the initial annual inspection, as well as review of available information provided by OGS pertaining to the status and condition of the inactive CCR surface impoundment, and discussions with OGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the inactive CCR surface impoundment, there have been no identified changes in the geometry of the impounding structure that would warrant additional investigation or remedial activities.

Additionally, review of historical annual inspections completed from 2011 through 2014, prior to this initial CCR Rule annual inspection for the inactive CCR surface impoundment, has shown there have been no previously identified changes in the geometry of the OGS ZLD Pond.

3.2.2 Existing Instrumentation (§257.83(b)(2)(ii) and §257.100(a))

Instrumentation that supports the operation of the OGS ZLD Pond includes a staff gauge in order to monitor the water elevation of the CCR surface impoundment. The staff gauge, installed in September 2016, is located in the western portion of the OGS ZLD Pond.

The staff gauge water elevation data was provided by IPL. The water elevation data included measurements collected between November 02, 2016 and June 21, 2017. The staff gauge measurements between November 2016 and March 2017 were collected during the monthly inspections that were implemented at that time. The staff gauge measurements between April 2017 and June 2017 were collected at the same time as the newly implemented 7-day inspections.

After review of the provided staff gauge water elevation data, the maximum water elevation recorded within the OGS ZLD Pond was 672.51 feet (November 2016/May 2017).

3.2.3 Depth and Elevation of Impounded CCR and Water (§257.83(b)(2)(iii) and §257.100(a))

As this is the initial CCR Rule annual inspection for the OGS ZLD Pond, there is no historical record of available information regarding the approximate minimum, maximum, and present depths and elevations of the impounded CCR and water in the OGS ZLD Pond from a previous annual inspection that was available for review.

However, at the time of the initial 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.

Also, historical information was previously provided from IPL which included staff gauge water elevation data, a drawing of the original site grading plan contours prepared by Black & Veatch (1976) which show the original contours prior to the construction of the OGS ZLD Pond, as well as the most recent topographic/bathymetric survey of the OGS ZLD Pond completed by French-Reneker-Associates (2015). Additionally, IPL provided historical information on the depth in which the CCR is present within the inactive CCR surface impoundment. Reviewing the information provided within the above mentioned documents, as well as the data collected during the initial annual inspection, the following minimum, maximum, and present depths and elevations were approximated for the impounded CCR and water:

- At the time of the initial annual inspection, the water surface elevation of the OGS ZLD Pond was surveyed to be 672.23 feet, approximately 8.77 feet below the crest of the east embankment of the CCR surface impoundment, which had an elevation of approximately 681 feet at the lowest point of the embankment.
- At the time of the initial annual inspection, the water depth that was measured within the CCR surface impoundment varied between 3.5 feet in the western portion of the CCR surface impoundment adjacent to the hydrated fly ash pile and 17.85 feet in the southeastern portion of the CCR surface impoundment.
- From the water depth measurements at the time of the initial annual inspection, the elevation of the top of CCR/sediment that was measured within the CCR surface impoundment varied between an elevation of 668.73 feet in the western portion of the CCR surface impoundment adjacent to the hydrated fly ash pile to an elevation of 654.38 feet in the southeastern portion of the CCR surface impoundment, with an average elevation of approximately 659.68 feet.
- From the 1976 drawing of the original site grading plan contours, the original bottom contour elevations varied from east to west within the CCR surface impoundment. The depth of the OGS ZLD Pond varied between an elevation of 655 feet in the eastern portion of the CCR surface impoundment to an elevation of 664 feet in the western portion of the CCR surface impoundment, averaging an elevation of approximately 659.5 feet. Based upon historical documentation provided by IPL, the average bottom of CCR elevation identified in soil

borings taken throughout the CCR surface impoundment was approximately 656.8 feet. Comparing the results of the average water depth measurement at the time of the initial annual inspection to the average bottom of CCR elevation identified within historical documentation, the average deposition thickness was observed to be approximately 2.88 feet within the CCR surface impoundment.

3.2.4 Storage Capacity of Impounding Structure (§257.83(b)(2)(iv) and §257.100(a))

The storage capacity (i.e. water volume) of the CCR surface impoundment at the time of the initial 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 initial annual inspection.

From both the 2015 topographic/bathymetric survey of the OGS ZLD Pond and the 2017 survey of the water surface elevation at the time of the initial annual inspection, the area of the water surface of the CCR surface impoundment was approximately 19 acres. From the water depth data that was collected during the initial annual inspection, the average water depth within the CCR surface impoundment was approximately 12.55 feet. Thus, the storage capacity within the OGS ZLD Pond at the time of the initial annual inspection was approximately 385,000 cubic yards.

3.2.5 Volume of Impounded CCR and Water (§257.83(b)(2)(v) and §257.100(a))

The volume of impounded CCR and water (i.e. total volume) within the OGS ZLD Pond at the time of the initial annual inspection was determined using

information that was collected during the initial annual inspection, as well as from historical information that was previously provided from IPL. Historical information provided from IPL included a drawing of the original site grading plan contours prepared by Black & Veatch (1976), as well as the most recent topographic/bathymetric survey of the OGS ZLD Pond completed by French-Reneker-Associates (2015). Additionally, IPL provided historical information on the depth in which the CCR is present within the inactive CCR surface impoundment.

The water surface elevation of the CCR surface impoundment that was surveyed at the time of the initial annual inspection was 672.23 feet. Based upon historical documentation provided by IPL, the average bottom of CCR elevation identified in soil borings taken throughout the CCR surface impoundment was approximately 656.8 feet. Thus, the average interior storage height of the OGS ZLD Pond was approximately 15.43 feet.

The surface area of the OGS ZLD Pond, in the area where both water and CCR were present, was approximately 19 acres. The total volume of impounded CCR and water within the OGS ZLD Pond at the time of the initial annual inspection was approximately 473,000 cubic yards.

3.2.6 Structural Weaknesses and Disruptive Conditions (§257.83(b)(2)(vi) and §257.100(a))

After review of available information provided by OGS pertaining to the status and condition of the inactive CCR surface impoundment, discussions with OGS facility personnel who oversee and maintain the operation, maintenance, and inspection activities of the inactive CCR surface impoundment, as well as conducting the on-site visual inspection of the inactive CCR surface

impoundment, there have been no identified appearances of an actual or potential structural weakness of the inactive CCR surface impoundment.

Regarding the existing conditions of the OGS ZLD 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 inactive CCR surface impoundment. At the time of the initial annual inspection, the upstream and downstream slopes of the embankments of the CCR surface impoundment were well maintained.

3.2.7 Other Changes Affecting Stability or Operation of Impounding Structure (§257.83(b)(2)(vii) and §257.100(a))

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

Additionally, review of historical annual inspections completed from 2011 through 2014, prior to this initial CCR Rule annual inspection for the inactive CCR surface impoundment, has shown there have been no previously identified changes that have affected the stability or operation of the OGS ZLD Pond.

4. CERTIFICATION

To meet the requirements of 40 CFR §§ 257.83(b) and 257.100(a), I Mark W. Loerop hereby certify that I am a licensed professional engineer in the State of Iowa; 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) and 257.100(a).

By:  _____

Name: MARK LOEROP _____

Date: July 3, 2017 _____

