

2016

J. M. Stuart Station Pond 10 Annual Inspection

ODNR File No.: 8535-011

Ohio EPA Permit No.: 06-5901

The Dayton Power & Light Company



Prepared by:
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The Dayton Power & Light Company

Date: December 21, 2016

Purpose

I have conducted the following annual inspection in compliance of the Federal CCR Rule, 40 CFR Part 257 and Ohio Department of Natural Resources ORC 1501.062.

Statement of Qualifications

I am a practicing Civil/Geotechnical Engineer registered with the State of Ohio employed by the Dayton Power & Light Company. I am experienced in the design, maintenance and operation of earthen dams and impoundments.

Review of Impoundment Documentation [§ 257.83(b)(1)(i)]

Design, History, and Operation of the Facility

Ash pond 10 is a partially-incised, upland reservoir that was constructed in 2001 under ODNR Permit No. 00-291. This pond is used for settling wet sluiced fly ash produced from the combustion of coal in the station generating units. The pond has an area of 28.9 acres at the crest, is 40-feet deep and has a volume of 826 acre-feet to the crest. This pond is periodically drained and the settled fly ash excavated which is then sent to a dry ash landfill. The Maximum Operating Level of this pond is three feet below the crest. The outlet is a concrete structure with removable stop logs to control the level.

Periodic Inspections

A thorough review of 2016 weekly facility inspections was conducted. These periodic inspections do not indicate any structural weakness or concerns.

Previous Structural Assessments

Initial Design documents and Pond 10 Initial Periodic Structural Stability Assessment prepared by Haley & Aldrich, 2016 were reviewed.

Visual Inspection of Impoundment [§ 257.83(b)(1)(ii)]

The Pond 10 dam is in good structural condition based on the visual inspection. Maintenance items were noted during the field inspection.

Changes in Geometry [§ 257.83(b)(2)(i)]

There were no changes to the upstream face of the dam. Rock erosion protection is in place and in good condition around the perimeter of the pond. There were no changes to the geometry of the downstream face of the dam pond or other indications of structural weakness. Slopes have no indication of deformation or other indicators of instability.

Instrumentation [§ 257.83(b)(2)(ii)]

These ponds are equipped with a staff gauge mounted on the primary outlet, settlement monuments and groundwater monitoring wells. All instrumentation is in good condition.

Structural Weakness [§ 257.83(b)(2)(vi)]

No indication was found of an actual or potential structural weakness of the CCR unit or any existing condition that was disrupting or had the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.

Other Changes [§ 257.83(b)(2)(vii)]

No changes were found to the CCR unit which could affect the stability or operation of the impounding structure since the previous annual inspection.

Visual Inspection of Hydraulic Structures [§ 257.83(b)(1)(iii)]

The hydraulic structure for this impoundment is in good condition. Much of the outlet piping for this structure is above ground. At one location the pipe had moved from the bench on which it originally sat likely due to thermal expansion and contraction of the high density polyethylene pipe as noted in the 2015 report. No further movement has occurred but should continue to be monitored.

Water and Material Depths and Volumes

[§ 257.83(b)(2)(iii), § 257.83(b)(2)(iv), § 257.83(b)(2)(v)]

Physical Parameters of Impoundment		
Depth of water	17	Feet
Maximum Depth of water	17	Feet
Minimum Depth of Water	17	Feet
Elevation of water	557	Feet
Storage Capacity	1,330,000	Cubic Yards, Crest Full Volume
Volume of water	170,000	Cubic Yards
Volume of CCR	650,000	Cubic Yards

Appendix A

CCR Rule Requirements for Impoundment Annual Inspections

§257.83 Inspection requirements for CCR surface impoundments.

- (a) *Inspections by a qualified person.*
- (1) All CCR surface impoundments and any lateral expansion of a CCR surface impoundment must be examined by a qualified person as follows:
 - (i) At intervals not exceeding seven days, inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit;
 - (ii) At intervals not exceeding seven days, inspect the discharge of all outlets of hydraulic structures which pass underneath the base of the surface impoundment or through the dike of the CCR unit for abnormal discoloration, flow or discharge of debris or sediment; and
 - (iii) At intervals not exceeding 30 days, monitor all CCR unit instrumentation.
 - (2) The results of the inspection by a qualified person must be recorded in the facility's operating record as required by §257.105(g)(5).
 - (i) *(2) Timeframes for inspections by a qualified person—(i) Existing CCR surface impoundments.* The owner or operator of the CCR unit must initiate the inspections required under paragraph (a) of this section no later than October 19, 2015.
 - (ii) *New CCR surface impoundments and any lateral expansion of a CCR surface impoundment.* The owner or operator of the CCR unit must initiate the inspections required under paragraph (a) of this section upon initial receipt of CCR by the CCR unit.
- (b) *Annual inspections by a qualified professional engineer.*
- (1) If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment is subject to the periodic structural stability assessment requirements under §257.73(d) or §257.74(d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:
 - (i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §§257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections);
 - (ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures; and
 - (iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.
 - (2) *Inspection report.* The qualified professional engineer must prepare a report following each inspection that addresses the following:
 - (i) Any changes in geometry of the impounding structure since the previous annual inspection;
 - (ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;
 - (iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;
 - (iv) The storage capacity of the impounding structure at the time of the inspection;
 - (v) The approximate volume of the impounded water and CCR at the time of the inspection;
 - (vi) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures; and
 - (vii) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.
 - (3) *Timeframes for conducting the initial inspection—*

- (i) *Existing CCR surface impoundments.* The owner or operator of the CCR unit must complete the initial inspection required by paragraphs (b)(1) and (2) of this section no later than January 19, 2016.
 - (ii) *New CCR surface impoundments and any lateral expansion of a CCR surface impoundment.* The owner or operator of the CCR unit must complete the initial annual inspection required by paragraphs (b)(1) and (2) of this section is completed no later than 14 months following the date of initial receipt of CCR in the CCR unit.
- (4) *Frequency of inspections.*
- (i) Except as provided for in paragraph (b)(4)(ii) of this section, the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by §257.105(g)(6).
 - (ii) (ii) In any calendar year in which both the periodic inspection by a qualified professional engineer and the quinquennial (occurring every five years) structural stability assessment by a qualified professional engineer required by §§257.73(d) and 257.74(d) are required to be completed, the annual inspection is not required, provided the structural stability assessment is completed during the calendar year. If the annual inspection is not conducted in a year as provided by this paragraph (b)(4)(ii), the deadline for completing the next annual inspection is one year from the date of completing the quinquennial structural stability assessment.
- (5) If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.
- (c) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in §257.105(g), the notification requirements specified in §257.106(g), and the internet requirements specified in §257.107(g).

[80 FR 21468, Apr. 17, 2015, as amended at 80 FR 37992, July 2, 2015]

Appendix B

Reference Documents Reviewed

- ❖ Operation Maintenance and Inspection Manual
- ❖ Emergency Action Plan
- ❖ Pond Design Manual, URS
- ❖ Pond 10 Initial Periodic Structural Stability Assessment, Haley & Aldrich, 2016
- ❖ Previous inspections reports
 - Weekly/monthly
 - ODNR 2013, 2009
 - CHA 2010
 - CEC 2009
- ❖ Drawings
 - 300-46-1172 (20 sheets)

Appendix C
Inspection Check List

Dam Field Inspection Report

DAM/IMPOUNDMENT ANNUAL FIELD INSPECTION FORM

Unit Name: Pond 10

Facility Name: J.M. Stuart Station

ODNR File No.: 8535-011

CCR Unit

ACTION

ODNR Hazard Classification: I II III IV N/A

Impoundment Type: Incised Upland Lake

Description: Located on the west side of Landfill along the plant entrance road. This Pond was designed by URS. Embankments are bottom ash core with a clay liner.

Inspection Date(s): November 29, 2016

Weather/Surface Conditions During Inspection: Clear with temperatures in the 50's, 0.3" of precipitation on the previous day. Surface conditions are damp.

Freeboard: 4.5'

NONE
 MONITOR
 MAINTENANCE
 ENGINEER

UPSTREAM SLOPE Gradient: Horizontal: 2.5 Vertical: 1 (est. meas.)

VEGETATION

Trees:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: None except in the deposited ash.				
Brush:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: None except in the deposited ash.				
Ground Cover:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Grass in most areas with riprap in select areas.				
CONDITION: Grass on the upper slope is maintained however with the water level down parts of the lower slope are out of reach of the mowing equipment.				

SLOPE PROTECTION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TYPE or NONE: Riprap in select areas				
DESCRIPTION: Riprap, 3'-12"				
CONDITION: Good condition.				

EROSION:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: Shoreline (beaching) erosion has occurred in unprotected areas.				
Water level was far below the normal operating level. Recommend adding additional clay material prior to refilling pond.				

INSTABILITIES: (SLIDES, CRACKS, BULGES, etc.)				
SLIDES/SLOUGHS:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
CRACKS:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
BULGES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
OTHER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				

OTHER (rodent burrows, ruts, etc.)				
DESCRIPTION AND LOCATION:				
DESCRIPTION AND LOCATION:				
DESCRIPTION AND LOCATION:				
DESCRIPTION AND LOCATION:				

CREST Length: 3,516' Width: 15' design (est. meas.)

GROUND COVER:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Dense graded stone (ODOT 304)				
CONDITION: Good				

EROSION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				

	ACTION			
	NONE	MONITOR	MAINTENANCE	ENGINEER
INSTABILITIES: (SLIDES, CRACKS, BULGES, etc.)				
CRACKS:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
RUTS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
POT HOLES:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
OTHER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
MONITORING INSTRUMENTATION:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Staff gauge at the outlet structure, settlement monuments.				
CONDITION:				
ALIGNMENT:				
CONDITION: No indication of changes in the alignment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER (rodent burrows, ruts, etc.)				
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOWNSTREAM SLOPE Gradient: Horizontal: 2.5 Vertical: 1 (est. meas.)				
VEGETATION				
Trees:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: none				
Brush:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: none				
Ground Cover:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Grass				
CONDITION: Vegetated cover has been well maintained and is improving in quality. One bare area is noted near the crest at station 26 which needs to be reseeded. Possibly caused by mowing equipment and/or geese.				
EROSION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
INSTABILITIES: (SLIDES, CRACKS, BULGES, etc.)				
SLIDES/SLOUGHS:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
CRACKS:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
BULGES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
OTHER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
SEEPAGE/WET AREA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:				
EMBANKMENT DRAINS:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Toe drains are provided to control pore pressure within the dam.				
CONDITION: Generally good but three drains required the removal of material at the discharge point.				
MONITORING INSTRUMENTATION:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ACTION

NONE
MONITOR
MAINTENANCE
ENGINEER

DESCRIPTION: none

CONDITION:

OTHER (rodent burrows, ruts, etc.)

DESCRIPTION AND LOCATION:

DESCRIPTION AND LOCATION:

DESCRIPTION AND LOCATION:

DESCRIPTION AND LOCATION:

HYDRAULIC STRUCTURES

STRUCTURE:

DESCRIPTION: Principle/Emergency Spillway

INLET

DESCRIPTION: Concrete structure with removeable steel channel stop logs used to maintain water level during operation.

CONDITION: Good condition.

OBSTRUCTION NOTED: (YES NO) DESCRIBE IF YES:

CONDUIT

DESCRIPTION: One 30 inch HDPE pipe running along the west, south and east sides of pond 3A

CONDITION: Good condition, at one location had slipped off of the bench where it was originally located. No additional movement since the previous inspection.

SEEPAGE NOTED: (YES NO) DESCRIBE IF YES:

OUTLET

DESCRIPTION: Discharges into a pool area of Pond 6

CONDITION: Good condition.

EROSION NOTED: (YES NO) DESCRIBE IF YES:

Appendix D

CCR Unit Maintenance Recommendations

1. Re-seed bare area near station 26.
2. Prior to refilling repair erosion to the upstream slope.

Continued Monitoring

1. Trees and brush on the ponded CCR material. Ensure that they do not spread to the pond structure.
2. Monitor outlets of toe drains.
3. Monitor the above ground outlet piping to ensure that it does not become over-stressed.