

**Prepared For:**

Gavin Power, LLC  
Cheshire, Ohio

**2017 Annual Inspection Report**

*Bottom Ash Complex and  
Stingy Run Fly Ash Reservoir  
Gavin Power Plant  
Cheshire, Ohio*

*8 January 2018*

**Environmental Resources Management**

204 Chase Drive  
Hurricane, West Virginia 025526

[www.erm.com](http://www.erm.com)



Gavin Power, LLC

# 2017 Annual Inspection Report

Bottom Ash Complex and Stingy Run Fly Ash Reservoir  
at Gavin Power Plant in Cheshire, Ohio

January 2018

Project No. 0402270



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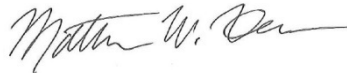
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## 1.0

### *INTRODUCTION*

The Bottom Ash Complex and Stingy Run Fly Ash Reservoir (FAR) at the Gavin Power, LLC (Gavin Power) facility in Cheshire, Ohio are surface impoundments subject to the requirements of the 2015 United States Environmental Protection Agency Rule 40 Code of Federal Regulations (CFR) Part 257, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCRs) from Electric Utilities, also referred to as the CCR Rule. The CCR Rule requires annual inspection and reporting for surface impoundments.

This Annual Inspection Report of these two surface impoundments has been prepared by Environmental Resources Management, Inc. (ERM) to comply with the requirements of the CCR Rule 40 CFR §257.83(b) and to fulfill the requirements of the Ohio Department of Natural Resources (ODNR), Division of Water, Dam Inspection Section. While the Ohio Administrative Code does not explicitly require annual inspections by the owner or a Professional Engineer of a dam or levee, the ODNR has the responsibility to enforce dam safety and conduct its own set of periodic inspections.

## 1.1

### *SUMMARY OF CONDITIONS OF ANNUAL INSPECTION*

The annual inspection was performed by Mr. James Hemme, P.E., and Mr. Matt Hurst, P.E., Ph.D. Mr. Douglas E. Workman, Environmental & Laboratory Supervisor and Mr. Colin McKean, Landfill Process Owner at Gavin Power were the facility contacts and supported the inspection activities. Other members of the Gavin Power team also assisted with logistics and provided data for completion of the inspection and report.

The inspection for the Bottom Ash Complex was performed on October 12 and 13, 2017. The inspection for the FAR was performed on October 13, 2017. Weather on October 12 consisted of partly overcast skies, light wind, and temperatures ranging from 60 degrees Fahrenheit (°F) to 70°F. Weather on October 13 consisted of mostly clear skies, light wind, and temperatures ranging from 65°F to 80°F. In the seven days prior to inspection, no precipitation was recorded.

**REGULATORY CROSS-REFERENCE TABLE**

Under 40 CFR §257.83 “Inspection Requirements for CCR Surface Impoundments,” annual inspections must be completed on CCR units<sup>1</sup> by a qualified Professional Engineer. Table 1, below, is a regulatory cross-reference table which describes the federal regulatory requirement and the location in this document where this requirement is met.

**Table 1** *Federal Regulatory Requirement Cross-Reference Table*

<b>Federal Regulatory Requirement</b>	<b>Location in the Annual Report</b>
<b>§257.83(b) - Annual Inspections by a qualified professional engineer</b>	
A review of available information regarding the status and condition of the CCR unit, including, but not limited to files available in the operating report, previous periodic structural stability assessments, the results of inspections by a qualified person, and results of previous annual inspections (§257.83(b)(1)(i))	Page 17
A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures (§257.83(b)(1)(ii))	Pages 9-13; Appendix A; Appendix B
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 (§257.83(b)(1)(iii))	Pages 9-13; Appendix A; Appendix B
<b>§257.83(b)(2) - Inspection Report</b>	
Any changes in geometry of the impounding structure since the previous annual inspection (§257.83(b)(2)(i))	Pages 4, 6
The location and type of existing instrumentation and the maximum recorded readings of each instrument since previous annual inspection ((§257.83(b)(2)(ii))	Pages 14-16; Appendix D
The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection ((§257.83(b)(2)(iii))	Pages 5, 7
The storage capacity of the impounding structure at time of inspection ((§257.83(b)(2)(iv))	Pages 5, 7
The approximate volume of the impounded water and CCR at time of the inspection ((§257.83(b)(2)(v))	Pages 5, 7

<sup>1</sup> *The Bottom Ash Complex and Stingy Run Fly Ash Reservoir are referred to as CCR units by the CCR Rule.*

<b>Federal Regulatory Requirement</b>	<b>Location in the Annual Report</b>
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 and appurtenant structures ((§257.83(b)(2)(vi))	Pages 9-13; Appendix A; Appendix B
Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection ((§257.83(b)(2)(vii))	Pages 9-13; Appendix A; Appendix B



## **2.0 GAVIN PLANT INFORMATION**

### **2.1 FACILITY OVERVIEW**

The General James M. Gavin Power Plant (Plant) is located in Gallia County, Ohio, just south of Cheshire, Ohio, off of State Route 7 as shown in Figure 1. The Plant is adjacent to the north shoreline of the Ohio River. Nearby towns include Addison, Ohio and Point Pleasant, West Virginia.

### **2.2 BOTTOM ASH COMPLEX**

The Bottom Ash Complex is adjacent to Ohio State Route 7, which is immediately south of the Plant and west of the Ohio River. The Bottom Ash Complex consists of two ponds: a larger Bottom Ash Pond and a smaller Recirculation Pond which abuts and is located to the northwest of the Bottom Ash Pond. The location of the Bottom Ash Pond is shown on Figure 1, and the general layout of the Bottom Ash Complex is shown on Figure 2.

The Bottom Ash Pond and the Reclaim Pond are above-ground reservoirs, which consist of continuous earthen embankments that surround the complex on all four sides. Table 2 provides current operational information and updated geometry of the CCR unit as required by the 40 CFR §257.83(b)(2)(iii), (iv), and (v) for the Bottom Ash Complex. ERM did not observe any significant changes in geometry of the BAC based on ERM's 2017 site visit and review of previous inspection reports.

**Table 2**      **2017 Operational Information for the Bottom Ash Complex**

<b>Parameter</b>	<b>Value</b>
Total Surface Area <sup>2</sup>	84 acres
Height of Dikes	22 to 36 feet
Average Solids Elevation <sup>3</sup>	550 to 562 feet above Mean Sea Level (MSL)
Storage Capacity <sup>4</sup>	2,040 acre-feet
Lowest Crest Elevation	586 feet above MSL
Water Depth and Elevation of Water Bottom Ash Pond	Most recent: 577.0 feet above MSL (21.0 feet deep); Minimum: 577.0 feet above MSL (21.0 feet deep); Maximum: 577.6 feet above MSL (21.6 feet deep)
Water Depth and Elevation of Water Reclaim Pond <sup>5</sup>	Most recent: 575.0 feet above MSL (25.0 feet deep); Minimum: 574.8 feet above MSL (24.8 feet deep); Maximum: 575.4 feet above MSL (25.4 feet deep)
Approximate Volume of Impounded Water <sup>6</sup>	810 acre-ft

Bottom ash slurry is pumped into the Bottom Ash Pond. The water from Bottom Ash Pond is decanted through a reinforced concrete drop inlet structure into the Reclaim Pond. Within the Reclaim Pond, stored water is

- 
- 2      *As reported in Geosyntec’s 2016 Groundwater Monitoring Network Evaluation – Bottom Ash Complex Report, Geosyntec provides a surface area of 84 acres, of which 78 acres are the Bottom Ash Pond, and 6 acres are the Reclaim Pond. This surface area is the entire complex including outer banks.*
  - 3      *The value reported above is provided in Geosyntec’s 2016 Groundwater Monitoring Network Evaluation – Bottom Ash Complex Report, Geosyntec. For the purposes of these calculations, a solids elevation of 556 feet was assumed.*
  - 4      *The total storage capacity was estimated based on a maximum storage elevation of 586 feet and available surface area of about 51 acres in the Bottom Ash Pond and 4 acres in the Reclaim Pond.*
  - 5      *The estimated solids elevation in the Reclaim Pond was assumed to be 550 feet.*
  - 6      *The approximate volume of impounded water for the Bottom Ash Pond was estimated based on the depth of water at time of inspection of 575.8 feet, and an estimated surface area.*

pumped to the Plant for reuse or discharged to the Ohio River via an overflow structure, in conformance with the facility's National Pollutant Discharge Elimination System permit.

## 2.3 *STINGY RUN FLY ASH RESERVOIR (FAR)*

The FAR is located about 2.5 miles northwest of the Plant. The location of the FAR is indicated on Figure 1. The outfall from the FAR drains to Stingy Run, which is a tributary to Kyger Creek. Kyger Creek flows into the Ohio River approximately 3 miles downstream and south of the Plant. The layout of the FAR is shown on Figure 3.

### 2.3.1 *Stingy Run Fly Ash Dam*

The Stingy Run Fly Ash Dam was constructed to retain settled fly ash at the Stingy Fly Ash Pond. In previous reports this facility was also referred to as the Main Dam. The dam is an earthen embankment which was previously about 145 feet high. At the south end of the dam, a section of the crest has been recently lowered approximately 4 feet to elevation 731 feet for landfill construction reasons, with approval of the ODNR Division of Water Resources Dam Safety Program. The elevations of the north and south groins have not changed and remain at 735 feet. The crest has been leveled and widened to accommodate construction traffic.

On the downstream (east facing) slope below the crest there are additional benches near the middle and at the toe of the slope to allow access. An access road from the toe follows the northern groin of the embankment and a construction haul road follows the southern groin providing access for routine operations and construction traffic respectively (Figure 3). As pond closure construction progresses, the plan is to lower the crest of the dam to a level that is slightly below the elevation of the middle bench.

Reservoir levels were previously regulated by the 100 foot high concrete intake tower within the principal spillway. Currently reservoir levels are maintained in a minimized state and are regulated by an adjacent siphon pump which maintains the pool level at a constant elevation. During the inspection, the surface water elevation in the Fly Ash Pond was 665.0 feet. In the event of a large storm, sufficient pool capacity is present to store the precipitation event and the existing concrete intake tower is still operable.

Specific geometric information regarding the Fly Ash Pond is shown on Table 3 in accordance with 40 CFR §257.83(b)(2)(iii), (iv), and (v). ERM did

not observe any significant changes in geometry of the FAR based on ERM’s 2017 site visit and review of previous inspection reports.

**Table 3** *2017 Operational Information for the Stingy Run Fly Ash Reservoir*

Parameter	Value
Approximate Surface Area at Pool Level	200 acres
Minimum Embankment Crest Elevation	731 feet above MSL
Ash thickness on bottom of Pool	5 to 60 feet thickness
Storage Capacity <sup>7</sup>	13,800 acre-feet
Water Depth and Elevation	Most recent: 665.0 feet above MSL (2.8 feet deep); Minimum: 663.5 feet above MSL (1.3 feet deep); Maximum: 665.6 feet above MSL (3.4 feet deep)
Approximate Volume of Impounded Water at time of inspection <sup>8</sup>	20 acre-feet

### 2.3.2 *Stingy Run Fly Ash Pond*

The Stingy Run Fly Ash Pond was originally constructed for settling fly ash. In 1994, the Plant ceased fly ash slurry discharges into the reservoir and since that time, only direct precipitation and storm water from upstream areas enter the pond. A Closure Plan for the Stingy Run Fly Ash Pond was approved by Ohio Environmental Protection Agency in 2016.

Closure of the Stingy Run Fly Ash Pond started in 2015, is currently in progress, and is anticipated to be completed by 2020. Fly ash located in a southern finger of the pond near the dam was covered with an engineered fill for expansion of an existing on-site landfill. The remaining fly ash is being capped incrementally as fly ash is dewatered and stabilized

<sup>7</sup> *The storage capacity for the top of dam was based on a total area of 497 acres and a top of dam elevation of 731 feet. In the future, the dam may be lowered. If the elevation at the principal spillway is used (698 feet) then the storage capacity would decrease to approximately 7,000 acre-feet.*

<sup>8</sup> *The approximate volume of impounded water was estimated based on the elevation of water at time of the annual inspection, which was 665 feet, and the approximate surface area of the pond covered by water, at time of the annual inspection.*

upstream of the dam. The general progression of the capping process will be from west (upstream) to east (downstream). A series of engineered channels will be installed across the capped fly ash areas for management of stormwater. The channels will tie into Stingy Run on the downstream end. The Closure Plan is available on the Gavin Power CCR website (<http://gavinpowerccr.com>).

### 3.0

## ***BOTTOM ASH COMPLEX INSPECTION***

This annual inspection was also conducted for the Bottom Ash Complex in accordance with 40 CFR §257.83(b). A more detailed narrative of this inspection is included in Appendix A. Photographs cross-referenced in Appendix A are located in Appendix B. The approximate locations where the photographs were taken are shown on Figure 4. Qualitative terms used herein to describe the inspection are summarized in Appendix C. The annual inspection report discusses each embankment section of the Bottom Ash Complex (i.e. west, south, east, and north embankments and Reclaim Pond) separately.

### 3.1

## ***WESTERN EMBANKMENT SECTION***

The western embankment section (including crest, slope and toe) appeared to be in satisfactory condition (i.e., appeared to be vegetated and in stable condition). There was no visible settlement, rutting, or misalignment noted. The following is a summary of the inspection:

1. The interior slope had no visual indication of settlement, rutting, or misalignment. The recently placed riprap along the toe of the interior embankment appeared to be in satisfactory condition.
2. The drainage ditch along the exterior toe of the western embankment had positive drainage and was clear of vegetation. The pipe culvert at the end of the ditch to the south also had some vegetation present, but no significant obstructions were noted and the culvert had positive drainage.
3. The exterior slope had no visual indication of settlement, rutting, or misalignment noted except for an earthen bulge noted halfway down the slope where Photograph 4 was taken and a vegetated erosion gully shown where Photograph 5 was taken (Figure 4). The earthen bulge and vegetated erosion gully do not appear to be active or expanding. The earthen bulge was previously noted in the 2016 Annual Inspection Report, and this bulge also did not appear to be active during the 2016 inspection. The bulge in this area has reportedly been like this since original construction.

### 3.2

## ***SOUTHERN EMBANKMENT SECTION***

The southern embankment section was generally in satisfactory condition (i.e., appeared to be mostly vegetated and in stable condition). The following is a summary of this visual inspection:

1. The interior and exterior slope had no visual indications of misalignment or settlement. Two vegetated gullies were noted along the exterior slope. Neither gully had an indication of recent erosion or widening.
2. To the east along the interior slope, sparser vegetation was noted, which may have resulted from recent placement of bottom ash at the surface. The inert nature of bottom ash and the associated lack of nutrients were likely the causes of sparse vegetation in that area. A few isolated areas to the west with sparser vegetation were also noted.
3. A vegetated swale adjacent to the toe of the exterior slope had positive drainage and was vegetated. While there was limited shallow (+/- 1 inch) standing water in a section of the swale, there appeared to be no sign of seepage from the embankment. A pipe culvert located near the center of the embankment draining to the south appeared to be functioning adequately and draining standing water from the swale.

### 3.3

#### *EASTERN EMBANKMENT SECTION*

The eastern embankment section was in satisfactory condition (i.e., appeared to be in stable condition) with some spots of sparse vegetation and minor rills/gullies. No visible indications of rutting, misalignment, or recent settlement were noted. The following is a summary of this visual inspection:

1. The interior slope appears to be stable and portions of the interior slope were buttressed by stockpiles of bottom ash. The stockpiles of bottom ash also appeared to be stable.
2. The pipe and support structures for the two slurry lines entering the pond appeared to be aged but structurally sound and in satisfactory condition. These slurry lines have been recently improved.
3. The exterior slope appeared to be stable and the majority of the slope has established vegetative growth. Along the exterior crest, spotty, sparse, and localized bare spots in the vegetation were noted from the crest and approximately 5 feet vertically down the slope. Along these localized bare spots, a few isolated rills and gullies were noted. There was also some evidence of past sloughing along the exterior slope, however, these areas were vegetated and appeared stable with no recent signs of movement.

### 3.4

#### *NORTHERN EMBANKMENT SECTION*

The northern embankment section was in satisfactory condition (i.e., appeared to be in stable condition) with some spots of sparse vegetation and minor rills/gullies. No visible indications of rutting or settling were noted. The terrain appeared hummocky along the exterior crest with some bare spots. The following is a summary of the visual inspection:

1. The conveyor system running along the crest appeared to be functional and in satisfactory operating condition.
2. The interior crest, slope, and toe appeared to be vegetated or riprapped and stable. No settling, rutting, or misalignment of terrain was noted.
3. Along the exterior crest and top of the slope, localized bare spots were noted. Along the exterior slope, rills and minor gullies had formed in localized spots along the slope and crest. These minor gullies and rills appear to have been the result of recent erosion caused by runoff from the roof of the conveyor. A bare spot was noted at the toe of the slope in the general vicinity of these rills and gullies.
4. A drainage ditch and grass swale adjacent to the toe of the exterior slope both appeared to have positive slope and to be effectively draining water into downstream inlet structures.

### 3.5

#### *RECLAIM POND*

The Reclaim Pond embankment was generally in satisfactory condition. No visible indications of settlement or rutting were apparent along the embankment. In addition, the overflow structure, mixing points, and other flow structures appeared to be functional. The following is a summary of this visual inspection:

1. No leakage or settlement around support structures was noticed, and the support structure and associated features appeared to be in satisfactory condition. Inlet and outlet pipes were protected and functioning.
2. The crest, slope, and toe along the interior were mostly vegetated or riprapped.
3. A limited area of shallow sloughing was noted along the interior slope in the northwest corner of the reclaim pond embankment. This area was vegetated and no tension cracks or other signs of recent soil movement were noted.



This annual inspection was conducted for the FAR consisting of the Stingy Run Fly Ash Dam and the surrounding embankment sections on the Stingy Run Fly Ash Pond in accordance with 40 CFR §257.83(b). Observations from the visual inspection are summarized below. A more detailed narrative of this inspection is included in Appendix A. Photographs cross-referenced in this section are located in Appendix B. The approximate locations where the photographs were taken are shown on Figure 5. Qualitative terms used herein to describe the inspection are summarized in Appendix C.

## 4.1

*TOE OF DAM*

The toe of the Stingy Run Fly Ash Dam was in satisfactory condition. The drainage features along the toe into Stingy Creek also were functional and appeared to be in working order. Cattail vegetation appears to be encroaching upon the measurement weirs within the toe drainage channel. No visual indication of settlement, misalignment, or rutting was apparent along the embankment from the toe up to the intermediate bench. The following is a summary of this visual inspection:

1. The toe ditch had a positive drainage to Stingy Creek. The ditch and three V-notched weirs (VW-1, VW-2, and VW-3) located in the ditch were functioning. The overflow weir and mixing point had an unobstructed flow condition and the supporting structure appeared to be in satisfactory condition.
2. Between the weirs, there has been prolific cattail growth that may begin to interfere with accurate flow measurement.
3. The slope from the toe up to the intermediate bench appeared to be in satisfactory condition. The toe and bottom portion of the slope is buttressed with riprap nearly halfway up to the intermediate bench. The rest of the slope, excluding the riprap, was well vegetated and appeared to be stable.

## 4.2

*INTERMEDIATE BENCH OF DAM*

The intermediate bench and upslope of the bench was in satisfactory condition (i.e., well vegetated) with no visible indication of rutting, settlement or misalignment noted along the slope. There was no excess sediment noted along access roads, which had positive drainage away from the road centerline.

### 4.3

#### *CREST OF DAM*

The crest and the land immediately downslope to the east (downstream) were in satisfactory condition. No visible indication of rutting, settling, or misalignment was noted along the crest or immediately downslope of the crest.

To the inside of the dam crest (upstream) there were several indications of erosion and gullies. There was also indication of previous soil movement at multiple locations along the embankment. These areas of erosion and movement are known to the Ohio Department of Natural Resources (ODNR) as documented in their May 2017 inspection. The approved Closure Plan for the Fly Ash Pond referenced in Section 2.3.2 of this report indicates that this soil will be removed prior to final closure in 2020. Given the pond elevation is maintained approximately 60 vertical feet below the crest, the significant volume of storage available, the inspection by ODNR and the temporary status of the embankment, no action is deemed necessary for the noted areas. There was no excess sediment noted along access roads and disturbed areas associated with the recent lowering of the embankment crest.

### 4.4

#### *FLY ASH POND*

The west slope towards the pond was either vegetated or consisted of riprap that had been placed for the majority of its length. The water level in the Fly Ash Pond is no longer controlled by the spillway discharge structure and is now maintained and controlled to a limited depth and footprint by a float controlled dewatering pump, with siphons used as needed. The following is a summary of this visual inspection:

1. The slope towards the shoreline appeared to be stable and in satisfactory condition. Riprap was visible along the surface of the slope. Areas without riprap had established vegetation along the slope. There were isolated areas where there was uneven terrain, but overall there was no evidence of continued instability, settling or rutting. Slumping and soil settlement was noted along the slope in localized areas, but there did not appear to be active settlement.
2. Vegetation was increasingly sparse heading west toward the shoreline. The bench and shoreline area towards the pond also appeared to be stable and in a satisfactory condition.
3. There was no excess sediment or standing water noted along access roads, and the access roads had positive drainage toward the remaining impounded water for purposes of sedimentation.

## 5.0 ASSESSMENT OF RECENT INSTRUMENTATION DATA

### 5.1 BOTTOM ASH COMPLEX

Two piezometers, labeled BAP-1, and BAP-2 are located at the Bottom Ash Complex as shown on Figure 2. Water level readings were obtained from piezometers BAP-1 and BAP-2 and the Bottom Ash Pond and Reclaim Pond. Piezometer BAP-1 is located near the drainage ditch along the western dike and Piezometer BAP-2 is located near the toe of the exterior slope of the southern dike. A plot of the maximum recorded readings from these piezometers and pond surfaces is shown in Appendix D in accordance with 40 CFR §257.83(b)(2)(ii). Throughout 2017, water levels in BAP-1 and BAP-2 have average elevations of 540.5 above mean sea level (MSL), with standard deviations of 0.6 and 0.5 feet, respectively.

The water levels in the Bottom Ash Pond and Reclaim Pond have average elevations of 577.4 and 575.3 feet above MSL, with standard deviations of 0.3 feet each. These results indicate that recorded water levels in the ponds and piezometers have been relatively constant throughout the year. This year's results are consistent with last year's average elevations of 577.1 and 575.6 feet above MSL for the Bottom Ash Pond and Reclaim Pond, respectively.

### 5.2 STINGY RUN FLY ASH RESERVOIR

The current monitoring plan of Stingy Run Fly Reservoir includes four monitoring wells, three seepage weirs, fifteen deformation monuments, and two slope inclinometers as shown on Figure 6.

#### 5.2.1 Observation Wells and Pond Surface

The present monitoring program includes four observation wells (OB-24, OB-28, OB-29, and OB-31), whose locations are shown in Figure 6. While observation well OB-24 is continuing to be monitored, data collected this year and a review of historical data indicates that the well has been dry since May, 2012. Data for these observation wells collected in 2017 are plotted in Appendix D.

The average pond water level for this year is 664.1 feet above MSL with a standard deviation of 0.7 feet. In 2014, the water elevation in the pond began slowly (approximately 1 year) being lowered to approximately 664 feet ( $\pm 1$  foot). In 2017, an operational change was made such that the pond

water level is no longer maintained by the spillway discharge structure, and is now maintained by a float controlled dewatering pump located on the north side of the pond shoreline with siphons as backup.

Observation Well OB-28 located on the north end of the dam near the crest maintained relatively constant groundwater elevations between 663 and 666 feet through September, 2017. Observation well OB-29 located near the crest on the south end of the dam maintained a relatively constant elevation around 627 feet. Observation Well OB-31 located on the north end of the dam near the crest recorded water elevations at about 652 feet until August 2017, and then declined to approximately 640 feet in September, 2017. This decline in groundwater elevation is likely related to the FAR dewatering efforts.

### 5.2.2 *Seepage Measurement Weirs*

Three V-notched weirs, labeled VW-1, VW-2, and VW-3, measure seepage flow from the dam and are located in a 10-foot wide channel located at the toe of the dam as shown on Figure 6. The purpose of these weirs is to assess in-situ dam stability. Weir VW-3 is intended to measure seepage flow from the groin drain of the southern abutment. Weir VW-2 is intended to measure seepage flow from the clay core drain and upstream flow from VW-3. Weir VW-1 is located downstream of VW-2 and VW-3 and is intended to measure flow from the northern groin drain and upstream flow from VW-2.

The average flow rate and estimated flow rate by each contributing section to the weir for 2017 data is presented below in Table 4. Standard deviation is also presented in this table to quantify the variance in the data. The estimated flow rate at each weir is on average less than 1.5 gallons per minute (gpm). As indicated by the standard deviation in measured flow rate, base flow and precipitation events contribute to variations in the measured flow.

**Table 4**      *2017 Flow measurement data from V-notch Weirs*

Weir	Average Flow Rate Measured from Weir (gpm)	Standard Deviation	Estimated Flow Rate from Contributing Area to Weir (gpm)
VW-3	0.59	0.72	0.59
VW-2	1.44	1.97	0.85
VW-1	2.70	2.78	1.26

### 5.2.3 *Slope Inclinator and Deformation Monuments*

Fifteen deformation monuments, labeled SM-6 through SM-20 are installed at the crest, face, middle bench, and toe of the dam. Locations of these monuments are shown on Figure 6. A review of available data from 2017 indicates that horizontal deformation in the dam is generally in the east and north direction and has been less than 0.15 inch/year with the majority of readings less than 0.10 inch/year. Available historical data indicates that horizontal deformation ranges between 0.01 to 0.26 inch/year, so this indicates that horizontal deformation data collected this year is within historical norms for this dam. Average vertical deformation at each monument for 2017 was less than 0.25 inch/year, which falls below historical vertical deformation data.

Slope inclinometers SI-1 and SI-2 are located at the lower bench at about elevation 660 feet. Slope inclinometer data measured at SI-1 for this year indicated very little profile change over depth. Slope inclinometer data at SI-2 also indicated very little profile change over depth. A maximum change of about 0.5 inches at profile depths of 5 feet or shallower this year was recorded, otherwise, very little change was noted. Compared with historical data, this is within the expected magnitude.

**REVIEW OF CCR OPERATING RECORD DOCUMENTS AND 2016 INSPECTION ITEMS**

As required by CRF 257.83(b)(1)(i), a review of operating record regarding the status and condition of the CCR unit includes previous periodic structural stability assessments, the results of inspections by a qualified person, and results of previous annual inspections. For this inspection report, the following documents were reviewed as part of the CCR operating record:

- 7-day inspection reports for the FAR and Bottom Ash Complex for 2017;
- Monthly inspection reports for the FAR and Bottom Ash Complex, which also include records of recent instrumentation data for 2017;
- The ODNR Dam Safety Inspection Report for Bottom Ash Reservoir, dated May 18, 2017;
- The ODNR FAR Inspection letter, dated September 25, 2017;
- The 2016 Annual Inspection Report for Bottom Ash Complex and FAR, dated January 10, 2017; and
- Other documents related to the operation and condition of the CCR unit including the Closure Plans, previous instrument data before 2017, and the 2015 Annual Inspection Report.

Based on the review of the available data, there were no past indications of potential structural weakness, slope instability, drainage or seepage issues, or other adverse conditions that would impact the stability and operation of these CCR units.

## 7.0 *CONCLUSIONS AND RECOMMENDATIONS*

### 7.1 *ADDRESSING 2016 INSPECTION ITEMS*

A review of photographs and inspection items from 2016 included the following for the Bottom Ash Complex: clearing areas from pipe culverts to be free from excessive vegetation, backfilling and compacting erosion gullies along the interior slope of the north dike, and backfilling the area around the decant structure at the interior slope of the north dike. For the FAR, the 2016 annual inspection report included the following: maintaining erosion gullies formed at the crest on a regular basis and keeping channels, toe ditch and pipe culverts downstream of the dam clear of debris and vegetation.

Based on the 2017 annual inspection and a review of weekly and monthly inspection reports, these above-mentioned repair items from the 2016 annual inspection were completed. The Plant appears to consistently and promptly address areas that require attention as noted in the weekly and monthly inspection reports.

### 7.2 *RECOMMENDATIONS FOR 2017*

#### 7.2.1 *Bottom Ash Complex*

ERM provides the following recommendations for the Bottom Ash Complex based on the 2017 inspection:

1. The weekly and monthly inspections continue to point out any areas that require attention, which in turn have been documented and addressed in a timely fashion. It is recommended that the Plant continue this good management practice.
2. Re-seed localized bare spots along slope to re-establish vegetation. Revegetation and potential application of nutrients or pH adjustment could be used to aid in revegetating localized areas where bottom ash has been placed.
3. Repair erosion rills promptly and continue to monitor areas where rills or gullies have formed.
4. Continue to monitor for locations along the slope where subsidence or sloughing might occur. Particular attention should be given to areas identified in this report that appear to have had some movement in the historical past but have since stabilized and show no sign of continued movement.

5. Repair the isolated area of apparent shallow soil sloughing in the northwest corner of the Reclaim Pond. The area is estimated to be approximately 40 feet wide by 10 vertical feet tall. Remove the affected soil and replace with a geotextile cover and riprap, or a similar approach approved by an engineer.

### 7.2.2 *Stingy Run Fly Ash Reservoir*

The following recommendations listed below are associated with the Fly Ash Reservoir:

1. The weekly and monthly inspections continue to point out any deficiencies and these deficiencies are documented and addressed in a timely fashion. It is recommended that the Plant continue this good management practice.
2. Re-seed any localized bare spots along slope to help re-establish vegetation.
3. Monitor locations where riprap was recently placed for any signs of activating slips or settlement.
4. Removal of prolific cattail growth from the channel connecting the underdrain monitoring weirs at the downstream toe of the embankment.

## 7.3 **CONCLUSIONS**

There were some minor recommendations regarding repair and maintenance at these CCR units listed above. The weekly and monthly inspections have been effective at identifying and documenting areas requiring attention, and the Plant should continue the practice of promptly implementing the required maintenance. Overall, the annual visual inspection revealed that the CCR units Bottom Ash Complex and FAR were in satisfactory operating condition and stable. The engineering certification for this report is found in Appendix E.



## *Figures*



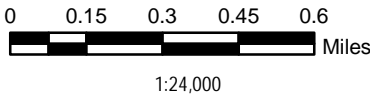
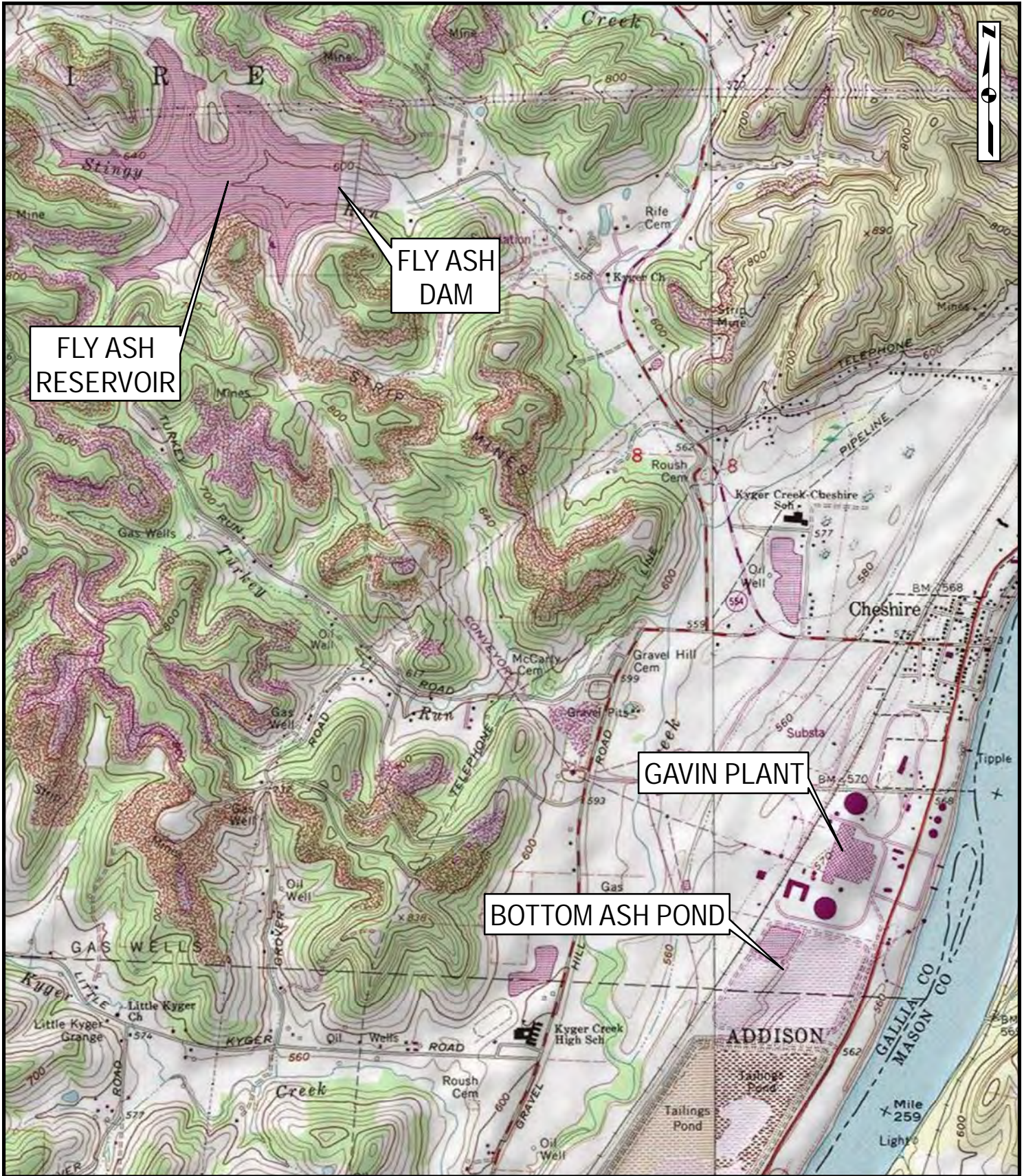
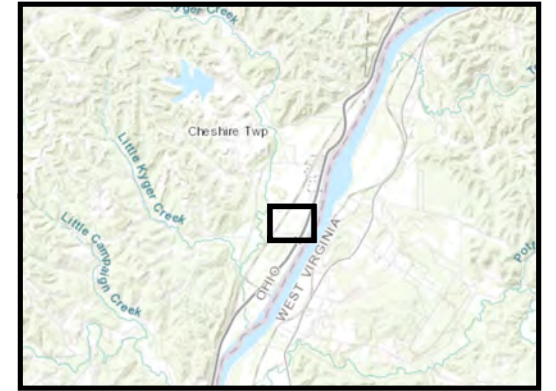


Figure 1: Site Location Map  
 Gavin Power LLC  
 Cheshire, Ohio

SOURCE  
 USGS scanned topographic quad maps provided  
 by National Geographic Society (© 2017).





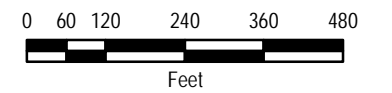


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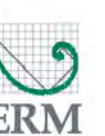
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**NOTES:**

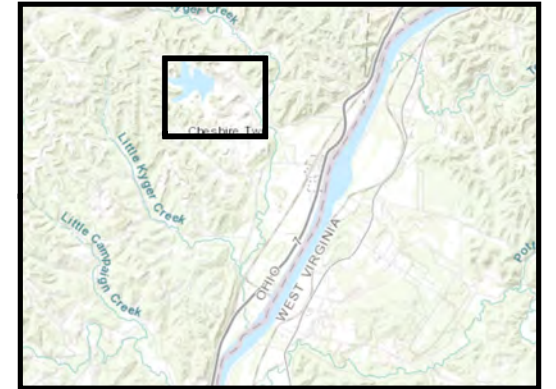
1. Locations are approximate
2. Aerial Imagery: ESRI World Imagery  
Reproduced under license in ArcGIS 10.4



**Figure 2: Bottom Ash Complex  
Site Layout**  
Gavin Power LLC  
Cheshire, Ohio







- NOTES:
1. Locations are approximate
  2. Aerial Imagery: ESRI World Imagery  
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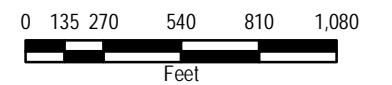
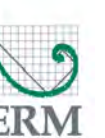
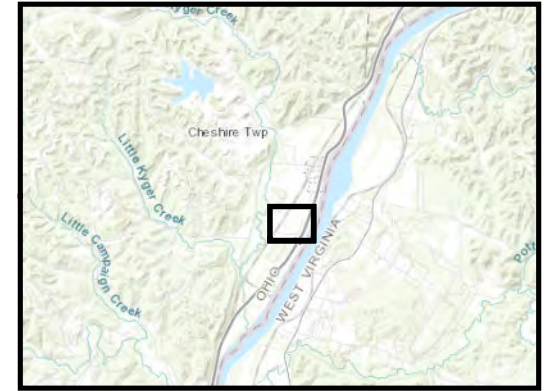


Figure 3: Stingy Run Fly Ash Reservoir Site Layout  
Gavin Power LLC  
Cheshire, Ohio







Legend

# Photograph Location

NOTES:

- 1. Locations are approximate
- 2. Aerial Imagery: ESRI World Imagery  
Reproduced under license in ArcGIS 10.4

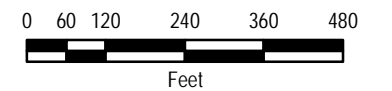
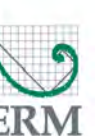
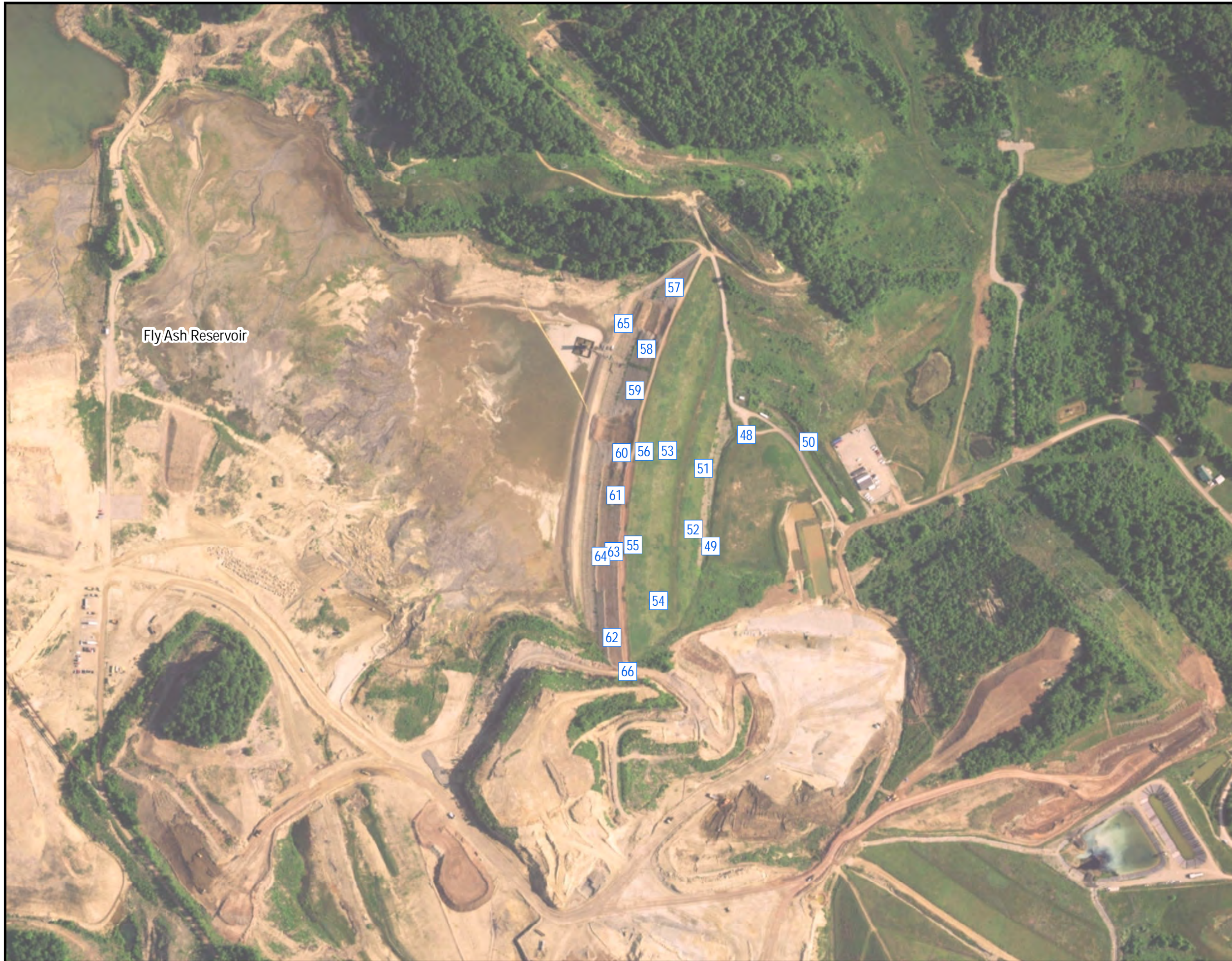


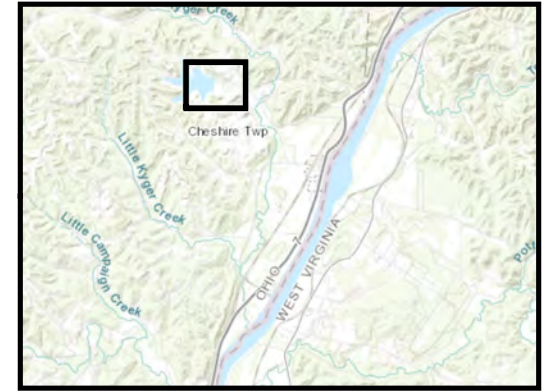
Figure 4: Visual Inspection Map  
Bottom Ash Complex  
Gavin Power LLC  
Cheshire, Ohio







Fly Ash Reservoir



Legend

# Photograph Location

NOTES:

1. Locations are approximate
2. Aerial Imagery: ESRI World Imagery  
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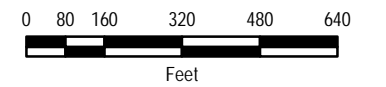
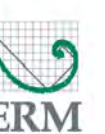
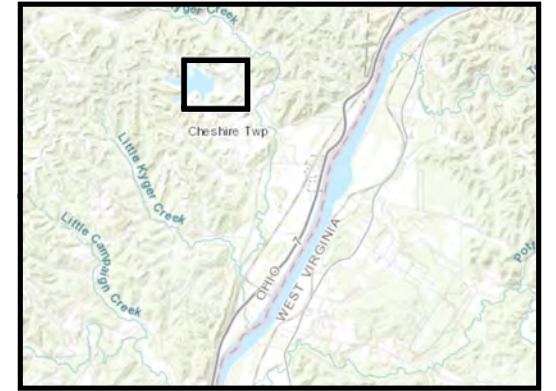


Figure 5: Visual Inspection Map  
Stingy Run Fly Ash Reservoir  
Gavin Power LLC  
Cheshire, Ohio





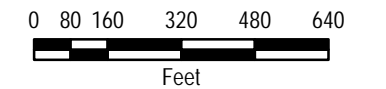


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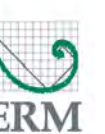
- Observation Well
- ✕ Settlement Monument
- ▲ Slope Inclinerometer
- V-notched Weir

**NOTES:**

1. Locations are approximate
2. Aerial Imagery: ESRI World Imagery  
Reproduced under license in ArcGIS 10.4



**Figure 6: Monitoring Instrument Map**  
 Stingy Run Fly Ash Reservoir  
 Gavin Power LLC  
 Cheshire, Ohio





*Appendix A*  
*Detailed Annual Inspection*  
*Narrative*



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## 1.0

### *BOTTOM ASH COMPLEX INSPECTION*

This annual inspection was conducted for the Bottom Ash Complex consisting of the Reclaim Pond and the embankment sections surrounding the Bottom Ash Pond. Observations from the visual inspection are summarized below.

## 1.1

### *WESTERN EMBANKMENT SECTION*

Based on visual inspection, the embankment of this dike section (including crest, slope and toe) appeared to be in satisfactory condition (i.e., appeared to be vegetated and in stable condition). There was no settlement, rutting, or misalignment noted. The following is a summary of this visual inspection:

1. Recently (as of 2016), the bottom section of the interior embankment had been repaired with riprap as shown in Photograph 1. The riprap appeared to be in satisfactory condition.
2. Photograph 2 illustrates a bottom ash temporary storage and management area with a typical view of residual ash piles. The piles appear to be in stable condition and buttress portions of the interior slope. The adjacent embankment slope appears to be stable.
3. The drainage ditch along the western toe of the exterior embankment appeared to be in satisfactory condition, with positive drainage and was clear of weeds and brush (Photographs 3 and 4). The pipe culvert located at the end of the ditch to the south had some wet soil, but there were no obstructions in the culvert, and the grade was sloped to have positive drainage. The inlet and outlet of the pipe had vegetation in the path of flow.
4. The exterior slope was generally in satisfactory condition. An inactive earthen bulge shown in Photograph 4 was noted about halfway down the slope. Gavin staff will continue to visually monitor this feature to look for signs of activity. An erosion gully was also noted running east-west along the exterior slope (Photograph 5). The erosion gully was vegetated and did not appear to be expanding.
5. The casing at Piezometer BAP-1 appeared to have been damaged and there was no lock on the casing (Photograph 6). The piezometer itself still appeared to be in satisfactory working condition. This is one of two piezometers used to measure daily water levels near to the toe of the embankment.

*SOUTHERN EMBANKMENT SECTION*

This embankment section was generally in satisfactory condition (i.e., appeared to be mostly vegetated and in stable condition). There was no settlement, rutting, or misalignment noted. The following is a summary of this visual inspection:

1. Photograph 7 shows the condition of the access road and crest of the south dike section. Vegetated gullies were noted running along the interior slope as shown in Photograph 8 and the exterior slope as shown in Photograph 9. The gully in Photograph 8 was about 3 feet wide and 9 inches deep. Neither gully showed evidence of additional erosion.
2. To the east, sparser vegetation along the interior crest slope and toe was noted (Photograph 10). Where bottom ash had been recently placed, there was a lack of vegetation noted at the crest and along the interior slope (Photograph 11). A rill began to form where coal ash had been recently placed as noted in Photograph 12. There were some bare areas along the crest of the exterior portion of the embankment on the western side also noted during the inspection (Photograph 13). A sparsely vegetated low area was also noted at the toe of the exterior slope on western side (Photograph 14).
3. The pipe culvert located at the toe of the exterior slope did not appear to have any obstructions and was sloped to have positive drainage (Photograph 15). The inlet and outlet of the pipe had vegetation. Water was actively draining from the adjacent ditch through the culvert. The ditch draining to the culvert was vegetated and had standing water about 1 to 2 inches deep. While there was standing water in the swale, there appeared to be no sign of seepage from the embankment. Ruts appear to be holding a limited amount of water in shallow (< 1") longitudinal puddles. A pipe culvert located near the center of the embankment draining to the south appeared to be functioning adequately and draining standing water from the swale.
4. There appeared to be no sign of seepage from the embankment.
5. The surface pad at Piezometer BAP-2 appeared to have been cracked and damaged. The casing was intact and was secure (i.e. had a lock) (Photograph 16). The piezometer itself still appeared to be in satisfactory working condition. This is one of two piezometers used to measure daily water levels near to the toe of the embankment.

The eastern embankment section was in satisfactory condition (i.e., appeared to be in stable condition) with some spots of sparse vegetation and minor rills/gullies. No rutting or misalignment was noted. Minor soil subsidence was observed in a localized section of exterior slope as noted below, but appeared to be stable. A predominant area of the embankment was part of the bottom ash management area (used for hauling and excavating operations), and the extent of the embankment was not easily delineated. Nonetheless, the interior slope in the bottom ash management area also appeared to be stable. The following is a summary of this visual inspection:

1. Photographs 17 through 19 shows conditions of the bottom ash management area as well as the condition of the sets of ash pipes and support structures. The interior slope appears to be stable and large portions of the interior slope are buttressed by stockpiles of the bottom ash. The pipe and support structures appear to be in satisfactory condition.
2. Photographs 20 through 22 show the condition of exterior slope, toe and crest near the northern edge of this embankment section. Generally, the slope appears to be stable with vegetative growth. Along the crest as detailed in Photograph 22, there are some sparsely vegetated, patchy spots.
3. Along the exterior crest spotty, sparsely vegetated and localized bare spots were noted as shown in Photographs 22 and 23.
4. A localized gully located on a predominately bare spot of the slope is shown on Photograph 24. The gully was not vegetated and appeared that it may have undergone erosion recently. Repair, revegetation and/or potential use of soil amendments are recommended. Further to the south on this section, a vegetated gully was noted along the exterior slope as illustrated in Photograph 25. There were no signs of recent disturbance or that this gully was further eroding.
5. Generally, the toe was well vegetated as shown in Photograph 26. There were a few isolated spots where bare soil was noted as shown in Photograph 27. Along the toe there were localized sections of wet to saturated soil, soft soil (Photograph 28) but there was no evidence of ruts or settlement and the toe had a positively draining slope.
6. Evidence of past soil settlement is shown in Photographs 29 and 30. The location where the past settlement was noted is vegetated. No tension cracks or other signs of recent soil movement were noted. It

does not appear that the slope was actively moving or settling at the time of this inspection.

#### 1.4 *NORTHERN EMBANKMENT SECTION*

This embankment section was in satisfactory condition (i.e., appeared to be in stable condition) with some spots of sparse vegetation and minor rills/gullies. No rutting or settling was noted. The terrain appeared hummocky along the exterior crest with some bare spots. The following is a summary of this visual inspection:

1. Photograph 31 is a view of discharge pipes and support structure. The pipes and support structures observed appeared to be functional and in satisfactory operating condition. Photograph 32 is a view of the embankment near monitoring well BAC-02.
2. The crest, slope, and toe along the interior as evidenced in Photograph 33 appeared to be vegetated and stable. No subsidence, rutting, or misalignment of terrain was noted.
3. Along the slope, rills and minor gullies had formed in localized spots along the slope and crest as shown in Photograph 34. It appeared that excess moisture/leakage from the conveyor belt system located at the crest of the slope may be causing some of the erosion rills and gullies that are forming. These gullies and rills are bare and thus, appear to have been the result of recent slope erosion. A bare spot was noted at the toe of the slope in the general vicinity of these rills and gullies as shown in Photographs 35 and 36. Although the drainage slopes were positive, the soil at this bare spot was soft and wet/saturated.
4. A general view of the toe, slope and crest of the exterior embankment on the eastern side is shown on Photograph 37. In this section, the embankment appeared to be vegetated and stable.
5. A drainage ditch to the north of the toe as shown in Photographs 38 and 39 was vegetated and had standing water. The ditch had a positive draining slope and appeared to be effectively draining water into a downstream inlet structure.
6. Along the crest and top of the slope localized bare spots were noted (Photograph 40). There were also areas near the top of the slope where the terrain appeared to be slightly misaligned, uneven, and/or wavy. Photograph 41 shows the top of the embankment looking west. Apart from the rills and minor gullies shown in Photograph 34, there were a few other locations where rills or gullies were noted. An example of

this is a vegetated gully shown in Photograph 42. This vegetated gully did not appear to have been formed from recent erosion.

## 1.5

### *RECLAIM POND*

The Reclaim Pond embankment was in satisfactory condition. No settlement or rutting was apparent along the embankment. The slope was hummocky in spots with minor soil subsidence as noted below. In addition, the overflow structure, mixing points, and other flow structures appeared to be functional and satisfactorily operating. The following is a summary of this visual inspection:

1. Photographs 43 through 45 show conditions of hydraulic structures such as discharge pipe (Photograph 43), mixing station (Photograph 44), and overflow structure (Photograph 45). These flow structures appeared to be functional and in satisfactory condition. No leaks or settlement around these structures were noticed. Inlet and outlet pipes were protected. The features associated with the support structure, including the steps, railing, deck platform, and visible concrete, also appeared to be in satisfactory condition.
2. The crest, slope, and toe along the interior as evidenced in Photograph 46 was mostly vegetated and stable. An area of subsidence along the interior slope noted is shown in Photograph 46. The location where the potential subsidence was noted is vegetated. No tension cracks or other signs of recent soil movement were noted. It does not appear that the slope was actively moving or settling at the time of this inspection.
3. The 2016 Annual Inspection Report noted that some areas along the slope and near to the decant structure had eroded near the toe. The areas were repaired with backfilling and compacting the eroded area with riprap. At time of this inspection, the areas where riprap had been placed appeared to have been stabilized with no further erosion seen.

## 2.0 *STINGY RUN FLY ASH RESERVOIR INSPECTION*

This annual inspection was conducted for the Stingy Run Fly Ash Reservoir. Observations from the visual inspection are summarized below.

### 2.1 *TOE OF DAM*

The toe of the Stingy Run Fly Ash Dam was in satisfactory condition. The drainage features along the toe into Stingy Creek were functional and in satisfactory condition with no significant obstructions noted. No settlement, misalignment or rutting was apparent along the embankment from the toe up to the intermediate bench. The following is a summary of this visual inspection:

1. The toe ditch has positive drainage to Stingy Creek. The ditch and its features located within the ditch are functioning well. Features include three V-notched weirs (VW-1, VW-2, and VW-3), two culvert pipes located at Outfall #001 and the overflow weir and mixing point connected downstream to the outfall of Stingy Creek. As shown in photographs 48 and 49, the V-notched weirs generally had an unobstructed flow condition, although vegetative growth next to the weirs could be having a slight impact on flow measurements. The overflow weir and mixing point had an unobstructed flow condition and the supporting structure appeared to be in satisfactory condition (Photograph 50).
2. The slope from the toe up to the intermediate bench appears to be in satisfactory condition as shown in Photographs 51 and 52. The toe and bottom portion of the slope is buttressed with riprap nearly halfway up to the intermediate bench. Following the riprap, the slope was well vegetated and appeared to be stable.

### 2.2 *INTERMEDIATE BENCH OF DAM*

The intermediate bench and upslope of the bench was in satisfactory condition (i.e., well vegetated) with no rutting, settlement or misalignment noted along the slope as shown in Photographs 53 and 54. There was no excess sediment noted along access roads, and the access roads had positive drainage away from the road centerline.

### 2.3 *CREST OF DAM*

The crest and immediately downslope to the east and west was in satisfactory condition. No rutting, settling, or misalignment was noted along the crest or immediately downslope of the crest as shown on Photographs 55 through 58. There was no excess sediment noted along access roads, and the access roads had positive drainage away from the road centerline.

### 2.4 *FLY ASH POND*

Overall, the west slope towards the pond was in satisfactory condition (i.e., vegetated). Riprap had been added along the slope at the top, middle and toe portions to enhance slope stability in the past. Vegetation is noted along other areas of the slope where no riprap is present. More sparse vegetation was noted along the shoreline. The bench and shoreline area towards the pond appeared to be stable and in satisfactory condition. One important operational change noted is that the water level in Fly Ash Pond is no longer controlled by the spillway discharge structure and instead now is controlled by a float controlled dewatering pump, with siphons used as needed. The spillway discharge structure is still available for an extreme event. A visual summary inspection is provided below:

1. The condition of this slope is illustrated on Photographs 59 through 62. Riprap along the surface of the slope acts as additional support and enhance stability. There were isolated areas where there was uneven terrain, but overall there was no evidence of instability or settling or rutting.
2. Slumps and soil settlement was noted along the slope in localized areas as depicted in Photographs 63 and 64. A larger slump was noted in Photograph 63 which caused a resulting bulge along the toe of the slope. No tension cracks were noted and this slump is likely surficial. Photograph 64 illustrates the resulting soil bulge near the toe of the slope.
3. A view of the spillway structure no longer in use is shown in Photograph 58. Instead, pond water level is controlled by a siphon pump system as shown in Photograph 65.
4. No excess sediment and positive drainage away from the road centerline was noted along access roads at this complex. In addition, no standing water or localized low spots (where water could collect) were noted. An example of a view of the access road adjacent to the






shoreline of the Fly Ash Pond looking west is shown on  
Photograph 66.

*Appendix B*  
*Annual Inspection Photographs*

# Bottom Ash Pond Complex

## West Dike

<b>Photograph #1</b>	
An overview view of interior slope and condition of riprap at toe (looking south).	
<b>Photograph #2</b>	
Residual coal ash piles along inner slope of west dike (looking south).	
<b>Photograph #3</b>	
Condition of outer bank and drainage ditch along west edge (looking north)	

**Photograph #4**

Slope of exterior embankment including apparent inactive earthen bulge along slope (looking north).



**Photograph #5**

Vegetated erosion gullies running along exterior slope (looking east).





**Photograph #6**




View of Piezometer BAP-1 (looking north).





## South Dike

<b>Photograph #7</b>	
View of interior embankment including crest and slope (looking west).	<b>Photograph #8</b>
View of interior embankment (looking east). A vegetated gully was noted running along the slope that was about 3 feet wide and 9 inches deep.	<b>Photograph #9</b>
View of vegetated gully along interior slope (looking south).	

<p><b>Photograph #10</b></p>	
<p>View of slopes on the eastern half of interior embankment (looking west)</p>	
<p><b>Photograph #11</b></p>	
<p>View of slopes on eastern portion of interior embankment where coal ash had been recently placed (looking west).</p>	
<p><b>Photograph #12</b></p>	
<p>Rill formation on eastern portion of interior embankment where coal ash had been recently placed (looking west).</p>	



**Photograph #13**

View of the crest of along exterior portion of embankment (looking west).



**Photograph #14**

View of sparsely vegetated low area at western toe of exterior bank (looking south).



**Photograph #15**

The area around the culvert at the toe of the slope (looking east).






**Photograph #16**

View of Piezometer BAP-2 (looking east).





## Eastern Embankment

<b>Photograph #17</b>	
Bottom ash management area (looking south).	
<b>Photograph #18</b>	
Ash slurry sluice pipes and support structure near north end (looking north).	
<b>Photograph #19</b>	
Ash slurry sluice pipes and support structure in middle of embankment (looking south).	

**Photograph #20**

Condition of exterior slope at northern edge of this section (looking north).



**Photograph #21**

Condition of toe at northern edge of this section (looking east).



**Photograph #22**

Condition of exterior crest (looking south).





**Photograph #23**

Condition of exterior crest with localized bare spot (looking north).



**Photograph #24**

Localized gully on bare spot of exterior slope (looking east).



**Photograph #25**

View of vegetated gully along exterior slope (looking west).





**Photograph #26**

View of toe and slope (looking north).



**Photograph #27**

View of toe along fence line (looking south).



**Photograph #28**

View of localized wet slope along toe (looking south).



**Photograph #29**

View of slope where evidence of soil subsidence was noted (looking south).






**Photograph #30**

View of slope where evidence of soil subsidence was noted (looking north).





## Northern Embankment

<p><b>Photograph #31</b></p>	 A photograph showing a concrete discharge structure with a metal railing on a grassy embankment. Water is flowing through a pipe into a large, shallow pond. The background shows a wide river and distant hills under a clear sky.
<p><b>Photograph #32</b></p>	 A photograph of a gravel embankment with several yellow and grey monitoring wells. In the background, a large ash pond is visible, and a tall smokestack with a plume of white smoke rises in the distance under a blue sky.
<p><b>Photograph #33</b></p>	 A photograph of a gravel embankment with a dirt road on top. To the left, there is a large pond and a grassy slope. In the background, a long, low structure, possibly a bridge or dam, spans across the landscape under a cloudy sky.



**Photograph #34**

View of exterior slope with apparent rills and gullies along slope (looking south).



**Photograph #35**

View of bare spot with localized wet/saturated surface at toe of exterior slope (looking west).



**Photograph #36**

View of slope and crest of exterior slope (looking south).





**Photograph #37**

View of toe, slope and crest of exterior embankment on eastern side (looking south)



**Photograph #38**

View of drainage ditch (looking north).



**Photograph #39**

View of standing water in drainage ditch (looking west).





**Photograph #40**

View of embankment crest  
(looking west)



**Photograph #41**

View of slope at top of  
embankment (looking west).






**Photograph #42**

View of slope at top of  
embankment and vegetated gully  
(looking east).



## Reclaim Pond

<p><b>Photograph #43</b></p>	 A photograph showing a discharge pipe with water cascading into a channel. In the background, there is a long, elevated metal structure, possibly a bridge or walkway, spanning across the area. The water is reflected in the calm surface of the pond in the foreground.
<p>View of discharge pipe and channel (looking north)</p>	
<p><b>Photograph #44</b></p>	 A photograph of a mixing station for pH adjustment. It features a large, dark, rectangular concrete structure with a white plume of steam or smoke rising from the top. The structure is situated on a platform with yellow safety railings, surrounded by water. A walkway with yellow railings leads to the platform.
<p>View of mixing station for pH adjustment (looking north).</p>	
<p><b>Photograph #45</b></p>	 A photograph of an overflow structure. It shows a concrete structure with a ramp leading down to a body of water. The structure is surrounded by green vegetation and a grassy bank. A street lamp is visible in the foreground.
<p>View of overflow structure (looking west).</p>	



**Photograph #46**

View of slope along interior embankment with noticeable subsidence (looking east)






**Photograph #47**

View of slope with riprap placed at toe and lower portions of slope (looking west).



# Stingy Run Fly Ash Reservoir

## Toe of Dam

<b>Photograph #48</b>	
View of seepage control weir VW-1 (looking west)	
<b>Photograph #49</b>	
View of seepage weir control VW-3 (looking south).	
<b>Photograph #50</b>	
View of mixing point and overflow weir to Stingy Creek (looking east).	



**Photograph #51**

View of northern portion of dam slope from toe (looking west).



**Photograph #52**

View of southern portion of dam slope from toe (looking west).






## Intermediate Bench of Dam

<b>Photograph #53</b>	 A gravel path leads up a grassy slope under a cloudy sky. The path is composed of light-colored gravel and is flanked by green grass and some low-lying vegetation. The slope rises to the right.
View of upslope from intermediate bench (looking south).	
<b>Photograph #54</b>	 A gravel path leads up a grassy slope. In the distance, a power transmission tower is visible against a cloudy sky. The path is flanked by green grass and some low-lying vegetation. The slope rises to the left.
View of upslope from intermediate bench (looking north).	



## Crest of Dam

<p><b>Photograph #55</b></p>	 A wide-angle photograph showing the crest of a dam. The crest is a dirt road that curves to the right. The slope to the east is covered in green grass. In the background, there are hills and a power plant with smokestacks emitting white smoke under a cloudy sky. A wooden post is visible in the foreground on the right.
<p><b>Photograph #56</b></p>	 A photograph of the east slope of the dam, looking north. A dirt road runs along the crest. The slope is covered in green grass. In the background, there are trees and a power line tower. A wooden post is visible in the foreground.
<p><b>Photograph #57</b></p>	 A photograph of the west slope of the dam, looking north. The foreground is a gravelly embankment. In the background, there is a reservoir with a dam, surrounded by trees and a dirt road. A wooden post is visible in the foreground.




**Photograph #58**

View of west slope (looking west).





## Fly Ash Pond

<b>Photograph #59</b>	 A photograph showing a grassy hillside with a dirt path in the foreground. The sky is blue with scattered white clouds. The vegetation is dense and green.
View of west slope (looking northeast).	 A photograph showing a grassy hillside with a dirt path in the foreground. The sky is blue with scattered white clouds. The vegetation is dense and green.
<b>Photograph #60</b>	 A photograph showing a grassy hillside with a dirt path in the foreground. The sky is blue with scattered white clouds. The vegetation is dense and green.
View of west slope (looking northeast).	
<b>Photograph #61</b>	
View of west slope (looking east).	



**Photograph #62**

View of west slope (looking south).



**Photograph #63**

View of location where soil had recently settled and was repaired with riprap (looking south).



**Photograph #64**

View of Fly Ash Pond and soil bulge at bench (looking west).



**Photograph #65**

View of siphon pump system used to control water level of pond (looking west).



**Photograph #66**

View access road and shoreline (looking west).



*Appendix C*  
*Qualitative Inspection Terms*



The terms described below are used to describe the overall condition and/or appearance of an observed embankment, structure, activity, or item. These terms are intended to give an overall qualitative judgment of the particular item. Please note, some of the terms described below were not used in this year's inspection, but are included as a comparative reference.

**Satisfactory:** A condition or activity that is meets what would be minimally anticipated or expected from a stability, maintenance, or design viewpoint.

**Poor:** A condition or activity that does not meet what would be minimally anticipated or expected from a stability, maintenance, or design viewpoint. If a rating of "poor" is assigned, then corrective action is required in as timely a manner as possible.

**Minor:** A reference to an item or activity where the current maintenance condition is below what is normally desired, but does not cause concern from a stability of safety viewpoint. Generally, these conditions would be identified and could be remedied through the normal maintenance process.

**Significant:** A reference to an item or activity which would impact the stability or daily operating conditions of the CCR unit. Generally, significant features develop over time and would likely be a result of maintenance not occurring when minor deficiencies were first noted. If left unchecked, such conditions could eventually be a concern for the stability and safety of the CCR unit.

**Excessive:** A reference to an item or activity that is much worse than what is normal or desired and is of immediate concern to the stability or safety of the CCR unit. Such a condition may also impact the ability of the inspector to properly evaluate the particular item or area.

*Appendix D*  
*Recent Instrumentation Data*

Figure D-1. Water elevation as measured at pond surfaces and observation wells BAP-1 and BAP-2 in 2017.

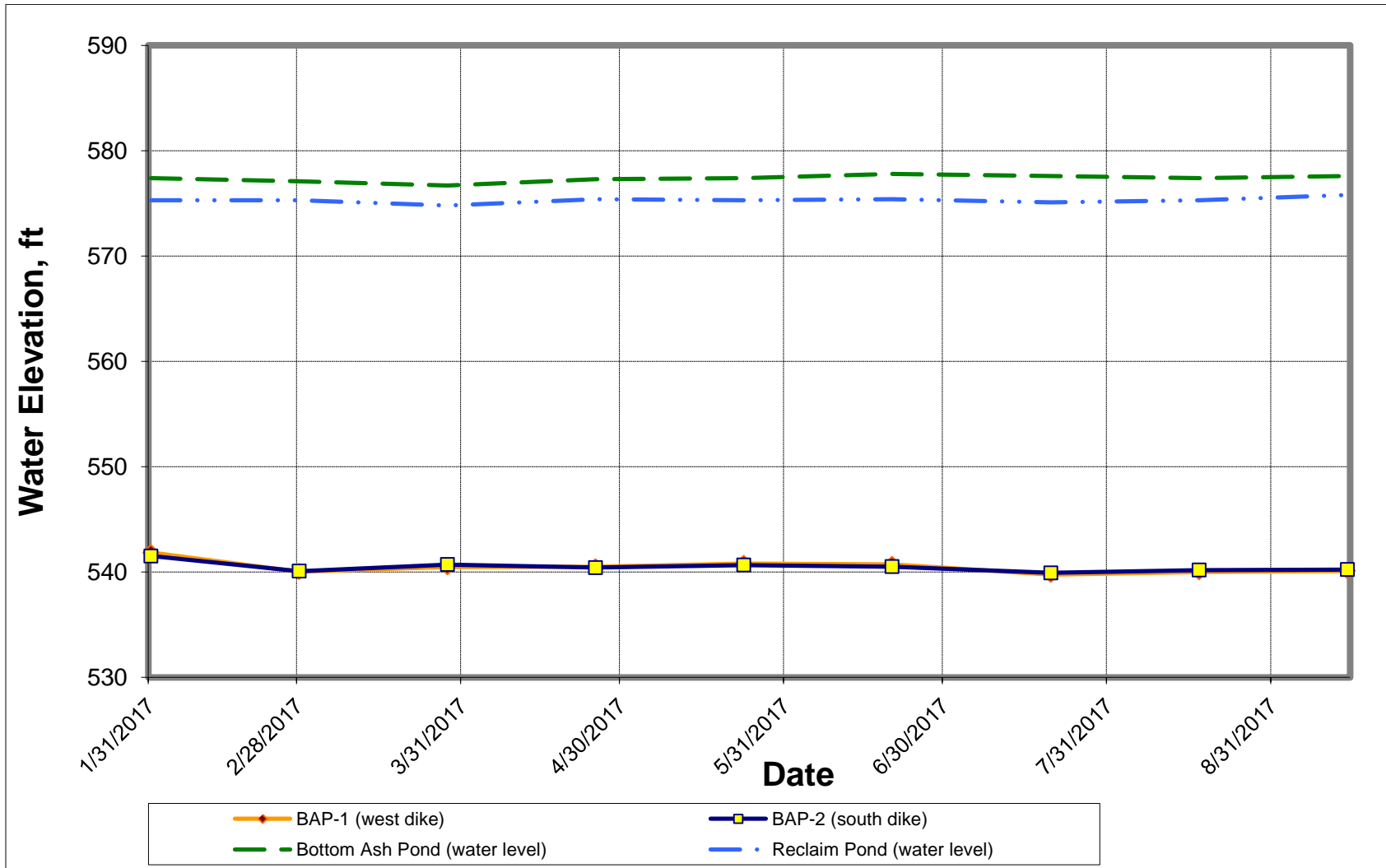
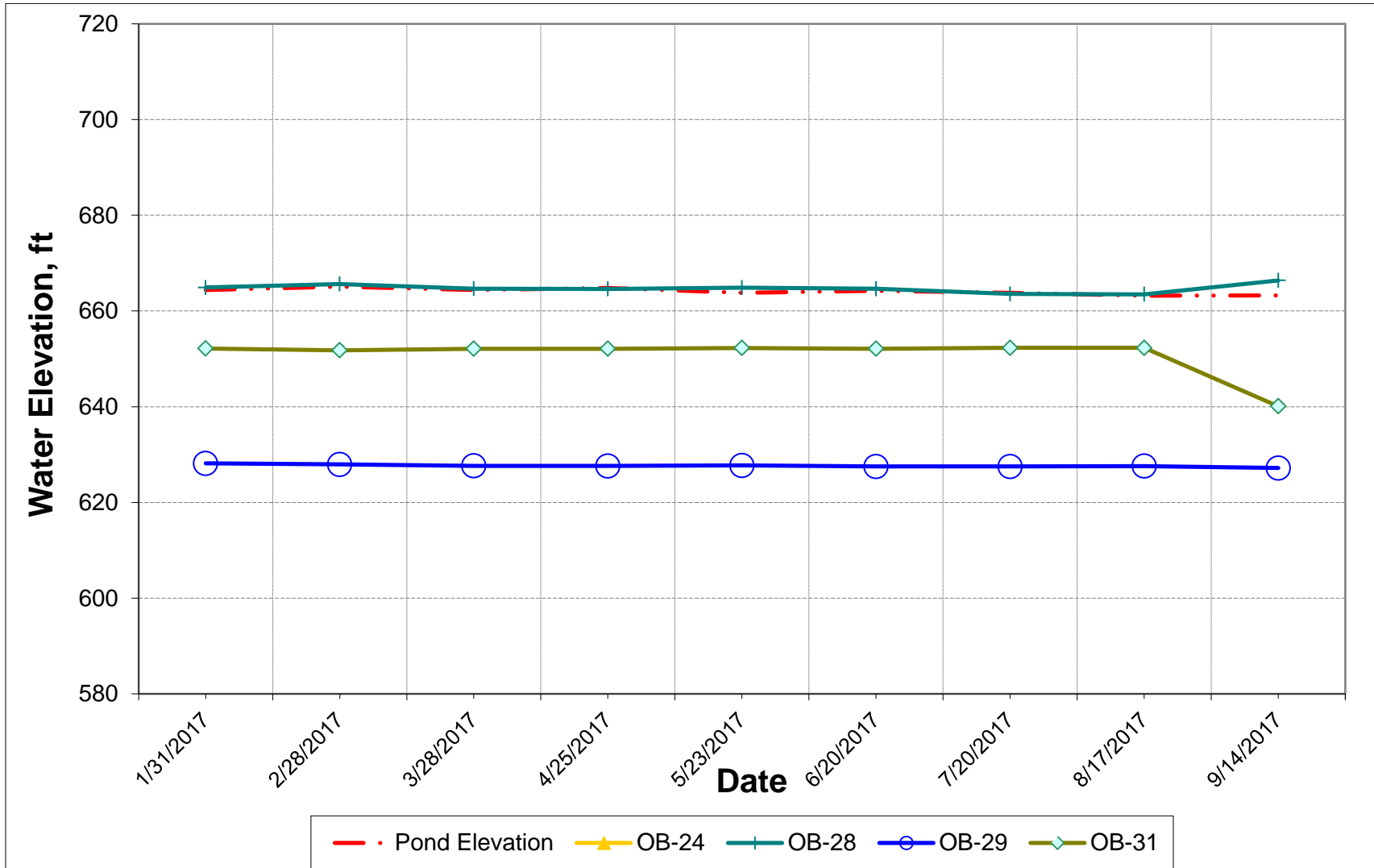




Figure D-2. Water elevation as measured at pond surface and piezometers OB-24, OB-28, OB-29, and OB-31.



*Appendix E*  
*Professional Engineer*  
*Certification*

1.0

**PROFESSIONAL ENGINEER CERTIFICATION**

I hereby certify that I or an agent under my review has prepared this Annual Inspection Report for the Bottom Ash Complex and Stingy Run Fly Ash Reservoir, and familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR). I attest that this Report has been prepared in accordance with good engineering practices and meets the intent of 40 CFR 257.83(b). To the best of my knowledge, the information contained in this Report is true, complete, and accurate.



**James A. Hemme, P.E.**  
*State of Ohio License No.: 72851*

Date: 01/08/2018

