



OHIO VALLEY ELECTRIC CORPORATION

3932 U. S. Route 23
P. O. Box 468
Piketon, Ohio 45661
740-289-7200

WRITER'S DIRECT DIAL NO:
740-897-7768

December 4, 2019

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Laurie Stevenson
Director
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

**Re: Ohio Valley Electric Corporation
Kyger Creek Station
Notification of CCR Rule Information Posting
Annual Certified CCR Surface Impoundment Inspection Report**

Dear Ms. Stevenson:

As required by 40 CFR 257.106(g), the Ohio Valley Electric Corporation (OVEC) is providing notification to the State Director of the Ohio Environmental Protection Agency that a qualified professional engineer has completed the Annual CCR Surface Impoundment Inspection in accordance with 40 CFR 257.83(b) for OVEC's Kyger Creek Station. The inspection report has been placed in the facility's Operating Record as well as on the company's publically accessible internet site.

This information can be viewed on OVEC's publically accessible internet site at:
<http://www.ovec.com/CCRCompliance.php>

If you have any questions, or require any additional information, please call me at (740) 897-7768.

Sincerely,

A handwritten signature in black ink that reads "Tim Fulk". The signature is written in a cursive, slightly slanted style.

Tim Fulk
Engineer II

TLF:klr

2019 Annual Dam and Dike Inspection Report

Bottom Ash Pond Complex

South Fly Ash Pond

Kyger Creek Plant

Ohio Valley Electric Corporation (OVEC)

Gallia County, Ohio

October 2019

Prepared for: Ohio Valley Electric Corporation (OVEC)

3932 U.S. Route 23

P.O. Box 468

Piketon, Ohio 45661

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

Columbus, OH 43215



GERS -19- 028


2019 Annual Dam and Dike Inspection Report

Kyger Creek Plant

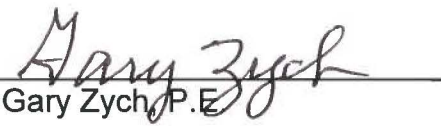
Bottom Ash Pond Complex & South Fly Ash Pond

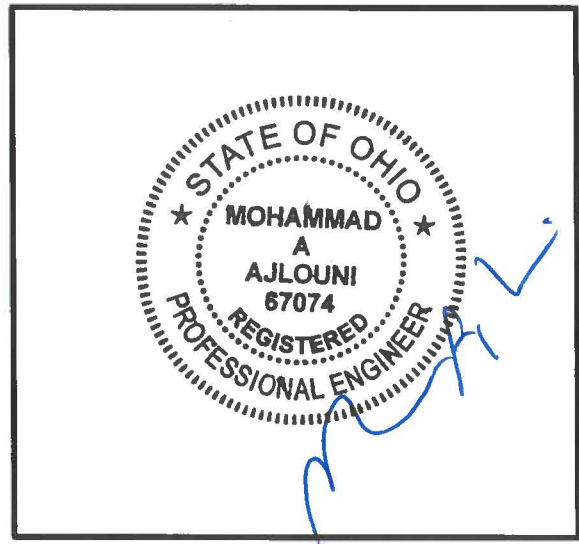
Date of Inspection: October 08, 2019

Document Number: GERS-19-028

PREPARED BY  DATE 10/25/2019
Mohammad A. Ajlouni, Ph.D., P.E.

REVIEWED BY  DATE 10/28/2019
Pedro J. Amaya, P.E.

APPROVED BY  DATE 10/28/2019
Gary Zych, P.E.
Manager – AEP Geotechnical Engineering



I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.83(b).

Table of Contents

1.0 Introduction.....4

2.0 Description of CCR Impoundments.....4

 2.1 Bottom Ash Pond Complex.....4

 2.2 South Fly Ash Pond.....4

3.0 Review of Available Information.....4

 3.1 Definitions of Visual Observations and Deficiencies4

4.0 Inspection.....6

 4.1 Bottom Ash Pond Complex.....6

 4.1.1 Changes in Geometry since Last Inspection6

 4.1.2 Instrumentation.....6

 4.1.3 Impoundment Characteristics.....6

 4.1.4 Visual Inspection7

 4.1.5 Evaluation of Instrumentation.....7

 4.1.6 Changes that Effect Stability or Operation.....7

 4.2 South Fly Ash Pond.....8

 4.2.1 Changes in Geometry since Last Inspection8

 4.2.2 Instrumentation.....8

 4.2.3 Impoundment Characteristics.....8

 4.2.4 Visual Inspection9

 4.2.5 Evaluation of Instrumentation.....9

 4.2.6 Changes that Effect Stability or Operation.....9

5.0 Summary of Findings10

 5.1 General Observations10

 5.2 Maintenance Items10

 5.3 Items to Monitor.....10

 5.4 Deficiencies11

List of Tables

- Table 1 Maximum recorded instruments reading since the previous annual inspection (BAP)
- Table 2 Summary of Relevant Storage Information (BAP)
- Table 3 Maximum recorded instruments reading since the previous annual inspection (FAP)
- Table 4 Summary of Relevant Storage Information (FAP)

List of Figures

- Figure 1 Location Map
- Figure 2 Inspection & Instrumentation Map (BAP)
- Figure 3 Inspection & Instrumentation Map (FAP)
- Figure 4 Bottom Ash Pond Complex Piezometers & Pond Levels.
- Figure 5 Fly Ash Pond Piezometers & Pond Levels.

Attachments

- Attachment A – Inspection Photos

1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.83 and the Ohio Department of Natural Resource (ODNR), Division of Water Resources Dam Safety Program and to provide Ohio Valley Electric Corporation (OVEC) and Kyger Creek Station with an evaluation of the facility.

Mr. Paul Hutchins, of the Kyger Creek Station provided onsite coordination for inspection activities. The inspection was performed on October 8th, 2019 by Mr. Mohammad Ajlouni of AEPSC Geotechnical Engineering with Mr. Paul Hutchins, Mr. Tim Folk and Mr. Kenneth Stapleton of OVEC. Weather conditions were clear with temperatures in upper-50s F to low-70s F.

2.0 DESCRIPTIONS OF IMPOUNDMENTS

Figure 1 depicts the location of the Kyger Creek plant and its pond complexes.

2.1 BOTTOM ASH POND COMPLEX

Bottom Ash Complex consists of a Boiler Slag Pond (BAP) and a Clearwater Pond (CWP) separated by a Splitter Dike shown in Figure 2. The Ohio River runs parallel to the east dike and OH State Route 7 runs parallel to the west dike. The Bottom Ash Complex is located between SR 7 and Kyger Creek to the west and Ohio River to the east. Kyger Creek also runs parallel to the west section of the dike. The ODNR Inventory Number is 8712-014.

2.2 SOUTH FLY ASH POND

The South Fly Ash Pond is one of two ash ponds that make up the Fly Ash Complex and which are separated by a splitter dike as shown in Figure 3. The second pond is the North Pond which has been capped and closed as part of the North Ash Pond Closure Project. The South Fly Ash Pond remains open and active as a part of the plant's fly ash sluicing operations. The South Fly Ash Pond is located along SR 7 just north of the Kyger Creek. The ODNR inventory number is 8712-013.

3.0 REVIEW OF AVAILABLE INFORMATION (257.83(b)(1)(i))

A review of available information regarding the status and condition of the Bottom Ash Pond Complex and the South Fly Ash Pond, including files available in the operating record, such as design and construction information, previous periodic structural stability assessments, previous 7 day inspection reports, and previous annual inspections, has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

3.1 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

Fair/Satisfactory: A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.

Annual Dam and Dike Inspection Report (2019)

Kyger Creek Plant

Poor:	A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
Minor:	A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure's safety or stability point of view.
Significant:	A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected.
Excessive:	A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure's safety or stability point of view.

This document also uses the definition of a "deficiency" as referenced in the CCR rule section §257.83(b)(5) Inspection Requirements for CCR Surface Impoundments. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, "Qualifications for Impoundment Inspection" CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined as a deficiency are considered maintenance or items to be monitored.

A "deficiency" is some evidence that a dam has developed a problem that could impact the structural integrity of the dam. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage

Uncontrolled seepage is seepage that is not behaving as the design engineer has intended. An example of uncontrolled seepage is seepage that comes through or around the embankment and is not collected and safely carried off by a drain. Seepage that is collected by a drain can still be uncontrolled, if it is not safely transported, such as seepage that is not clear. Seepage that is unable to be measured and/or observed is considered uncontrolled seepage. [Wet or soft areas are not considered uncontrolled seepage, but they can lead to this type of deficiency. These areas should be monitored frequently.]

2. Displacement of the Embankment

Displacement of an embankment is a large scale movement of part of the dam. Common signs of displacement are cracks, scarps, settlement, bulges, depressions, sinkholes and slides.

3. Blockage of Water Control Features

Blockage of Water Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.

4. Erosion

Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

4.0 INSPECTION (257.83(b)(1)(ii))

Annual Dam and Dike Inspection Report (2019)

Kyger Creek Plant

4.1 BOTTOM ASH POND COMPLEX

4.1.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.83(b)(2)(i))

No modifications have been made to the geometry of the Bottom Ash Pond Complex since the 2018 annual inspection. The geometry of the impoundment has remained essentially unchanged.

4.1.2 INSTRUMENTATION (257.83(b)(2)(ii))

The location and type of instrumentation is shown on Figure 2. The maximum recorded readings of each instrument since the previous annual inspection is shown in Table 1.

Table 1 Maximum recorded instruments reading since the previous annual inspection (BAP)

INSTRUMENTATION DATA Bottom Ash Pond Complex			
Instrument	Type	Maximum Reading since last annual inspection	Date of reading
KC-1015	Piezometer	552.27	2/22/19
KC-1016	Piezometer	542.7	12/27/18
KC-1017	Piezometer	548.39	2/22/19
KC-1018	Piezometer	543.1	12/27/18
KC-1021	Piezometer	551.12	12/27/18
KC-1022	Piezometer	550.34	2/22/19

4.1.3 IMPOUNDMENT CHARACTERISTICS (257.83(b)(2)(iii, iv, v))

Table 2 is a summary of the minimum, maximum, and present depth and elevation of the impounded water & CCR since the previous annual inspection; the storage capacity of the impounding structure at the time of the inspection; and the approximate volume of the impounded water and CCR at the time of the inspection.

Table 2 Summary of Relevant Storage Information (BAP)

IMPOUNDMENT CHARACTERISTICS- Bottom Ash Pond Complex		
	Boiler Slag Pond	Clearwater Pond
Approximate Minimum depth (elevation) of impounded water since last annual inspection	17 ft. (558)	8.1 ft. (549.1)
Approximate Maximum depth (elevation) of impounded water since last annual inspection	18.1ft. (559.2)	18.1ft. (559.1)
Approximate Present depth of impounded water at the time of inspection	18.1ft. (559.2)	8.8ft. (549.8)
Approximate Minimum depth (elevation) of CCR since last annual inspection	41ft. (582.0)*	N/A.
Approximate Maximum depth (elevation) of CCR since last annual inspection	41ft. (582.0)*	N/A
Approximate Present depth (elevation) of CCR at the time of inspection	41ft. (582.0)*	N/A
Storage Capacity of impounding structure at the time of inspection	610 ac-ft.	310 ac-ft.
Approximate volume of impounded water at the time of inspection	181 ac-ft.	53 ac-ft.
Approximate volume of CCR at the time of the inspection	300 ac-ft	N/A

*Boiler slag is currently stockpiled within the impoundment in preparation for sales for beneficial use.

Annual Dam and Dike Inspection Report (2019)

Kyger Creek Plant

4.1.4 VISUAL INSPECTION (257.83(b)(2)(i))

A visual inspection of the Bottom Ash Pond Complex was conducted to identify any signs of distress or malfunction of the impoundment and appurtenant structures. The inspection also included the hydraulic structures underlying the base of the dike. Specific items inspected included all structural elements of the dam such as inboard and outboard slopes, crest, and toe; as well as appurtenances such as the outlet structure at the Bottom Ash Pond and Clear Pond, and pipe discharge structure.

Overall the facility is in good condition and is being well maintained. The impoundment is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the impoundment. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available upon request.

Vegetation is well established and is controlled through an active maintenance program (Photo 1).

Discharge into the boiler slag pond is unobstructed and free draining (Photo 2).

The decant structure for the clear water pond was observed to be in good condition and flow was unobstructed (Photo 3).

Surface seals and concrete pads for the dam’s piezometers were observed to be free of defects (Photo 4).

4.1.5 EVALUATION OF INSTRUMENTATION

The pond stages have remained fairly constant since the last annual inspection. A review of the piezometer readings indicates that no adverse trends were observed and the water level fluctuation is also responsive to changing Ohio River levels (Figure 4). Maximum piezometer water levels were nearly coincident with high river stages for the Ohio River (Figure 4).

4.1.6 CHANGES THAT EFFECT STABILITY OR OPERATION (257.83(b)(2)(vii))

Based on interviews with plant personnel and field observations there were no changes to the Bottom Ash Pond Complex since the last annual inspection that would affect the stability or operation of the impounding structure.

4.2 SOUTH FLY ASH POND

4.2.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.83(b)(2)(i))

No modifications have been made to the geometry of the South Fly Ash Pond since the 2018 annual inspection. The geometry of the impoundment has remained essentially unchanged.

4.2.2 INSTRUMENTATION (257.83(b)(2)(ii))

The location and type of instrumentation is shown on Figure 2. The maximum recorded readings of each instrument since the previous annual inspection is shown in Table 3.

Table 3 Maximum recorded instruments reading since the previous annual inspection (FAP)

INSTRUMENTATION DATA			
South Fly Ash Pond			
Instrument	Type	Maximum Reading since last annual inspection	Date of reading
KC-1003	Piezometer	575.99	12/28/2018
KC-1004	Piezometer	551.49	2/22/2019
KC-1007	Piezometer	580.73	2/22/2019
KC-1008	Piezometer	561.21	12/7/2018
KC-1011	Piezometer	567.49	3/28/2019
KC-1012	Piezometer	561.47	12/28/2018

Annual Dam and Dike Inspection Report (2019)

Kyger Creek Plant

4.2.3 IMPOUNDMENT CHARACTERISTICS (257.83(b)(2)(iii, iv, v))

Table 4 is a summary of the minimum, maximum, and present depth and elevation of the impounded water & CCR since the previous annual inspection; the storage capacity of the impounding structure at the time of the inspection; and the approximate volume of the impounded water and CCR at the time of the inspection.

Table 4 Summary of Relevant Storage Information (FAP)

IMPOUNDMENT CHARACTERISTICS	
South Fly Ash Pond	
Approximate Minimum depth (elevation) of impounded water since last annual inspection	19.2ft. (583.1)
Approximate Maximum depth (elevation) of impounded water since last annual inspection	20.1 ft. (584.0)
Approximate Present depth (elevation) of impounded water since last annual inspection	19.6 ft. (583.5)
Approximate Minimum depth (elevation) of CCR since last annual inspection	15.0 ft. (565.0)
Approximate Maximum depth (elevation) of CCR since last annual inspection (ft.)	36 ft. (586.0)
Approximate Present depth (elevation) of CCR since last annual inspection	36 ft. (586.0)
Storage Capacity of impounding structure at the time of the inspection	2,500 ac-ft
Approximate volume of impounded water at the time of the inspection	460 ac-ft
Approximate volume of CCR at the time of the inspection	1,800 c.y.

4.2.4 VISUAL INSPECTION (257.83(b)(2)(i))

A visual inspection of the South Fly Ash Pond was conducted to identify any signs of distress or malfunction of the impoundment and appurtenant structures. The inspection also included hydraulic structures underlying the base of the dike. Specific items inspected included all structural elements of the dam such as inboard and outboard slopes, crest, and toe; as well as appurtenances such as the outlet structure and pipe discharge structure.

Overall the facility is in good condition. The impoundment is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the impoundment. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available upon request.

Areas of ponded water along the south dike of the south fly ash pond. (Photo 5)

Discharge into the fly ash pond was observed to be free flowing and unobstructed (Photo 6).

Embankment slopes and crest were observed to be in good condition (Photos 7, 8 and 9).

Discharge from the fly ash pond was observed to be free flowing and unobstructed (Photos 10 and 11).

A minor seepage area (approximately 5 ft in diameter) was observed along the outboard slope of the pond's east embankment during the inspection and it seems to be intermittent based of the seven day inspection reports. (See Figure 3 for approximate location). The seep was observed to be visually clear and flow is consistent with previous observations (Photo 12).

4.2.5 EVALUATION OF INSTRUMENTATION

The pond stages have remained fairly constant since the last annual inspection. A review of the piezometer hydrographs for each piezometer indicates that no adverse trends are present (Figure 5).

4.2.6 CHANGES THAT AFFECT STABILITY OR OPERATION (257.83(b)(2)(i))

Based on interviews with plant personnel and field observations there were no changes to the South Fly Ash Pond since the last annual inspection that would affect the stability or operation of the impounding structure.

5.0 SUMMARY OF FINDINGS

5.1 GENERAL OBSERVATIONS

The following general observations were identified during the visual inspection:

Bottom Ash Pond Complex

- 1) The outboard slopes, crest and inboard slopes of the embankment were generally in good condition. The embankments did not show any signs of structural weakness or instability. The vegetation along the embankments was recently mowed in most locations. The crest did not contain any ruts or other signs of instability. Specific maintenance and items to monitor are described in the subsequent sections of this report.
- 2) The hydraulic structures of the Boiler Slag Pond and the Clear Water Pond were generally in good condition. There were no signs of deterioration of the concrete or steel structures. Stop logs were available for use. Flow within the pipes appeared unobstructed.

South Fly Ash Pond

- 1) The outboard slopes, crest and inboard slopes of the embankment were generally in good condition. The embankments did not show any signs of structural weakness or instability. The vegetation along the embankments was recently mowed in most locations. The crest did not contain any ruts or other signs of instability. Specific maintenance and items to monitor are described in the subsequent sections of this report.
- 2) The hydraulic structures of the South Fly Ash Pond were in generally in good condition. There were no signs of deterioration of the concrete or steel structures. Flow within the pipes appeared unobstructed.

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection.

Bottom Ash Pond Complex

- 1) The plant is actively performing maintenance in controlling vegetation along the crest and the exterior embankment slopes. Minor vegetation was observed within the interior embankment slopes.

South Fly Ash Pond

- 1) The plant is actively performing maintenance in controlling vegetation along the crest and the interior/exterior embankment slopes. A few small locations in close proximity to the water's shoreline along the west embankment slope exhibited excessive vegetation. The vegetation should be periodically mowed to prevent woody vegetation or controlled growth through the application of a herbicide to

Annual Dam and Dike Inspection Report (2019)
Kyger Creek Plant

facilitate inspection of these areas.

5.3 ITEMS TO MONITOR

The following items were identified during the visual inspection as items to be monitored, see inspection map for locations:

Bottom Ash Pond Complex

- 1) None

South Fly Ash Pond

- 1) Isolated wet areas observed through the weekly inspections should continue to be monitored for flow rate and clarity of flow. The plant is actively mitigating such areas and repairing them using the same ODNR approved detail for controlling previous seepage areas along embankment slope. If the flow rate increases or the water flowing from the seep is not clear it should be brought to the immediate attention of AEP-Geotechnical Engineering.
- 2) The seepage located beyond the south toe was observed to have a similar flow rate to previous inspections. Weekly inspections have noted that the flow rate is steady at 24 gpm. The flow was clear and there was no accumulation of solids around the seepage areas. The flow rate and clarity of this seep should continue to be monitored during the 7 day inspections.

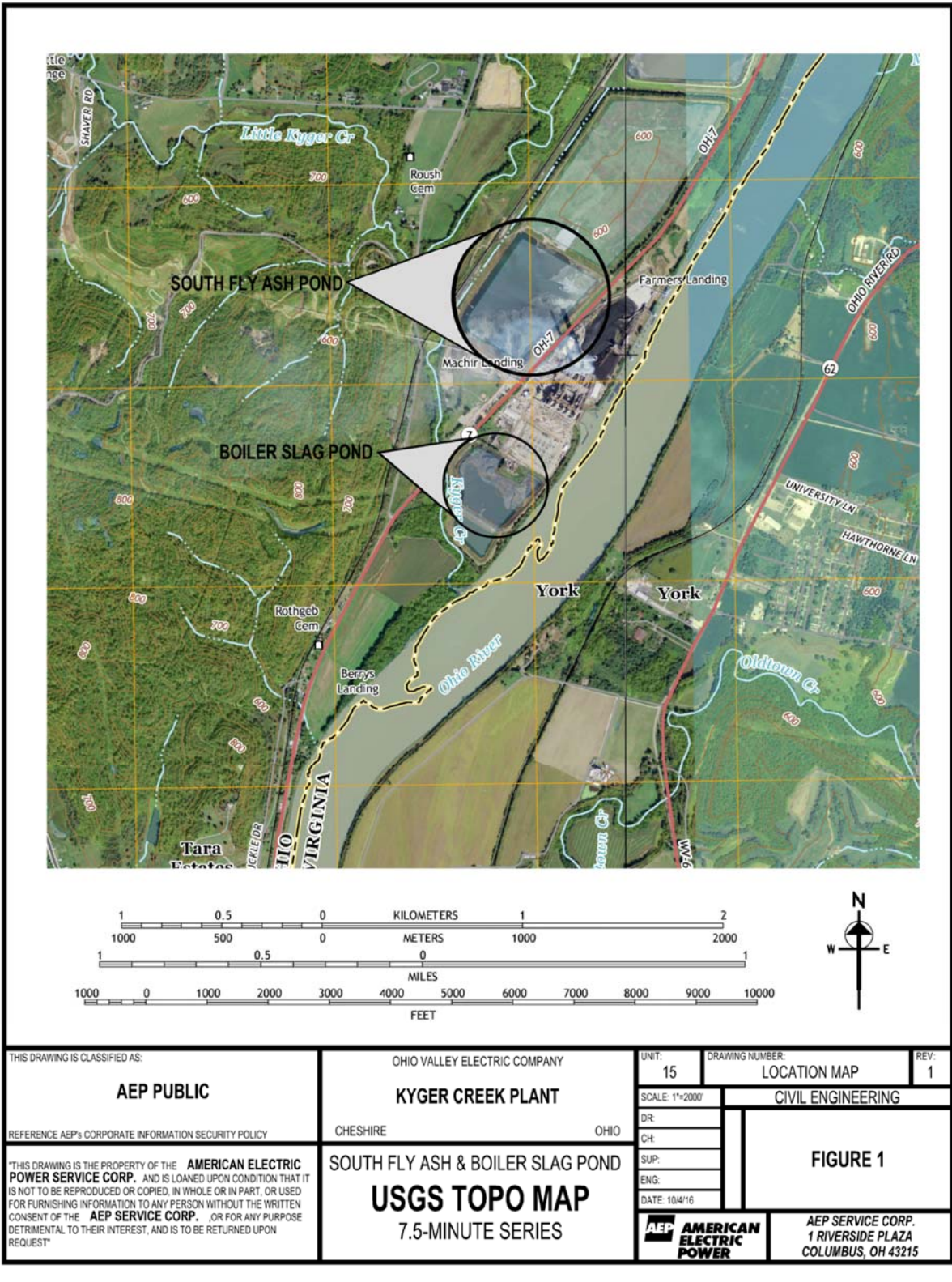
5.4 DEFICIENCIES (257.83(b)(2)(vi))

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted this inspection or during any of the periodic 7-day or 30-day inspections. A deficiency is defined as either 1) uncontrolled seepage, 2) displacement of the embankment, 3) blockage of control features, or 4) erosion, more than minor maintenance. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

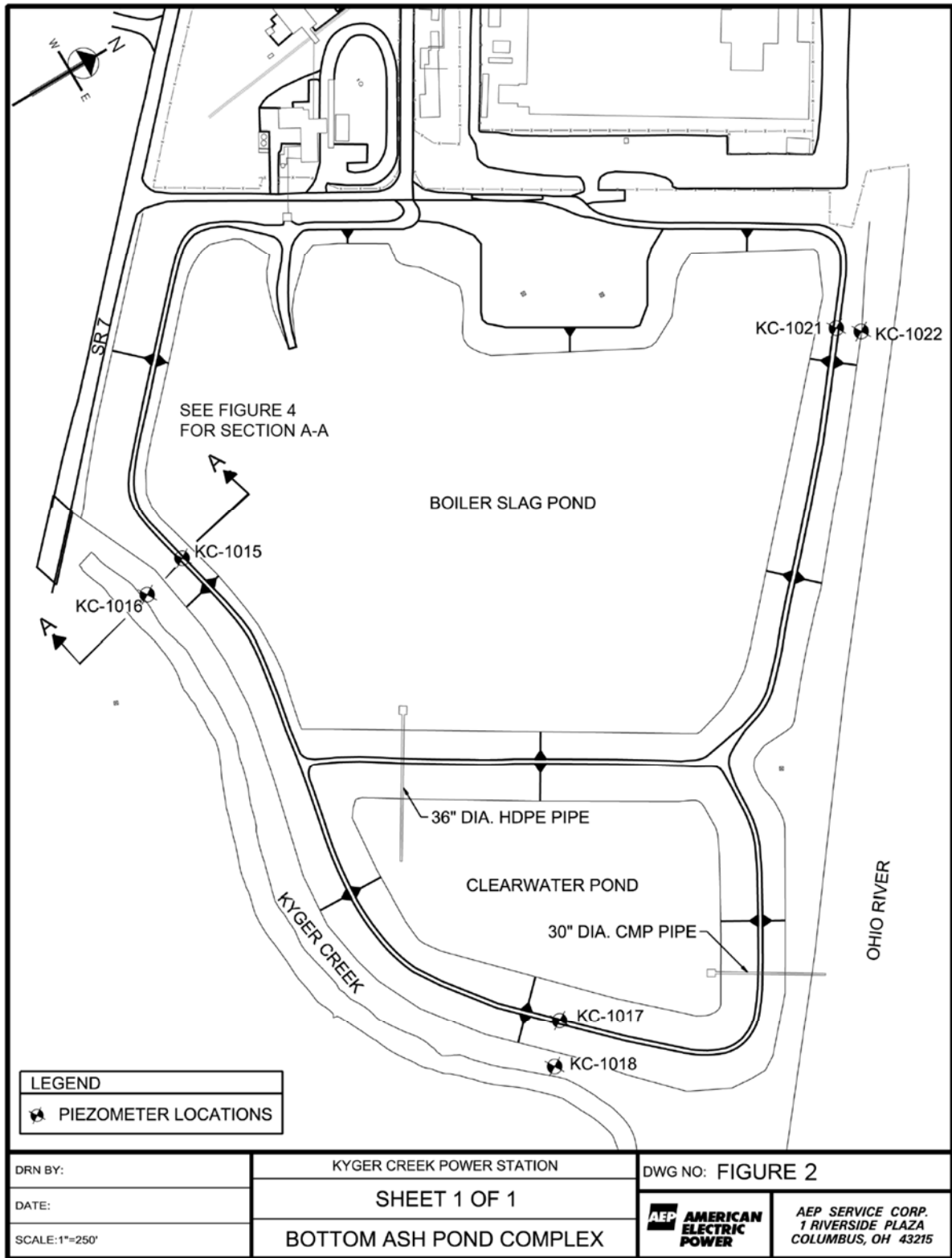
Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station

FIGURES

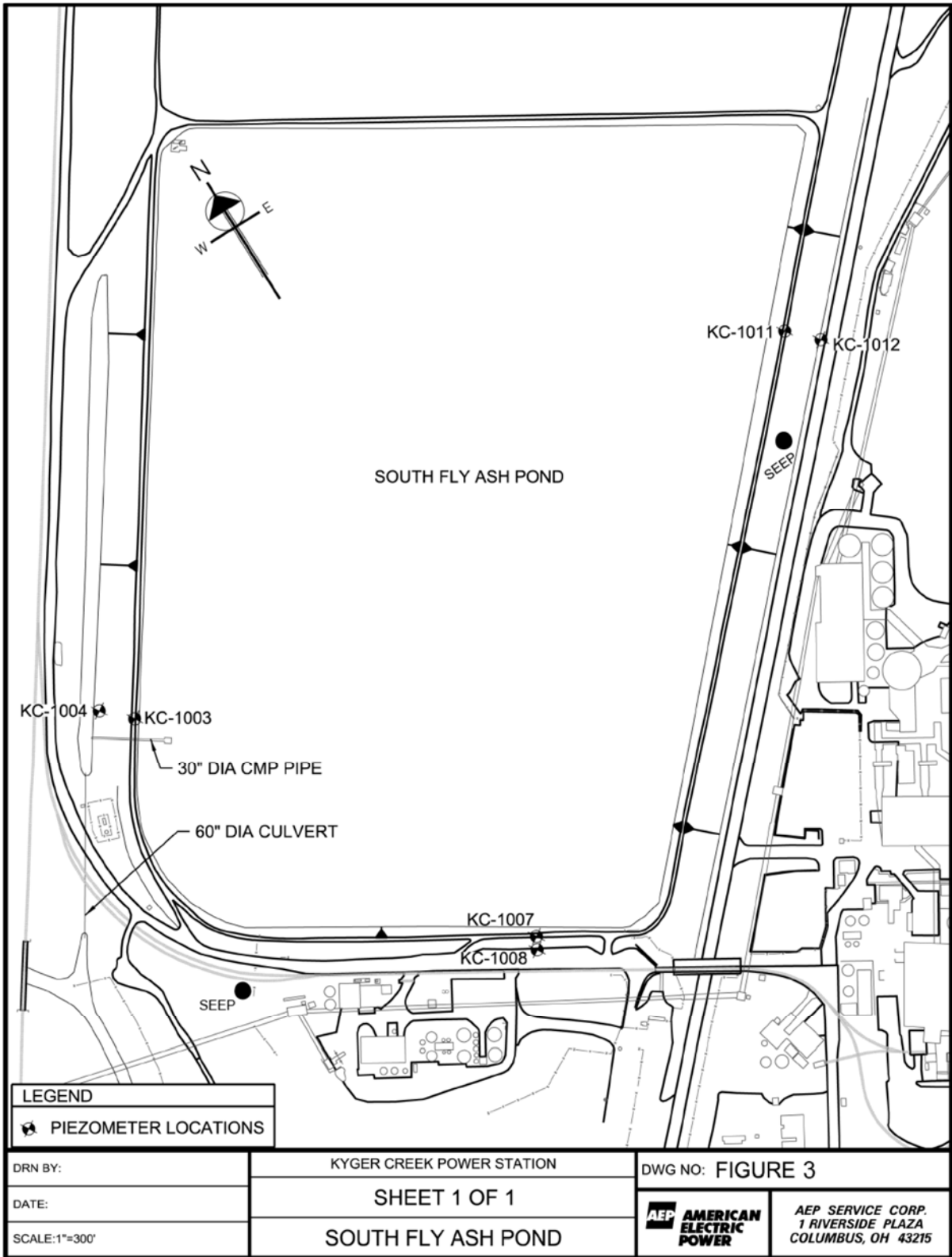
Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station



Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station



Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station



BY: 259464
 PLOT TIME: 10:11 PM
 DATE: 11/14/2016

Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station

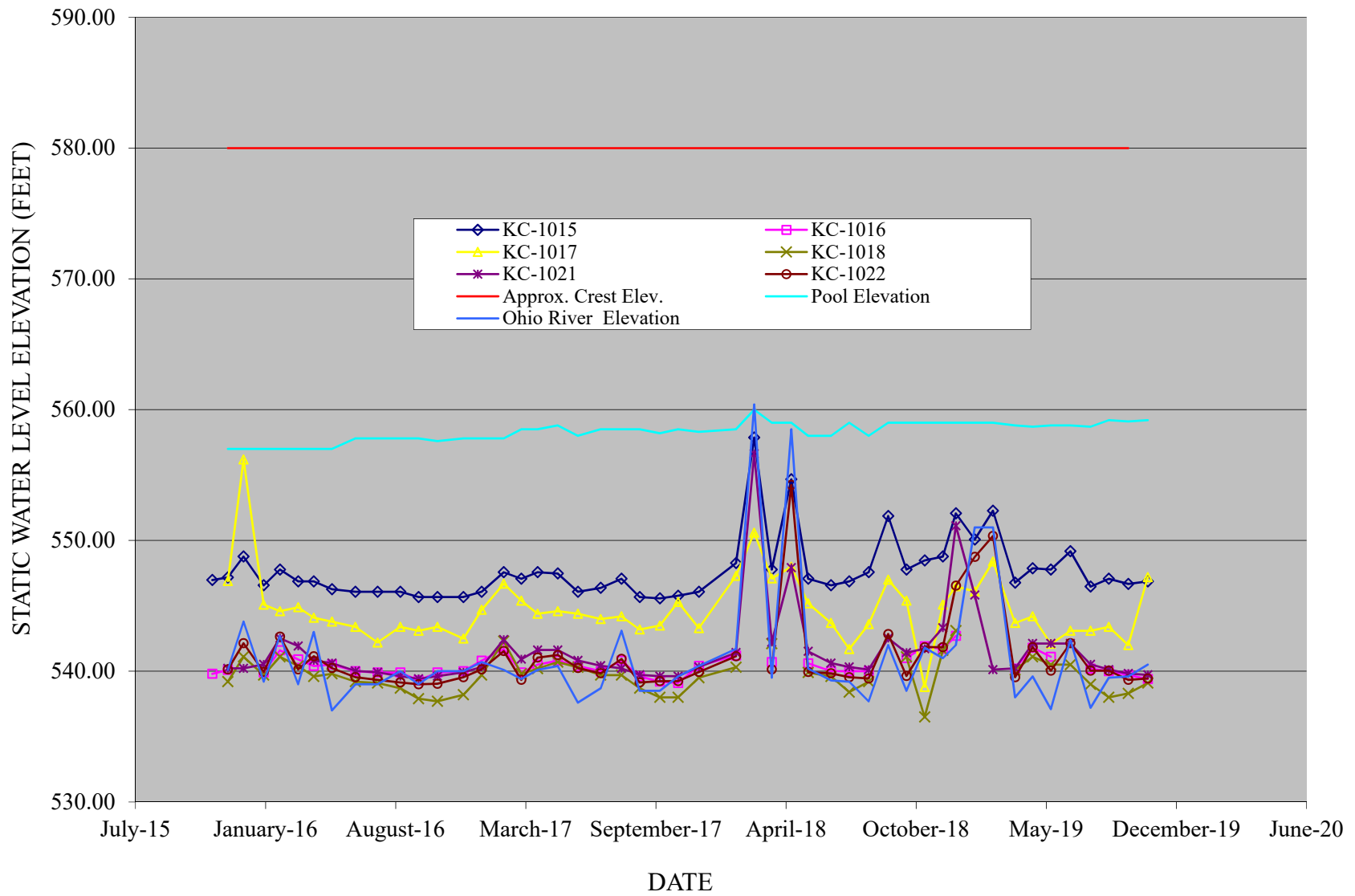


Figure 4 Bottom Ash Pond Complex Piezometers & Pond Levels.

Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station

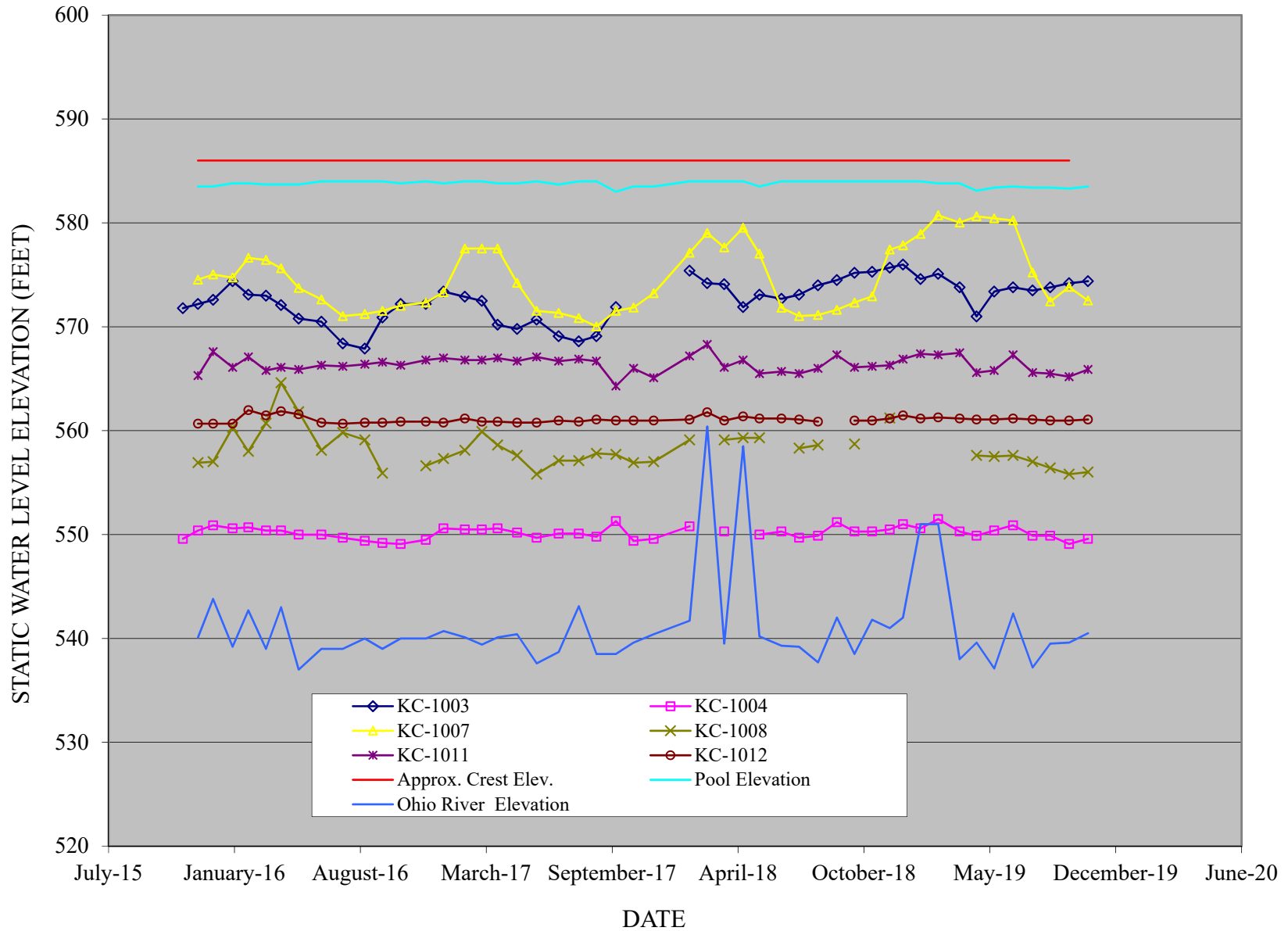


Figure 5 Fly Ash Pond Piezometers & Pond Levels.

Annual Dam and Dike Inspection Report (2019)
Kyger Creek Station

ATTACHMENT A

Photos

**2019 Annual Dam and Dike Inspection Report
Kyger Creek Plant
Photos**



Photo 1 Typical view showing good conditions of the boiler slag embankment.



Photo 2 Typical view showing good conditions of the boiler slag embankment and stockpile of material to be used for beneficial utilization.



Photo 3 Typical view showing good conditions of the decant structure and interior embankment.



Photo 4 Typical view showing good conditions of the flush mounted piezometer installation showing the well cap seal and concrete pad.



Photo 5 Areas of ponded water along the south dike of the south fly ash pond.



Photo 6 Typical view showing conditions of unobstructed discharge into the fly ash pond.



Photo 7 Typical view showing good conditions of the east embankment showing a uniform slope and a well maintained vegetative cover.



Photo 8 Typical view showing good conditions of the north embankment showing a uniform slope and a well maintained vegetative cover.



Photo 9 Typical view showing good conditions of the west embankment showing a uniform slope and crest. No erosion of the interior pond slopes was observed.



Photo 10 Typical view showing fair conditions of the south fly ash pond discharge structure. Additional mowing is scheduled to be performed within this area.



Photo 11 Typical view showing unobstructed flow from the south fly ash pond.



Photo 12 – Typical view of seep along the south dike showing a visually clear discharge.