



OHIO VALLEY ELECTRIC CORPORATION

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

WRITER'S DIRECT DIAL NO:
740-289-7267

December 16, 2016

Mr. Craig Butler
Director
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Dear Mr. Butler:

**Re: Ohio Valley Electric Corporation
Kyger Creek Station
Notification of CCR Information Posting**

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 facility's annual CCR surface impoundment inspections 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, which can be viewed at <http://www.ovec.com/CCRCompliance.php>

If you have any questions, or require any additional information, please call me at (740) 289-7267.

Sincerely,

A handwritten signature in black ink that reads "Gabriel S. Coriell". The signature is written in a cursive style.

Gabriel S. Coriell
Environmental Services Manager

GSC:klr

2016 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**

November 11, 2016

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



2016 Annual Dam and Dike Inspection Report

**Kyger Creek Plant
Bottom Ash Pond Complex
South Fly Ash Pond
Document Number: GERS-16-152**

PREPARED BY *D.R.* DATE 11/15/2016
Daniel Rizzino, P.E.

REVIEWED BY *M.A.J.* DATE 11/15/2016
Mohammad Ajlouni, P.E.

APPROVED BY *Gary Zych* DATE 11/18/2016
Gary Zych, P.E.
Manager – AEP Geotechnical Engineering

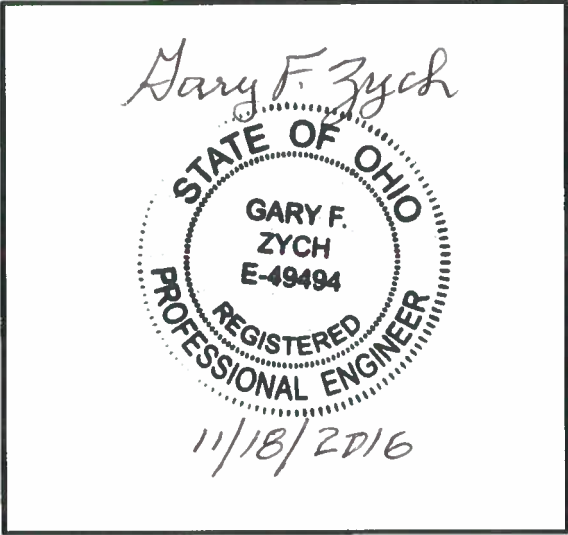


Table of Contents

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 Bottom Ash Pond Complex.....	4
3.2 South Fly Ash Pond.....	4
4.0 Inspection.....	4
4.1 Bottom Ash Pond Complex.....	4
4.1.1 Changes in Geometry Since Last Inspection.....	4
4.1.2 Instrumentation.....	4
4.1.3 Impoundment Characteristics.....	5
4.1.4 Visual Inspection.....	5
4.1.5 Changes that Effect Stability or Operation.....	5
4.2 South Fly Ash Pond.....	6
4.2.1 Changes in Geometry Since Last Inspection.....	6
4.2.2 Instrumentation.....	6
4.2.3 Impoundment Characteristics.....	6
4.2.4 Visual Inspection.....	7
4.2.5 Changes that Effect Stability or Operation.....	8
5.0 Summary of Findings	8
5.1 General Observations	8
5.2 Maintenance Items	8
5.3 Items to Monitor.....	9
5.4 Deficiencies.....	10

Attachments

- Attachment A – Pictures
- Attachment B – Site Map

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 18, 2016 by Daniel Pizzino of AEP Geotechnical Engineering. Also onsite for the inspection were Tye Schwall, Hank Cleland and Kenny Stapelton of OVEC. Simultaneously Neil Shop, Dan Murphy, and Josh Garland of ODNR were performing the 5 year inspection of the impoundments. A separate report is expected from ODNR with similar findings. Weather conditions were sunny with temperatures in upper-70s F to low-80s F, with good visibility.

2.0 DESCRIPTIONS OF IMPOUNDMENTS

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 1. 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 divided by a splitter dike as shown in Figure 2. The second pond is the North Pond which has been capped and closed as part of the North Ash Pond Closure Project and was not included as part of this inspection report. The South Fly Ash Pond remains open and active as part of the plants fly ash sluicing operations and is the focus of this report. 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, which include 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.

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

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 2015 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 1. The maximum recorded readings of each instrument since the previous annual inspection is shown in Table 1.

Table 1

INSTRUMENTATION DATA Bottom Ash Pond Complex			
Instrument	Type	Maximum Reading since last annual inspection	Date of reading
KC-1015	Piezometer	548.77	12/28/2015
KC-1016	Piezometer	541.60	2/22/2016
KC-1017	Piezometer	556.19	12/28/2015
KC-1018	Piezometer	541.1	12/28/2016
KC-1021	Piezometer	542.52	2/22/2016
KC-1022	Piezometer	542.64	2/22/2016

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

IMPOUNDMENT CHARACTERISTICS Bottom Ash Pond Complex		
	Boiler Slag Pond	Clearwater Pond
Approximate Minimum depth (elevation) of impounded water since last annual inspection	15.6 ft. (556.6)	8.0 ft.(549.0)
Approximate Maximum depth (elevation) of impounded water since last annual inspection	16.6 ft. (557.6)	8.9 ft. (549.9)
Approximate Present depth of impounded water at the time of the inspection	16.5 ft. (557.5)	8.7 ft. (549.7)
Approximate Minimum depth (elevation) of CCR since last annual inspection	41 ft. (582.0)	N/A.
Approximate Maximum depth (elevation) of CCR since last annual inspection	41 ft. (582.0)	N/A
Approximate Present depth (elevation) of CCR at the time of the inspection	41 ft. (582.0)	N/A
Storage Capacity of impounding structure at the time of the inspection	610 ac-ft.	310 ac-ft.
Approximate volume of impounded water at the time of the inspection	181 ac-ft.	53 ac-ft.
Approximate volume of CCR at the time of the inspection	300 ac-ft	N/A

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 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. 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. A map presenting locations of the inspection observations is included in Attachment B.

4.1.5 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 2015 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

INSTRUMENTATION DATA			
South Fly Ash Pond			
Instrument	Type	Maximum Reading since last annual inspection	Date of reading
KC-1003	Piezometer	574.39	1/28/2016
KC-1004	Piezometer	550.89	12/28/2015
KC-1007	Piezometer	576.63	2/22/2016
KC-1008	Piezometer	564.61	4/14/2016
KC-1011	Piezometer	567.59	2/22/2016
KC-1012	Piezometer	561.97	2/22/2016

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

IMPOUNDMENT CHARACTERISTICS South Fly Ash Pond	
	South Fly Ash Pond
Approximate Minimum depth (elevation) of impounded water since last annual inspection	19.1ft. (583.0)
Approximate Maximum depth (elevation) of impounded water since last annual inspection	20 ft. (583.9)
Approximate Present depth (elevation) of impounded water since last annual inspection	19.4 ft. (583.3)
Approximate Minimum depth (elevation) of CCR since last annual inspection	13.9 ft. (563.9)
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. A map presenting locations of the inspection observations is included in Attachment B.

4.2.5 CHANGES THAT EFFECT 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. Specific maintenance and items to monitor are described in the subsequent sections of this report. (See Picture 1 and 2)

South Fly Ash Pond

- 3) 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.
- 4) 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. Stop logs were available for use. Flow within the pipes appeared unobstructed. (See Picture 10)

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection, see inspection map for locations:

Bottom Ash Pond Complex

- 5) A small abandoned structure was found at the toe of the north dike and included a small cavity that went back into the dike approximately 24". This structure should be removed and the cavity should be filled. (See Pictures 3 and 4)
- 6) An erosion rill was discovered in the inboard slope south east portion of the Boiler Slag Pond. The erosion has occurred in the stockpiled boiler slag that is lining the inboard slope of the soil dike and is therefore not impacting the integrity of the dike. The erosion should be repaired. (See Pictures 5 and 6)
- 7) Vegetation was excessive along the inboard slopes of the Clear Water Pond. The vegetation should be periodically mowed to keep woody vegetation from growing and to allow for inspection. (See Picture 7)

South Fly Ash Pond

- 8) Wave erosion of the inboard slope was observed at several isolated areas of the north dike.

Other areas of wave erosion noted in the 2015 annual inspection were repaired. These observed areas should be repaired in the same manner. Please contact AEP Geotechnical Engineering for standard repair details. (See Picture 12 and 13)

- 9) Excessive vegetation is located along the inboard slopes at several locations. Where it is safe to do so, the vegetation should be periodically mowed to prevent woody vegetation and to allow for better inspection. (See Picture 11)
- 10) Wave erosion of the inboard slope was observed at several locations of the west dike primarily near the vicinity of the outlet structure. This area should be repaired using rip rap similar to previous repairs. Please contact AEP Geotechnical Engineering for standard repair details. (See Pictures 16 and 17)
- 11) Minor erosion was observed beneath the sluice lines on the outboard slope of the dike. This area does not receive much direct sunlight therefore grass cannot grow easily. It is recommended that small riprap be placed in this area to prevent further erosion. Please contact AEP Geotechnical Engineering for repair details. (See Picture 20)

5.2 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

- 12) Root intrusion was observed in the discharge end of the Clear Water Pond outlet pipe. This condition has been observed previously and root masses have been periodically removed. This should be monitored during 7-day inspections to ensure the condition does not worsen. If flow is restricted or the pipe condition deteriorates please contact AEP Geotechnical Engineering. (See Picture 8)
- 13) A portion of the north dike has trees and woody vegetation located on the outboard slope which serve as a wind break for the boiler slag reclaim operations. The trees are located on a portion of the dike that is well above the normal pool and maximum pool elevations of the impoundment therefore they are not currently being recommended for removal. This area should be monitored for instability in the event the trees are uprooted and for other movements in the embankment. In the future if the pool elevation of the pond is raised the removal of these trees should be re-evaluated. (See Picture 9)

South Fly Ash Pond

- 14) An isolated wet area was observed approximately half way up the west dike. This area should be monitored for flow rate and clarity of flow. The area did not appear to be flowing. The wet area could also be repaired using the same ODNR approved detail used for previous seepage areas along this dike. If the flow rate increases or the water coming from the seep is not clear it should be brought to the immediate attention of AEP-Geotechnical Engineering. (See Pictures 14 and 15)
- 15) A second wet area was observed in the same location as previous annual inspections, near the south-west corner of the impoundment. The condition did not appear to worsen since previous annual inspections. The area did not appear to be flowing. The wet area could also be repaired using the same ODNR approved detail used for previous seepage repairs along the dike. If the

flow rate increases or the water coming from the seep is not clear it should be brought to the immediate attention of AEP-Geotechnical Engineering. (See Pictures 18 and 19)

- 16) The seepage located beyond the south toe was observed to be 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. If there is any change in condition it should be brought to the immediate attention of AEP-Geotechnical Engineering. (See Picture 21)

5.3 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

During the routine camera inspection of the outlet piping from the Boiler Slag pond to the Clear Water Pond, performed by the plant in December 2015, an isolated upward bulge in the invert of the pipe was observed. The pipe was previously slip lined with HDPE piping and it is possible that this installation caused the HDPE to deform. Normal flows do not appear to be restricted; however the pipe may be susceptible to blockage. This pipe is within the splitter dike therefore any malfunction will be contained within the outer embankment. A further review should be conducted to evaluate the hydraulic capacity of the pipe and determine if a repair is required.

If you have any questions with regard to this report, please contact Daniel Pizzino at 614-716-1472 (Audinet: 200-1472) or Gary Zych at 614-716-2917 (Audinet: 200-2917).

ATTACHMENT A

Photos

**2016 Annual Dam and Dike Inspection Report
Kyger Creek Plant
Bottom Ash Pond Complex - Photos**



Picture 1 – Boiler Slag Pond, Overall view



Picture 2 – Clear Water Pond, Overall view



Picture 3 – Boiler Slag Pond, abandoned appurtenance at north toe



Picture 4 – Boiler Slag Pond, abandoned appurtenance at north toe



Picture 5 – Boiler Slag Pond, erosion on inboard slope



Picture 6 – Boiler Slag Pond, erosion on inboard slope



Picture 7 – Clear Water Pond, overgrown vegetation on inboard slope



Picture 8 – Clear Water Pond, root intrusion at end of discharge pipe



Picture 9 – Boiler Slag Pond, trees on outboard slope

**2016 Annual Dam and Dike Inspection Report
Kyger Creek Plant
South Fly Ash Pond - Photos**



Picture 10 – South Fly Ash Pond, General View of Outlet structure



Picture 11 – South Fly Ash Pond, excessive vegetation along inboard slope



Picture 12 – South Fly Ash Pond, wave erosion at north dike inboard slope



Picture 13 – South Fly Ash Pond, wave erosion at north dike



Picture 14 – South Fly Ash Pond, west dike wet area along outboard slope



Picture 15 – South Fly Ash Pond, wet area along outboard dike



Picture 16 – South Fly Ash Pond, wave erosion at west dike inboard slope



Picture 17 – South Fly Ash Pond, wave erosion at west dike inboard slope



Picture 18 – South Fly Ash Pond, wet area at south-west dike



Picture 19 – South Fly Ash Pond, wet area at south-west dike



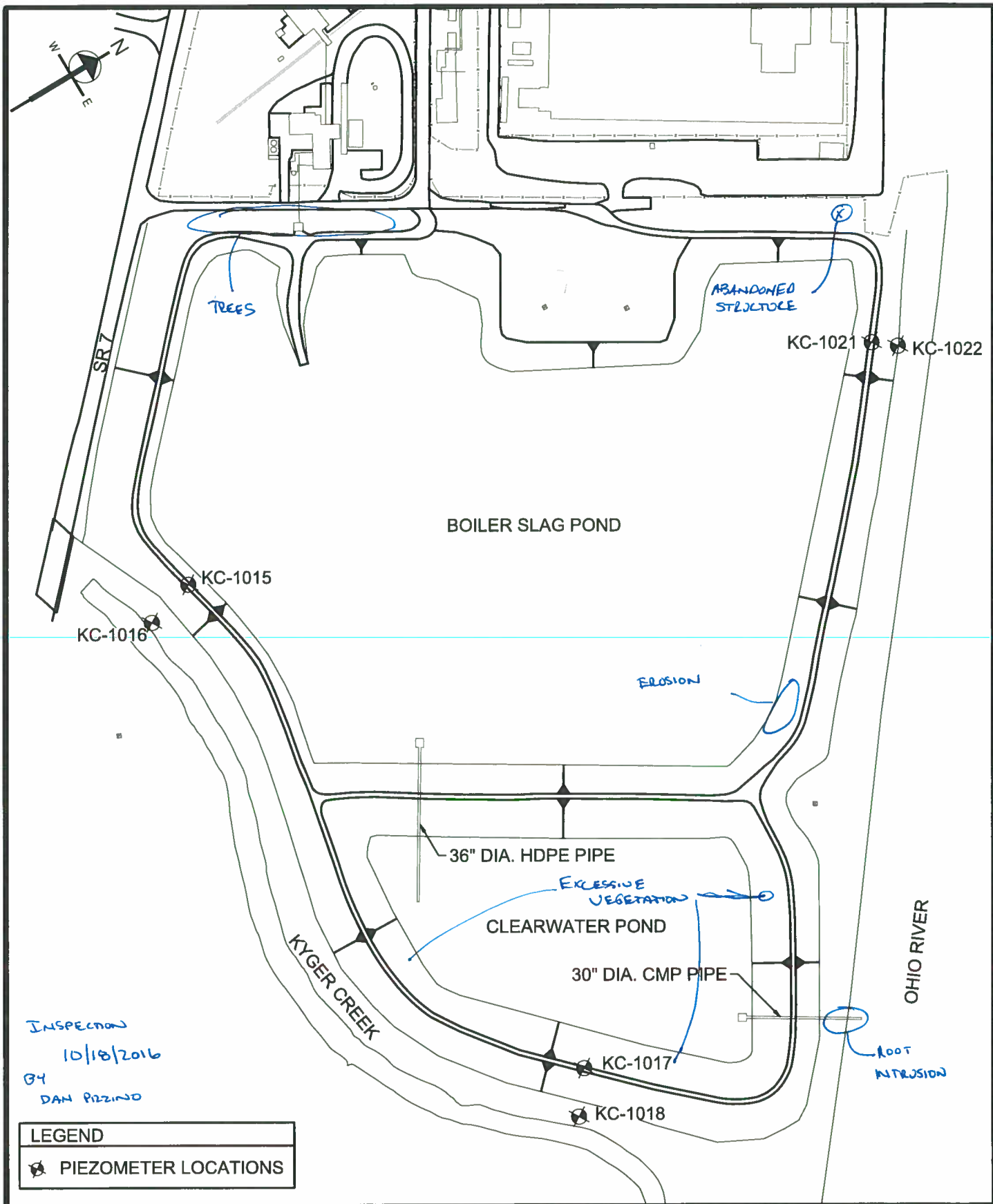
Picture 20 – South Fly Ash Pond, erosion at south dike outboard slope near the sluice line



Picture 21 – South Fly Ash Pond, seepage area beyond south dike.

ATTACHMENT B

Inspection / Instrumentation Location Maps



INSPECTION
10/18/2016
BY
DAN PIZZINO

LEGEND
PIEZOMETER LOCATIONS

DRN BY:	KYGER CREEK POWER STATION	DWG NO: FIGURE 1
DATE:	SHEET 1 OF 1	
SCALE: 1"=250'	BOTTOM ASH POND COMPLEX	

PLOT TIME: 11:47:07 PM
 BY: 2259464
 PLOT DATE: 11/14/2016

INSPECTION
10/18/2016
BY DAN PRZINDO



WIND EROSION
ALONG INBOARD SLOPE

KC-1011 KC-1012

WET AREA

SOUTH FLY ASH POND

WIND EROSION
ALONG INBOARD
SLOPE

KC-1004 KC-1003

30" DIA CMP PIPE

WET AREA

60" DIA CULVERT

EROSION
UNDER
SWICE LINES

KC-1007

KC-1008

SEEPAGE

LEGEND

 PIEZOMETER LOCATIONS

DRN BY:

KYGER CREEK POWER STATION

DWG NO: FIGURE 2

DATE:

SHEET 1 OF 1

SCALE: 1"=300'

SOUTH FLY ASH POND



AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

BY: 2259464

PLOT TIME: 11/11/11 PM

PLOT DATE: 11/14/2016