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

November 13, 2017

Mr. Craig Butler
Director
Ohio Environmental Protection Agency
50 W. 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 Mr. Butler:

As required by 40 CFR 257.106(g), the Ohio Valley Electric Corporation (OVEC) is providing notification to the 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, 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,

Gabriel S. Coriell

Gabriel S. Coriell
Environmental Services Manager

GSC:klr

2017 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

August 16, 2017

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 -17- 025

2017 Annual Dam and Dike Inspection Report

Kyger Creek Plant
Bottom Ash Pond Complex
South Fly Ash Pond
Document Number: GERS-17- 025

PREPARED BY _____ DATE 9/12/2017
J.T. Massey-Norton

REVIEWED BY _____ DATE 9/12/2017
Daniel Pizzino, P.E.

APPROVED BY _____ DATE 9/12/2017
Gary Zych, P.E.
Manager – AEP Geotechnical Engineering

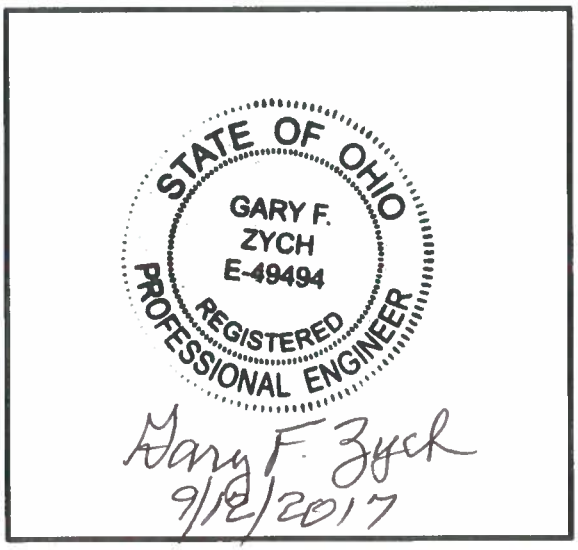


Table of Contents

Attachments

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 August 16th, 2017 by Mr. J.T. Massey-Norton of AEPSC Geotechnical Engineering with Mr. Paul Hutchins and Mr. Kenneth Stapelton of OVEC. Weather conditions were sunny with temperatures in upper-70's F to low-80's 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. The South Fly Ash Pond remains open and active as part of the plants 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, 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.

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.

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 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 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 by 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 picked up and safely carried off by a drain. Seepage that is collected by a drain can still be uncontrolled if it is not safely collected and transported. Seepage that is not clear and is turbid would also be considered as uncontrolled. Seepage that is unable to be measured and/or observe it is considered uncontrolled seepage.

   Note: Wet or soft areas are not considered as uncontrolled seepage, but can lead to this type of deficiency. These areas should be monitored more frequently.

2. Displacement of the Embankment

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

3. Blockage of Control Features

   Blockage of 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))

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 2016 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

INSTRUMENTATION DATA Bottom Ash Pond Complex			
Instrument	**Type**	**Maximum Reading since last annual inspection**	**Date of reading**
KC-1015	Piezometer	547.57	1/31/2017
KC-1016	Piezometer	541.70	1/31/2017
KC-1017	Piezometer	556.69	1/31/2017
KC-1018	Piezometer	542.30	1/31/2017
KC-1021	Piezometer	542.42	1/31/2017
KC-1022	Piezometer	541.54	1/31/2017

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 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.

4.1.5 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 were observed and the water level fluctuation is also responsive to changing Ohio River stages (Attachment 3).

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 2016 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. No seepage was observed along the outboard slopes of the pond's embankments during the inspection.

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.

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 were observed (Attachment 3).

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.

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.

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection.

Bottom Ash Pond Complex

5) The maximum operating pool stage was indicated on the staff gages but would not be readily discernable from a distance. It is recommended that the max operating pool stage be stenciled (or otherwise denoted) on the concrete structure itself so that it is clearly visible from the crest of the embankment. (See Pictures 1 and 2)

6) The plant is actively performing maintenance in mitigating erosion rills along the inboard slopes of the Boiler Slag Pond. The erosion that has occurred is located 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. (See Picture 3)

7) The plant is actively performing maintenance in controlling vegetation along the crest and the embankment slopes. Excessive vegetation was observed in the vicinity of the piezometers located along the toe of the embankments. Select piezometers should also be protected with the installation of bollards to prevent damage from mowing equipment. All piezometers should be labeled on the outside of the protective casing with the piezometer's number and a brass tag affixed with the piezometer number to the inside of the casing. (See Picture 4)

South Fly Ash Pond

8) Excessive vegetation is located along the inboard/outboard slopes at a few small locations where it is in close proximity to the water's shoreline. The vegetation should be periodically mowed to prevent woody vegetation or controlled through the application of a herbicide to allow for adequate inspection of these difficult areas. (See Pictures 5 and 6). Please contact AEP Geotechnical Engineering for additional information in regards to vegetative control.

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

9) 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.

South Fly Ash Pond

10) 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 (See Pictures 7 and 8). 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.

11) 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.

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

ATTACHMENT A

Photos

Photo 1 Typical view of staff gage denoting Max Operating Pool.

Photo 2 – Typical view of decant structure showing good conditions. Paul Hutchins is also depicted and participated in the inspection.

Photo 3 – Typical view of crest and embankment showing good conditions. Ken Stapleton is also depicted and participated in the inspection.

Photo 4 – Typical view of the downstream slope showing the location of the piezometer KC-1022 along the edge of mowed area.

Photo 5 – Typical view of the downstream slope showing at the discharge pipe for the fly ash pond..

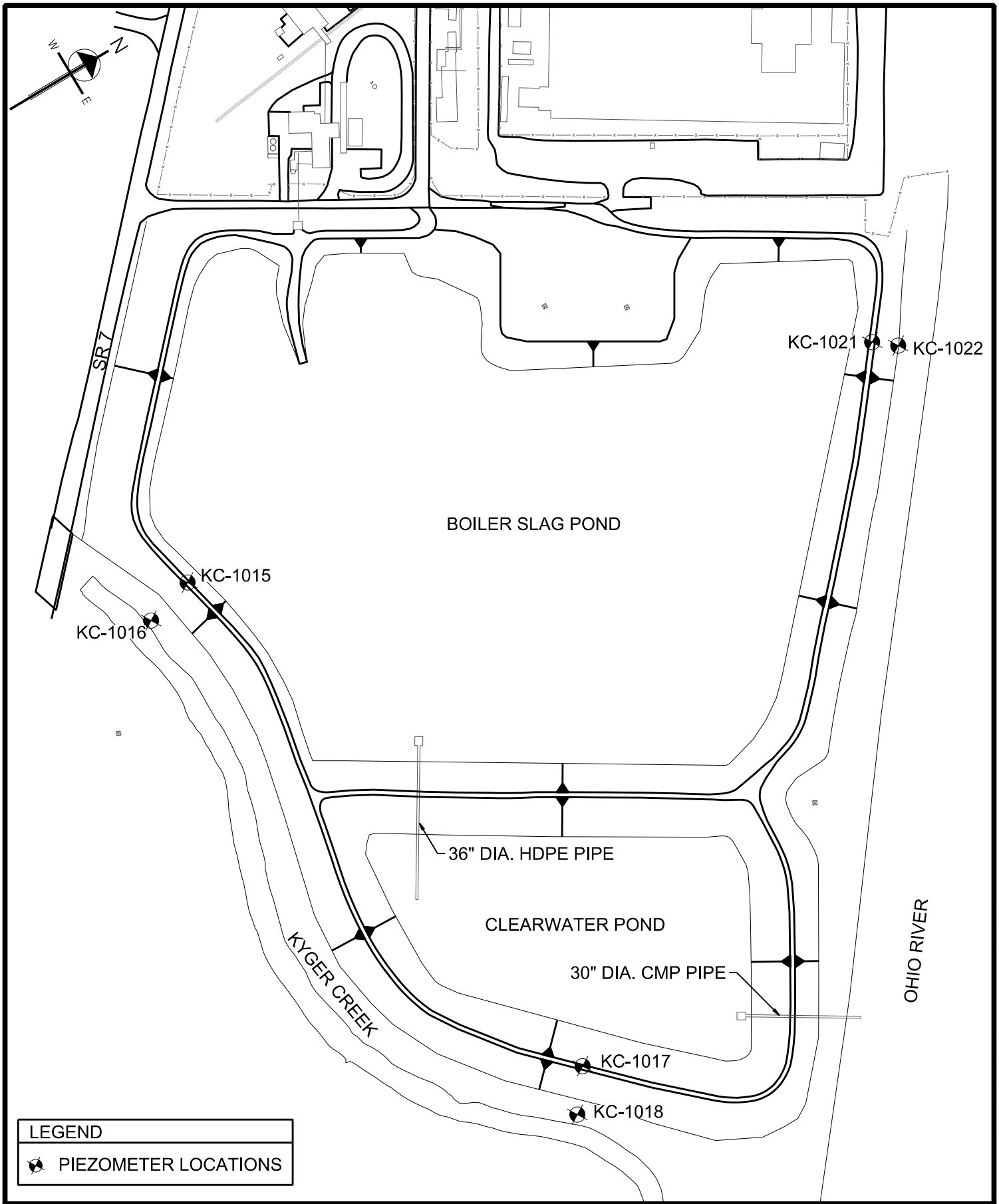
Photo 6 – A small area where excessive vegetation has grown along stairwell access.

Photo 7 – Typical view of the repairs to the seeps along the east embankment.

Photo 8– Typical view of the repairs to the seeps along the west embankment showing excellent conditions.

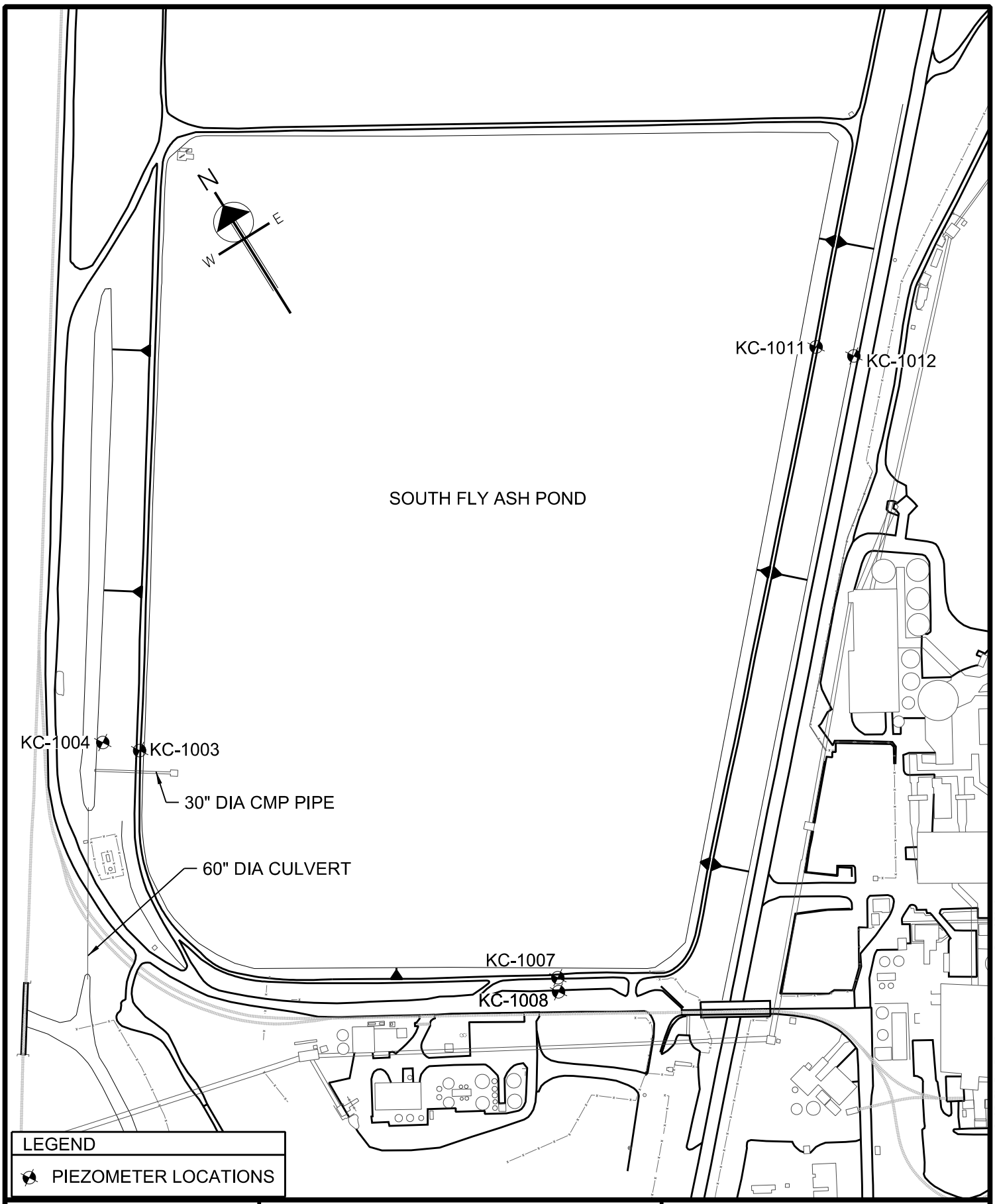
ATTACHMENT B

Site Maps



DRN BY:	KYGER CREEK POWER STATION	DWG NO: FIGURE 1
DATE:	SHEET 1 OF 1	AEP AMERICAN ELECTRIC POWER
SCALE:1"=250'	BOTTOM ASH POND COMPLEX	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

PLOT DATE: 11/14/2016 PLOT TIME: 1:47:07 PM BY: s259464



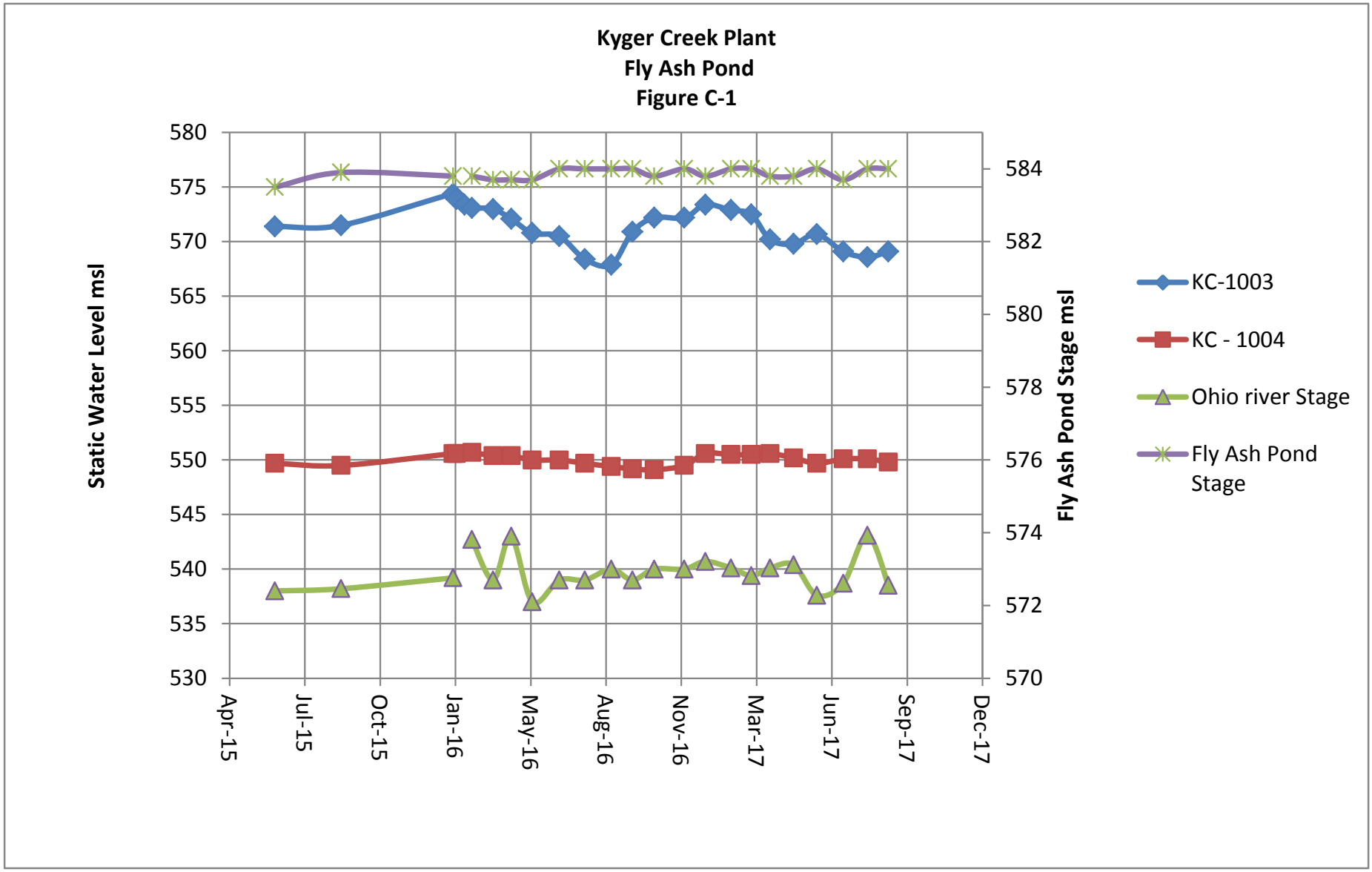
DRN BY:	KYGER CREEK POWER STATION	DWG NO: FIGURE 2
DATE:	SHEET 1 OF 1	AEP AMERICAN ELECTRIC POWER
SCALE:1"=300'	SOUTH FLY ASH POND	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

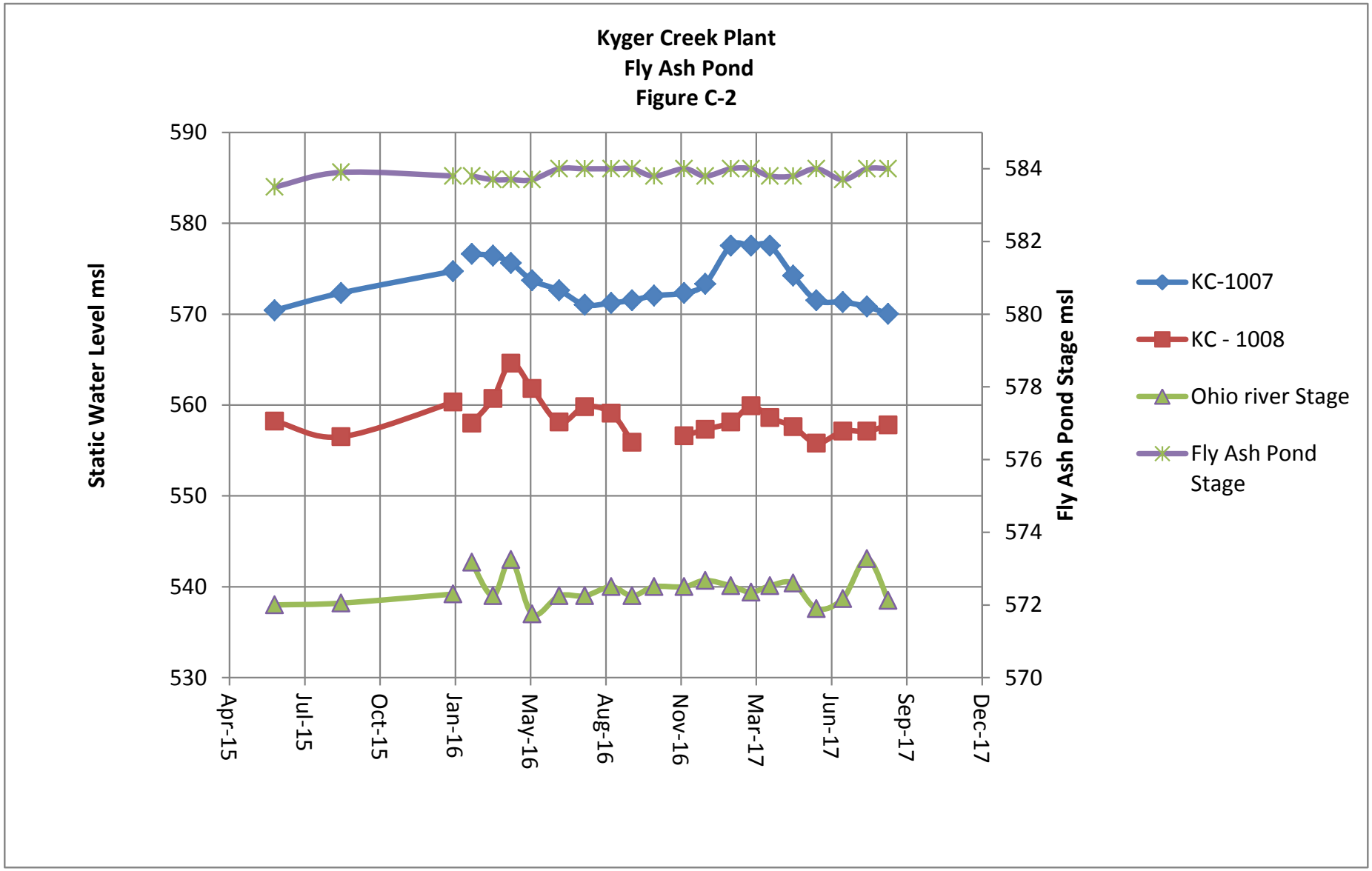
PLOT DATE: 11/14/2016 PLOT TIME: 1:51:11 PM BY: s259464

ATTACHMENT C

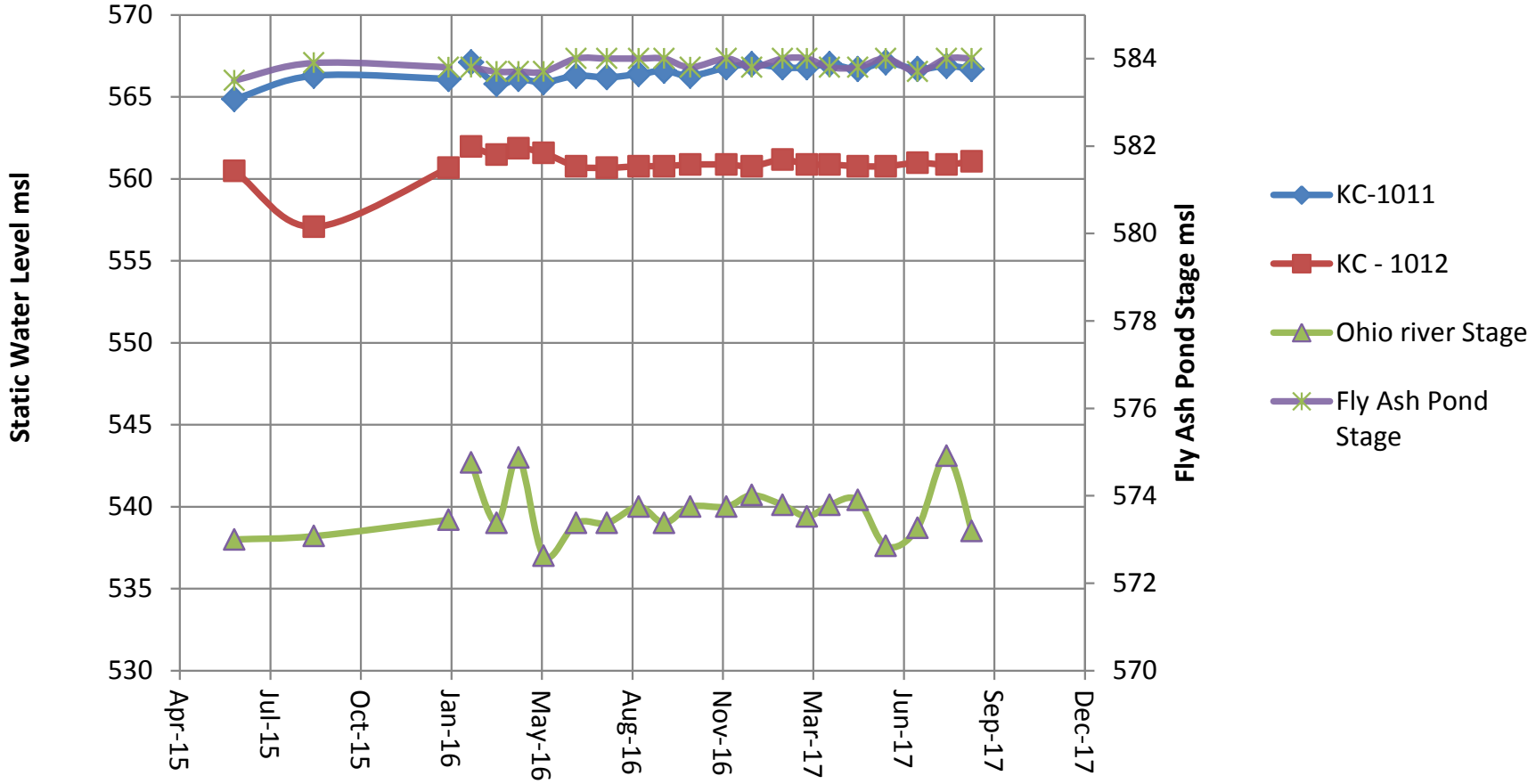
Pond Stage Hydrographs and Piezometer Hydrographs

Kyger Creek Plant
Fly Ash Pond
Figure C-1

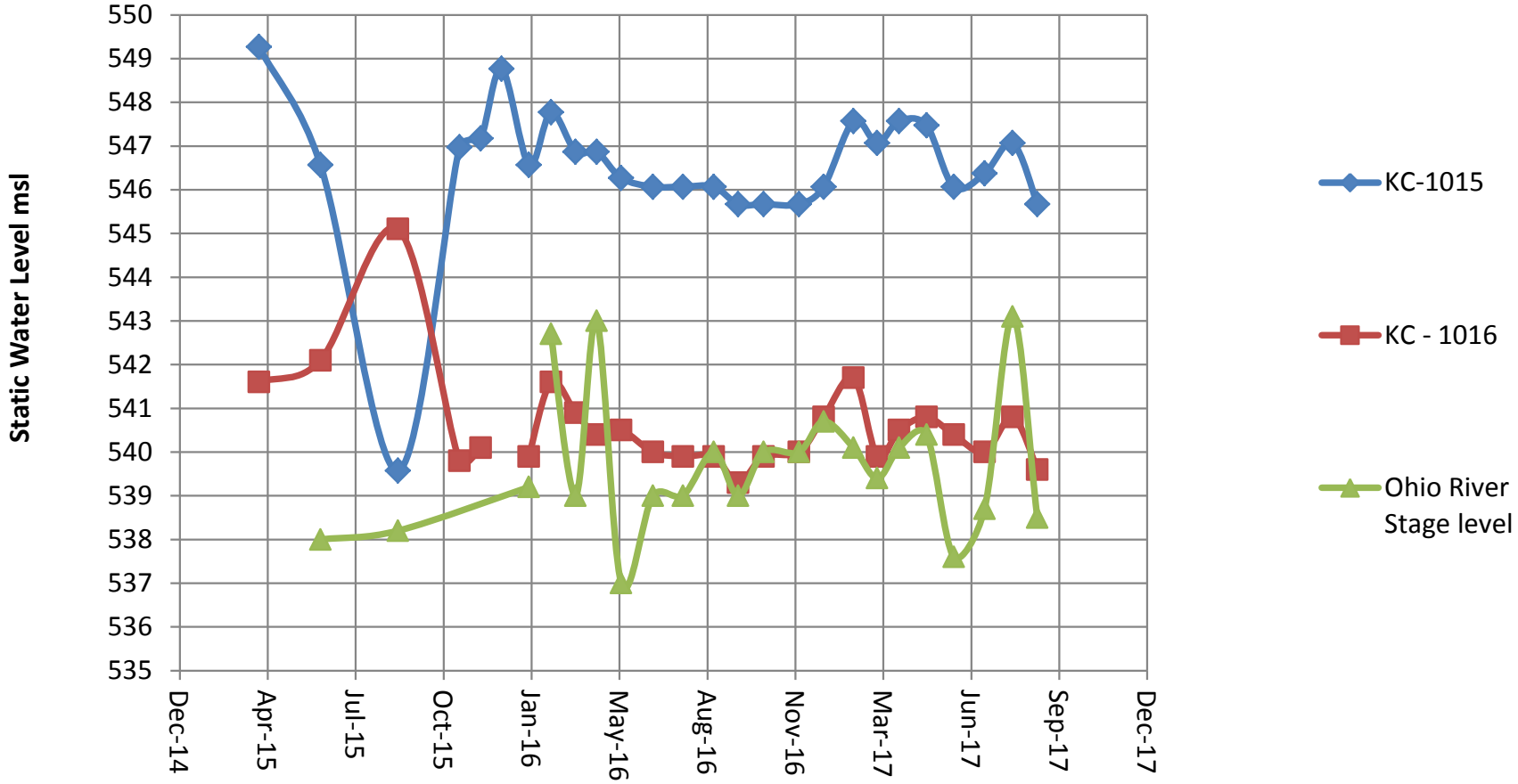



Kyger Creek Plant
Fly Ash Pond
Figure C-2
Static Water Level msl
Fly Ash Pond Stage msl
590
580
570
560
550
540
530
584
582
580
578
576
574
572
570
Apr-15
Jul-15
Oct-15
Jan-16
May-16
Aug-16
Nov-16
Mar-17
Jun-17
Sep-17
Dec-17
KC-1007
KC - 1008
Ohio river Stage
Fly Ash Pond Stage

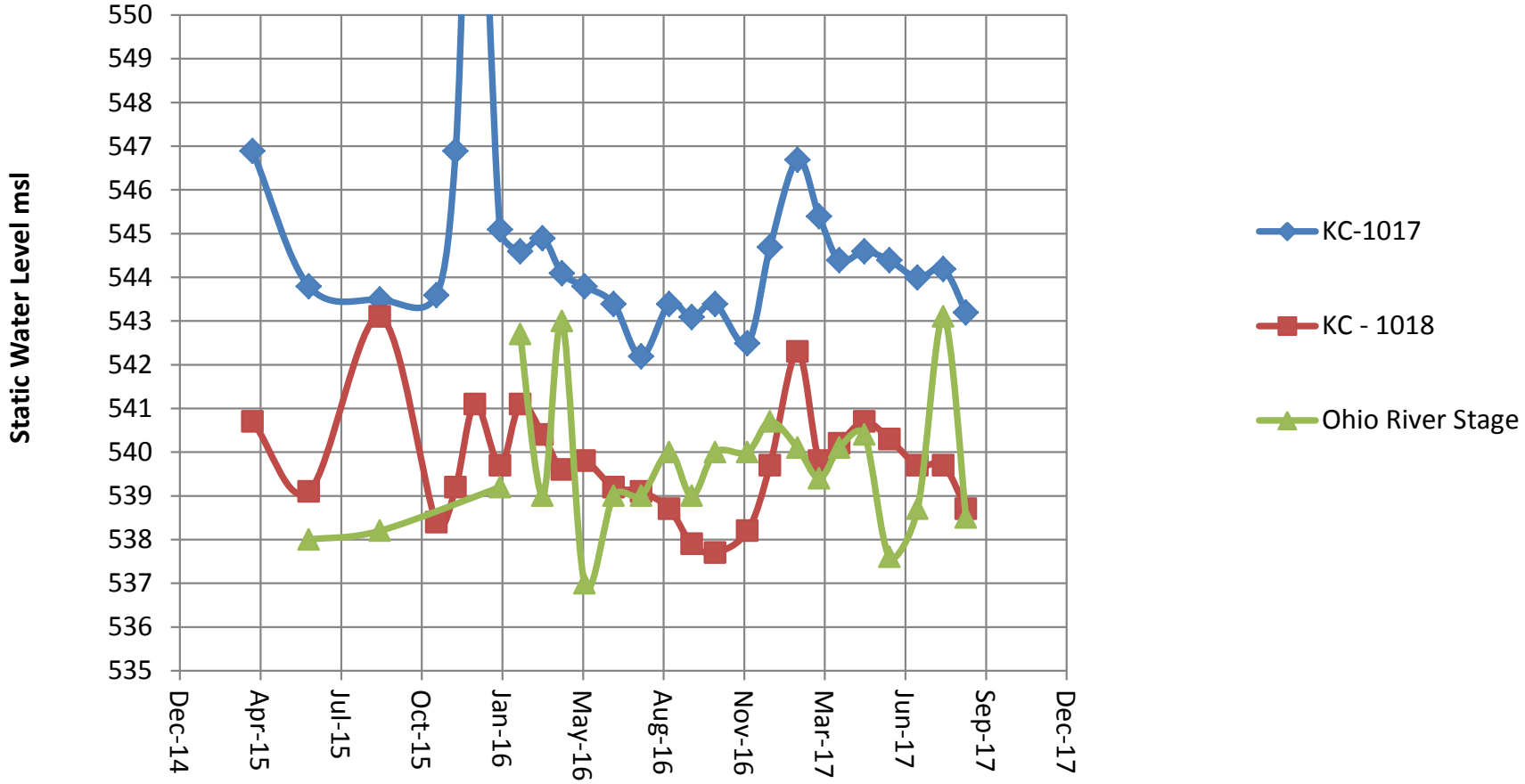
Kyger Creek Plant
Fly Ash Pond
Figure C-3



Kyger Creek Plant
Bottom Ash Pond
Figure C-4



Kyger Creek Plant
Bottom Ash Pond
Figure C-5



Kyger Creek Plant
Bottom Ash Pond
Figure C-5