



Submitted to
Southern Indiana
Gas & Electric Company
dba Vectren Power
Supply, Inc. (SIGECO)
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Submitted by
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July 19, 2018

CCR Annual Inspection

§257.83 (b)

for the

West Ash Pond

at the

F. B. Culley Generating Station

Revision 0

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Executive Summary

This Coal Combustion Residuals (CCR) Annual Inspection for the West Ash Pond at the Southern Indiana Gas & Electric Company dba Vectren Power Supply, Inc., F. B. Culley Generating Station has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 CFR §257.83(b) which establishes the requirements for the annual inspections and 40 CFR 257.100(e) which extended the due date for completing the initial annual inspection for *inactive* CCR surface impoundments to July 19, 2017. Pursuant to that requirement, the initial annual inspection was completed and placed in the facility operating record on July 19, 2017. These regulations require that subsequent to the initial inspection, the owner or operator of the CCR unit must conduct the inspection on an annual basis, with the date of completing the initial inspection being the basis for establishing the deadline to complete subsequent annual inspections. Consequently, this annual inspection must be completed and placed in the facility's operating record on or before July 19, 2018.

This Inspection for the West Ash Pond meets the regulatory requirements as summarized in **Table ES-1**.

Table ES-1 – Summary				
Report Section	CCR Rule Reference	Requirement Summary	Requirement Met?	Comments
2.1	§257.83 (b)(1)	<i>Annual Inspection</i>	Yes	The CCR Unit has met the annual inspection requirements
2.2	§257.83 (b)(2)	<i>Inspection Report</i>	Yes	The CCR Unit has met the inspection report requirements
2.3	§257.83 (b)(4)	<i>Frequency of Inspections</i>	Yes	The CCR Unit has met the required frequency of inspections
2.4	§257.83 (b)(5)	<i>Deficiency Identified</i>	Yes	Remedial actions and measures have been identified for all noted deficiencies

The Culley West Ash Pond is currently an inactive surface impoundment. All inspection requirements were evaluated during the visual inspection on June 12, 2018 and the surface impoundment was found to meet all requirements as required within each individual assessment in §257.83(b).

1 Introduction

1.1 Purpose of this Report

The purpose of the Annual Inspection presented in this report is to document that the requirements specified in 40 Code of Federal Regulations (CFR) §257.83(b) have been met to support the requirement under each of the applicable regulatory provisions for the F. B. Culley Generating Station West Ash Pond (Culley West Ash Pond). The Culley West Ash Pond is an inactive coal combustion residual (CCR) surface impoundment as defined by 40 CFR §257.53. Due to the partial vacatur of the CCR rule with regards to inactive surface impoundments, the EPA extended compliance deadlines for inactive CCR impoundments by means of issuing a direct final action which included 40 CFR 257.100(e) *Timeframes for Certain Inactive CCR Surface Impoundments*. In accordance with this action, the due date for completing the initial annual inspection for inactive CCR surface impoundments was extended to July 19, 2017. Pursuant to that requirement, the initial annual inspection was completed and placed in the facility operating record on July 19, 2017.

These regulations require that subsequent to the initial inspection, the owner or operator of the CCR unit must conduct the inspection on an annual basis, with the date of completing the initial inspection being the basis for establishing the deadline to complete subsequent annual inspections. Consequently, this annual inspection must be completed and placed in the facility's operating record on or before July 19, 2018.

The following table summarizes the documentation required within the CCR Rule and the sections that specifically respond to those requirements of this assessment.

Table 1-1 – CCR Rule Cross Reference Table

Report Section	Title	CCR Rule Reference
2.1	Annual Inspection	§257.83 (b)(1)
2.2	Inspection Report	§257.83 (b)(2)
2.3	Frequency of Inspections	§257.83 (b)(4)
2.4	Deficiency Identified	§257.83 (b)(5)

1.2 Brief Description of Impoundment

The Culley station is located in Warrick County, Indiana, southeast of Newburgh, Indiana, and is owned and operated by Southern Indiana Gas and Electric Company, dba Vectren Power Supply Inc. (SIGECO). The Culley station is located along the north bank of the Ohio River and the west bank of the Little Pigeon Creek along the southeast portion of the site. Culley has two CCR surface impoundments, identified as the West Ash Pond and the East Ash Pond. Only the East Ash Pond is actively receiving CCR materials. The West Pond ceased receiving CCR materials and became inactive by October 19, 2015. The West Ash Pond is located directly west of the station.

The 32-acre West Pond is located west of the coal storage pile. Original design plans indicate that this pond was constructed in the 1950s by placing fill along the south side (i.e., adjacent to the Ohio River), east and west sides, and tying into high natural ground at the north side. Bottom elevation of the pond was set at an approximate elevation of 365' but followed the natural topography and increased in elevation as the pond extended to the north. Little Pigeon Creek was originally routed through the footprint of the West Ash Pond but was re-routed east of the generating station at the time of the original construction in the 1950s. As such, the east and west embankments of the West Pond extend to the bottom of the creek bed which is at approximate elevation of 340'. The top of the embankment was constructed to an approximate elevation of 394' with a small portion in the northeast corner increasing to elevation 402'. Interior side slopes of the pond vary, but original design documents indicate that the slopes were 2H:1V along the south embankment and 2.5H:1V on the east and west embankments. The base of the pond was shown to be native soils on the original construction drawings.

Current conditions of the West Pond indicate the south embankment is approximately 950' long. The embankment crest is roughly 40 feet wide with an elevation of 394', and is covered with crushed stone that forms the existing access road. The exterior slope is mostly covered with riprap with brush and trees present beyond the toe of the existing slope. Based upon topographic mapping provided, the exterior slope of the embankment varies from approximately 2.5H:1V to approximately 1.9H:1V. The normal pool elevation in the West Ash Pond was previously maintained at an operating level of 390' by a pumping station. However, Vectren began dewatering measures and has maintained the water level at approximately 370' since the Fall of 2017 by using a localized sump and floating pump located to the north of the existing pumping station. It is Vectren's stated intent that they plan on maintaining this lower water level until closure construction has been initiated. Currently, the pumping system discharges water from the impoundment to the East Ash Pond then to a permitted National Pollutant Discharge Elimination System (NPDES) outfall.

A site Location Map showing the area surrounding the station is included as **Figure 1 of Appendix A**. **Figure 2 in Appendix A** presents the Culley Site Map.

2 Annual Inspection Description

Regulatory Citation: 40 CFR §257.83 Inspection requirements for CCR surface impoundments

The Annual Inspection for the West Ash Pond is described in this section. Information about operational and maintenance procedures was provided by Culley plant personnel. The Culley station follows an established inspection and maintenance program that quickly identifies and resolves issues of concern.

2.1 Annual Inspection

Regulatory Citation: 40 CFR §257.83 (b) Annual inspections by a qualified professional engineer;

- (1) *If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment is subject to the periodic structural stability assessment requirements under §257.73 (d) or §257.74 (d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.*

The West Ash Pond is subject to the periodic structural stability assessment requirements as mentioned. Thus, the following items were performed to comply with the CCR Rule.

2.1.1 Review of Available Information

Regulatory Citation: 40 CFR §257.83 (b)(1);

- (i) *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §257.73 (c)(1) and §257.74 (c)(1), previous periodic structural stability assessments required under §257.73 (d) and §257.74 (d), the results of inspections by a qualified person, and results of previous annual inspections).*

The available information was reviewed for the West Ash Pond, including the weekly inspections by plant personnel and the previous CCR Rule initial inspection performed by AECOM on June 20, 2017.

2.1.2 Visual Inspection

Regulatory Citation: 40 CFR §257.83 (b)(1);

- (ii) *A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures.*

The West Ash Pond was visually inspected by AECOM on June 12, 2018. No major signs of distress or malfunction of the CCR unit and appurtenant structures were identified. A few minor maintenance issues are listed under Section 2.4.2.

Regulatory Citation: 40 CFR §257.83 (b)(1);

- *(iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.*

There are no hydraulic structures underlying the base or passing through the dike of the CCR unit of the West Ash Pond. There is an existing pump station located near the center of the embankment. The outlet pipes from the pump station are buried a few feet under the existing gravel road. The pipes run along the interior top of slope of the embankment from the pump station to the east end of the embankment then continue and discharge into the East Ash Pond. There was no seepage observed on the interior slope of the embankment along the pipe route. No signs of structural deficiencies were identified during the visual inspection conducted on June 12, 2018.

2.2 Content of the Inspection Report

Regulatory Citation: 40 CFR §257.83 (b)(2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:

- *(i) Any changes in geometry of the impounding structure since the previous annual inspection.*

The geometry of the impounding structure has not changed since the previous initial inspection.

- *(ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection.*

There is no automated instrumentation at this impoundment. Readings were observed by staff taking measurements at the pump station from a known elevation within the surface impoundment.

- *(iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection.*

The required information is presented in Table 2-1 below. The minimum and maximum water depths were estimated by Culley plant personnel based on surveying the bottom of the floating pump platform located in the localized sump to the north of the existing pumping station. The depth was calculated by subtracting elevation of the base of the impoundment (obtained from the original bathymetric survey) from the water surface elevation.

	Minimum		Maximum		Present	
	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)
Impounded Water	2	368	4	370	4	370

CCR depths range from 0 feet to approximately 40 feet. The minimum CCR depth occurs along the perimeter of the impoundment. The maximum CCR depth occurs at the southwest corner of the northeast quadrant within the impoundment.

- *(iv) The storage capacity of the impounding structure at the time of the inspection.*

The storage capacity of the impounding structure is approximately 1,263,000 CY.

- (v) *The approximate volume of the impounded water and CCR at the time of the inspection.*

The approximate volume of impounded water and CCR material for the West Ash Pond are 35,500 CY and 1,008,000 CY respectively (these volumes are based on aerial photogrammetry conducted in 2016 and a base of ash surface elevation of 363-feet.)

- (vi) *Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.*

The visual inspection performed on June 12, 2018 did not reveal any actual or potential structural weaknesses. However, a few minor maintenance issues are listed under Section 2.4.2.

- (vii) *Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.*

There were no changes which might have affected the stability or operation of the impounding structure since the previous inspection.

2.3 Frequency of Inspections

Regulatory Citation: 40 CFR §257.83 (b)(4);

- (i) *Except as provided for in paragraph (b)(4)(ii) of this section, the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by §257.105 (g)(6).*

This annual inspection report will be placed in the facility's operating record on July 19, 2018.

- (ii) *In any calendar year in which both the periodic inspection by a qualified professional engineer and the quinquennial (occurring every five years) structural stability assessment by a qualified professional engineer required by §257.73 (d) and §257.74 (d) are required to be completed, the annual inspection is not required, provided the structural stability assessment is completed during the calendar year. If the annual inspection is not conducted in a year as provided by this paragraph (b)(4)(ii), the deadline for completing the next annual inspection is one year from the date of completing the quinquennial structural stability assessment.*

The quinquennial structural stability assessment was not completed this year. Thus, this annual inspection report is being submitted as stipulated in §257.83 (b)(4)(i).

2.4 Deficiency Identified

Regulatory Citation: 40 CFR §257.83 (b)(5);

- *If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.*

Areas of concern from previous inspections were reviewed and described below in section 2.4.1. Areas of concern from this year’s inspection are described in section 2.4.2.

2.4.1 Previous Inspection

Three areas of concern were noted during the initial inspection performed on June 20, 2017. Corrective measures were completed to meet the requirements of §257.83 (b)(5) for each deficiency or observation identified as shown in the table below.

Table 2-2 – Areas of Concern (Previous Inspection: June 20, 2017)	
Deficiency/Observation	Corrective Measure Used
Interior Slope – Near vertical side slopes are present where ash is collapsing into basin adjacent to access road.	Riprap cover was installed and ash no longer appears to be collapsing into the basin adjacent to the access road.
Exterior Slope – A few small trees/bushes and brush have grown on the embankment slope.	Herbicide spray and continued monitoring.
Toe of Embankment Slope – There are several large trees and overgrown brush at the toe of slope.	Continued monitoring. The vegetation height requirement was remanded by the U.S. Court of Appeals on June 14, 2016. The downstream slope will be addressed once the replacement rule is issued by EPA and revised requirements are established. Vectren performed an analysis to determine the best management practice in regards to the referenced vegetation. The majority of the trees on the downstream slope of the embankment are at the toe and no seepage was observed in this area. No visual evidence was observed of stability concerns (i.e., sloughing, depressions, erosion, etc.) Based on these observations and the size and extent of the trees, AECOM believes removing these trees at this time would result in significant disturbance to the unit, which could destabilize the embankment and could promote excessive erosion during high rainfall events. It is our opinion that the trees are currently necessary for stabilization of the embankment and are better left in place.

2.4.2 Current Inspection

A few areas of concern were noted during the annual inspection performed on June 12, 2018. Corrective measures have been proposed to meet the requirements of §257.83 (b)(5) for each deficiency or observation identified as shown in the table below.

Table 2-3 – Areas of Concern (Current Inspection: June 12, 2018)

Deficiency/Observation	Proposed Corrective Measure
Exterior Slope – A few small trees/bushes and brush have grown on the embankment slope.	Continue monitoring. Cut small trees/bushes to a level flush with the ground surface (so as to not disturb the subsurface) and spray remaining vegetation.
Exterior Slope – Concrete stairs leading to the Ohio River are dilapidated. Unstable terrain underlies collapsing stairs.	Damaged stairs to be removed and unstable areas regraded as necessary.
<p>Toe of Embankment Slope – There are several large trees and overgrown brush at the toe of slope.</p> <p>As stated previously in Table 2-2, the majority of the trees on the downstream slope of the embankment are at the toe and no seepage was observed in this area. No visual evidence was observed of stability concerns (i.e., sloughing, depressions, erosion, etc.)</p>	<p>Continue monitoring. Based on these observations and the size and extent of the trees, AECOM believes removing these trees at this time would result in significant disturbance to the unit, which could destabilize the embankment and could promote excessive erosion during high rainfall events. It is our opinion that the trees are currently necessary for stabilization of the embankment and are better left in place.</p> <p>Monitor brush and spray/remove if it continues to encroach onto embankment slope.</p>

3 Certification

This Certification Statement documents that the annual inspection has been completed for the West Ash Pond at the F. B. Culley Generating Station and this inspection report meets the requirements specified in 40 CFR §257.83 (b). The West Ash Pond is an inactive CCR surface impoundment as defined by 40 CFR §257.53.

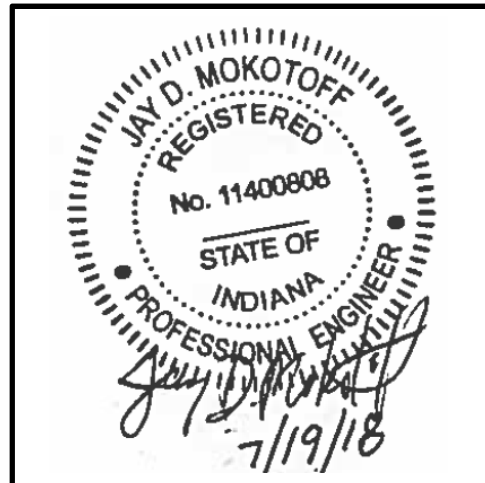
In accordance with the CCR rule, the deadline for completing the annual inspection for the inactive CCR surface impoundment and placing the report in the operating record is one year from the previous inspection report completion date of July 19, 2017.

CCR Unit: Southern Indiana Gas & Electric Company; F. B. Culley Generating Station; West Ash Pond

I, Jay Mokotoff, being a Registered Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that this annual inspection report dated July 19, 2018 meets the requirements of 40 CFR §257.83 (b).

Jay D. Mokotoff
Printed Name

7/19/2018
Date



4 Limitations

Background information, design basis, and other data which AECOM has used in preparation of this report have been furnished to AECOM by SIGECO. AECOM has relied on this information as furnished, and is not responsible for the accuracy of this information. Our recommendations are based on available information from previous and current investigations. These recommendations may be updated as future investigations are performed.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The recommendations presented in this report should not be used for other projects or purposes. Conclusions or recommendations made from these data by others are their responsibility. The conclusions and recommendations are based on AECOM's understanding of current plant operations, maintenance, stormwater handling, and ash handling procedures at the station, as provided by SIGECO. Changes in any of these operations or procedures may invalidate the findings in this report until AECOM has had the opportunity to review the findings, and revise the report if necessary.

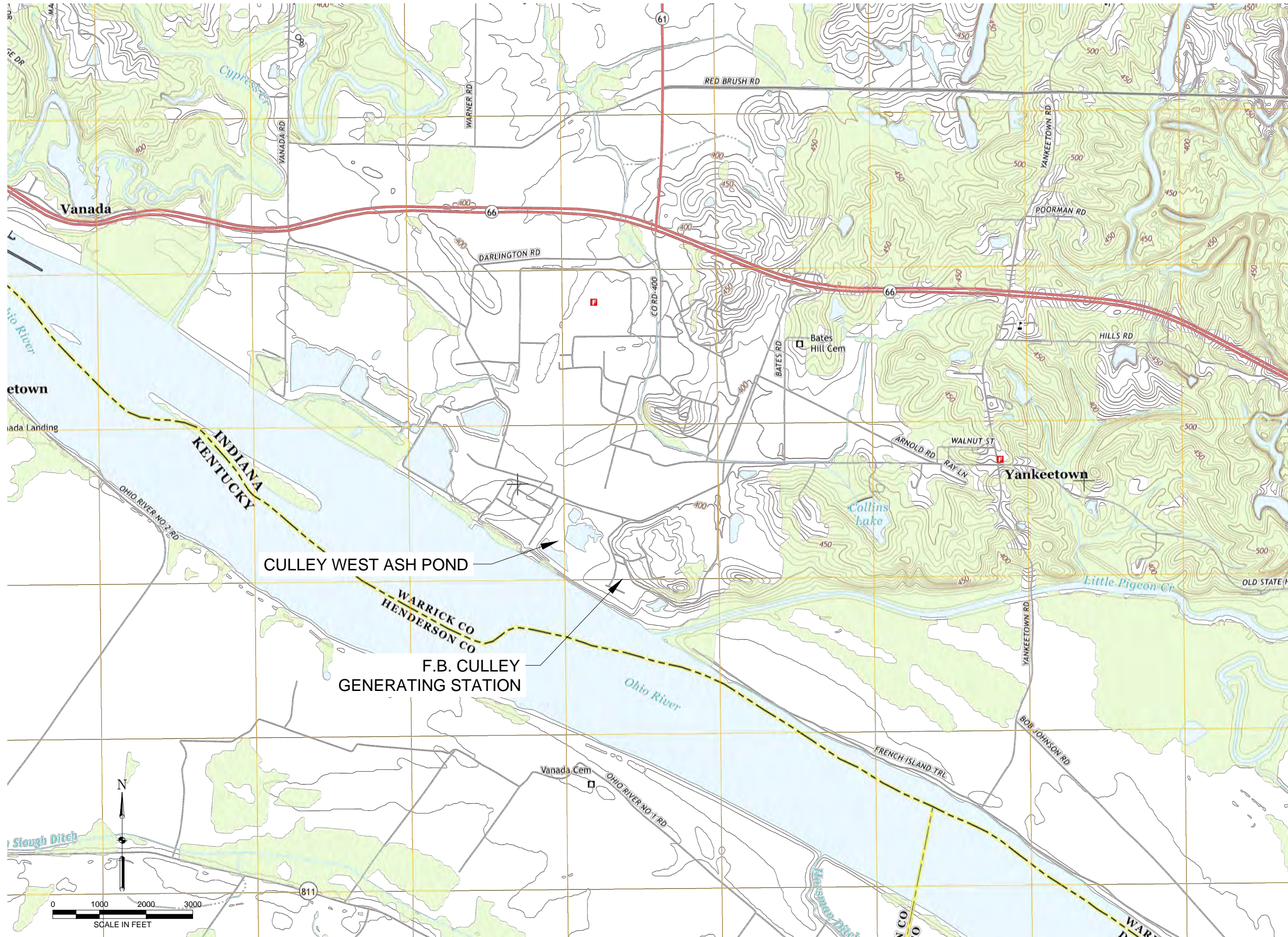
This development of the Annual Inspection was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

Appendix A Figures

Figure 1 – Location Map

Figure 2 – Site Map

Figure 3 – Inspection Site Plan



9400 Amberglenn Boulevard
Austin, TX 78729-1100
512-454-4797 (phone)
512-454-8807 (fax)

**SOUTHERN INDIANA
GAS AND ELECTRIC
COMPANY**
dba VECTREN POWER
SUPPLY, INC.

One Vectren Square
Evansville, IN 47708
1-800-227-1376 (phone)

**F.B. CULLEY
GENERATING STATION
NEWBURGH, IN**

**CCR ANNUAL
INSPECTION
WEST ASH POND**

**ISSUED FOR
CERTIFICATION**

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

NO.	DESCRIPTION	DATE
△		
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AECOM PROJECT NO:	60442676
DRAWN BY:	AG
DESIGNED BY:	AG
CHECKED BY:	JDM
DATE CREATED:	06/21/2018
PLOT DATE:	06/21/2018
SCALE:	1" = 1000'
ACAD VER:	2014

SHEET TITLE

LOCATION MAP

FIGURE 1



9400 Amberglenn Boulevard
Austin, TX 78729-1100
512-454-4797 (phone)
512-454-8807 (fax)

**SOUTHERN INDIANA
GAS AND ELECTRIC
COMPANY**
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**F.B. CULLEY
GENERATING STATION
NEWBURGH, IN**

**CCR ANNUAL
INSPECTION
WEST ASH POND**

**ISSUED FOR
CERTIFICATION**

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

NO.	DESCRIPTION	DATE
△		
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AECOM PROJECT NO:	60442676
DRAWN BY:	AG
DESIGNED BY:	AG
CHECKED BY:	JDM
DATE CREATED:	06/21/2018
PLOT DATE:	06/21/2017
SCALE:	1" = 200'
ACAD VER:	2014

SHEET TITLE

SITE MAP

FIGURE 2

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

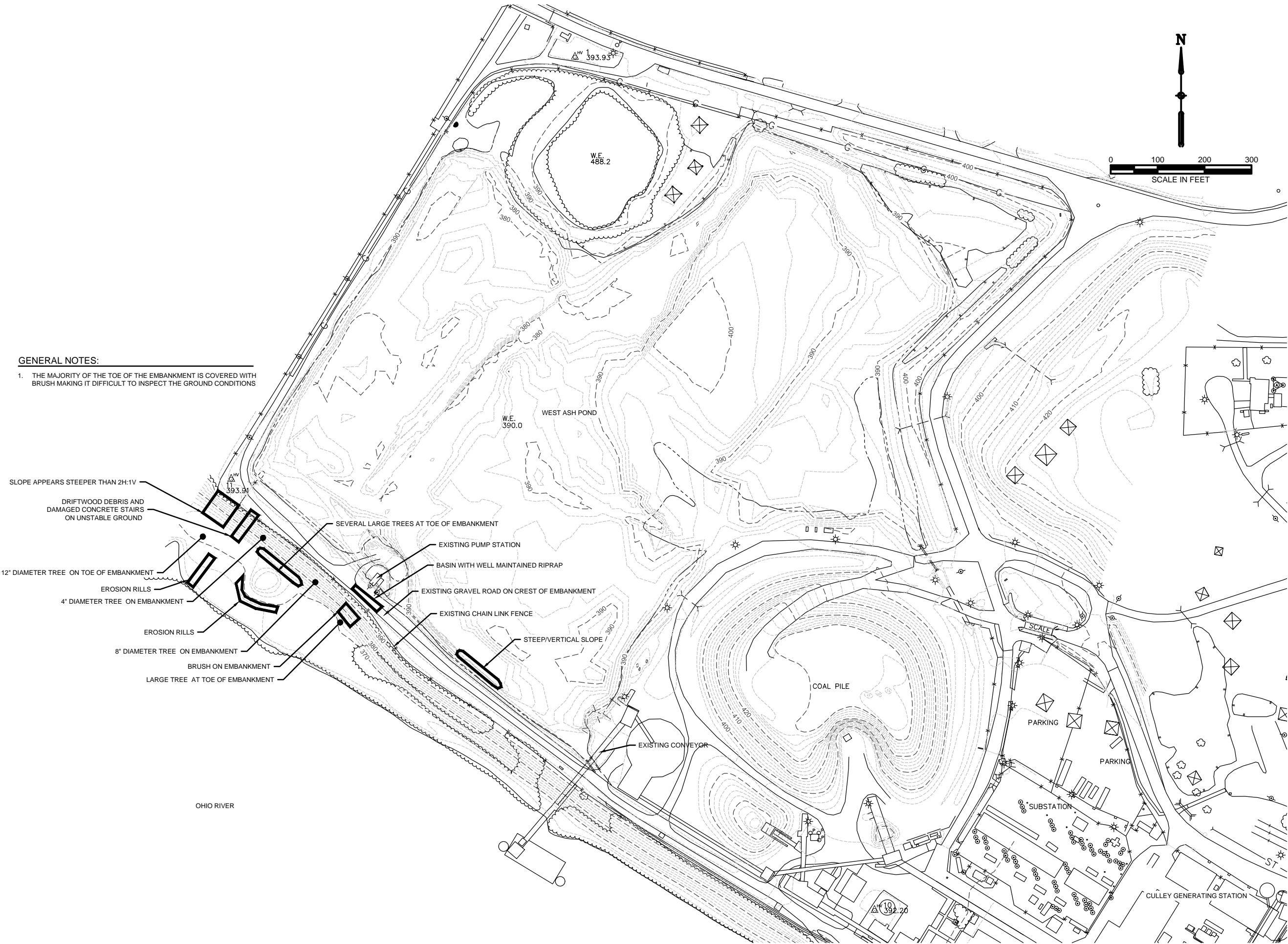
NO.	DESCRIPTION	DATE

AECOM PROJECT NO:	60442676
DRAWN BY:	AG
DESIGNED BY:	AG
CHECKED BY:	JM
DATE CREATED:	06/21/2018
PLOT DATE:	06/21/2018
SCALE:	1" = 100'
ACAD VER:	2014

SHEET TITLE

INSPECTION SITE PLAN

FIGURE 3



GENERAL NOTES:

1. THE MAJORITY OF THE TOE OF THE EMBANKMENT IS COVERED WITH BRUSH MAKING IT DIFFICULT TO INSPECT THE GROUND CONDITIONS

- SLOPE APPEARS STEEPER THAN 2H:1V
- DRIFTWOOD DEBRIS AND DAMAGED CONCRETE STAIRS ON UNSTABLE GROUND
- 12" DIAMETER TREE ON TOE OF EMBANKMENT
- EROSION RILLS
- 4" DIAMETER TREE ON EMBANKMENT
- EROSION RILLS
- 8" DIAMETER TREE ON EMBANKMENT
- BRUSH ON EMBANKMENT
- LARGE TREE AT TOE OF EMBANKMENT

- SEVERAL LARGE TREES AT TOE OF EMBANKMENT
- EXISTING PUMP STATION
- BASIN WITH WELL MAINTAINED RIPRAP
- EXISTING GRAVEL ROAD ON CREST OF EMBANKMENT
- EXISTING CHAIN LINK FENCE
- STEEP/VERTICAL SLOPE
- EXISTING CONVEYOR

OHIO RIVER

COAL PILE

PARKING

PARKING

SUBSTATION

CULLEY GENERATING STATION

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About AECOM

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