



Submitted to
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Gas & Electric Company
dba Vectren Power
Supply, Inc. (SIGECO)
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Evansville, IN 47708

Submitted by
AECOM
9400 Amberglen Boulevard
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January 11, 2019

CCR Annual Inspection

§257.83 (b)

for the

East 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 East 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 Code of Federal Regulations §257.83 (b). These regulations require that the specified documentation and assessments for an existing CCR surface impoundment be prepared within one year of the placement of the previous inspection report in the facility's operating record. The previous inspection report was placed in the facility's operating record on January 11, 2018; accordingly, the deadline for completing this inspection report is January 11, 2019.

This Inspection for the East 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 East Ash Pond is currently an active surface impoundment. All inspection requirements were evaluated 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 (Culley) East Ash Pond. The Culley East Ash Pond is an existing coal combustion residual (CCR) surface impoundment as defined by 40 CFR §257.53. As previously noted, the CCR Rule requires that the specified documentation and assessments for an existing CCR surface impoundment be prepared within one year of the placement of the previous inspection report in the facility's operating record. The previous inspection report was placed in the facility's operating record on January 11, 2018; accordingly, the deadline for completing this inspection report is January 11, 2019.

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 East Ash Pond is located directly east of the station and is approximately 10 acres in size.

The East Ash Pond was commissioned in or around 1971. Earthen embankments were constructed along the south and east sides of the impoundment. Structural fill used for the original construction of the Culley station in the 1950s borders the impoundment to the west side, and west end of the north side. The east embankment intersects a natural hillside on the east end of the north side of the impoundment. The embankment is approximately 1,200 feet long, 30 feet high, and has 2.4 to 1 (horizontal to vertical) exterior side slopes covered with trees and other undergrowth vegetation. Interior side slopes varied from 2.5 to 1 (horizontal to vertical) to 2 to 1 (horizontal to vertical) for the upper and lower portion of the embankment, respectively. The embankment

crest elevation varies from 392.67 feet¹ to 396.42 feet and has a crest width of approximately 15 feet. The surface area of the impoundment is approximately 9.8 acres. Within the pond, there are two small pools. One is being utilized as a settling basin for the water from the physical-chemical treatment system. The ponding water has a surface area of approximately 7 acres and has a normal operating level of 386.4 feet as of 12/6/2018.

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.

¹ Unless otherwise noted, all elevations in this report are in the NAVD88 datum.

2 Annual Inspection Description

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

The Annual Inspection for the East 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 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 East 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 East Ash Pond, including the weekly inspections by plant personnel and the previous CCR Rule annual inspection performed by AECOM on November 29, 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 East Ash Pond was visually inspected by AECOM on December 6, 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 active hydraulic structures underlying the base or passing through the dike of the CCR unit of the East Ash Pond. A riser spillway was present in the southeast portion of the East Ash Pond which had discharged to Little Pigeon Creek but was previously plugged with concrete and abandoned. There was no seepage observed on the outer slope of the embankment in the area opposite the previous spillway. Therefore, no signs of structural deficiencies were identified during the visual inspection on December 6, 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.*

No changes in the geometry of the impounding structure were observed since the previous annual inspection.

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

Plant personnel obtain water surface elevation data for the Ash Pond using an ultrasonic level indicator. Maximum recorded readings are provided in Table 2-1 below.

- *(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 calculated based on the yearly minimum and maximum water elevation readings provided by Culley plant personnel. The depth was calculated by subtracting the elevation of the base of the impoundment (Elev. 376 obtained from the original bathymetric survey) from the water surface elevation.

Table 2-1 – Depth and Elevation of Impounded Water

	Minimum		Maximum		Present	
	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)
Impounded Water	9.67	385.67	11.23	387.23	10.37	386.37

CCR depths range from 0 feet to approximately 60 feet. The minimum CCR depth occurs along the perimeter of the impoundment. The maximum CCR depth occurs at the center of the splitter dike 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 543,000 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 East Ash Pond are 61,000 CY and 378,000 CY, respectively.²

- (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 December 6, 2018 did not reveal any actual or potential structural weaknesses. However, a minor maintenance issue is 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 annual 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).*

The annual inspection report was submitted to SIGECO on January 11, 2019.

- (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 is not required for this year as it was completed October 2016. Thus, an annual inspection report was submitted to SIGECO as stipulated in §257.83 (b)(4)(i).

² The volume of impounded water was calculated by comparing the current elevation of impounded water to the bathymetrical contours, surveyed on November 30, 2016.

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

Two areas of concern were noted during the previous annual inspection performed on November 29, 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 (Inspected: November 29, 2017)	
Deficiency/Observation	Corrective Measure Used
Minor erosion rills on embankments either side of the crest's edge.	Eroded areas previously noted were regraded and reseeded as necessary. Additional erosion rills exist as noted in Table 2-3.
An ash pile about 8'-10' above the crest elevation is currently present on the interior side of the south embankment. Ash should not be piled above the crest of the embankment without subsequent geotechnical stability analyses and calculations.	The ash pile was removed. Ash was not observed to be piled above the embankment in any location within the limits of the pond.

2.4.2 Current Inspection

Three areas of concern were noted during the annual inspection performed on December 6, 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 (Inspected: December 6, 2018)	
Deficiency/Observation	Proposed Corrective Measure
Minor erosion rills on embankments on the downstream side of the crest's edge. See attached plan.	Eroded areas shall be regraded and reseeded as necessary.
A piezometer was installed recently, and the area around it has no vegetation or other erosion protection. See attached plan.	The area around the piezometer should be regraded and reseeded.
A small tree is present on the eastern embankment	The tree should be removed and the resulting cavity filled

<p>of the pond. See attached plan.</p>	<p>with compacted cohesive soil. The vicinity should be reseeded.</p>
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3 Certification

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

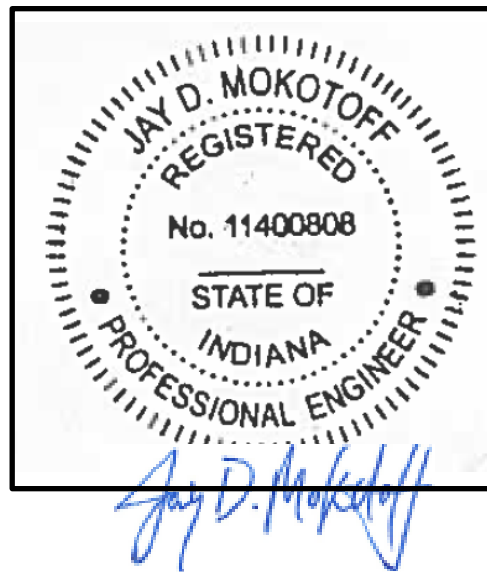
In accordance with the CCR rule, the deadline for completing the annual inspection for the active CCR surface impoundments and placing the report in the operating record is one year from the previous inspection report submittal date of January 11, 2018.

CCR Unit: Southern Indiana Gas & Electric Company; F. B. Culley Generating Station; East 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 the annual inspection dated January 11, 2018 meets the requirements of 40 CFR §257.83 (b).

Jay D. Mokotoff
Printed Name

1-11-19
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.

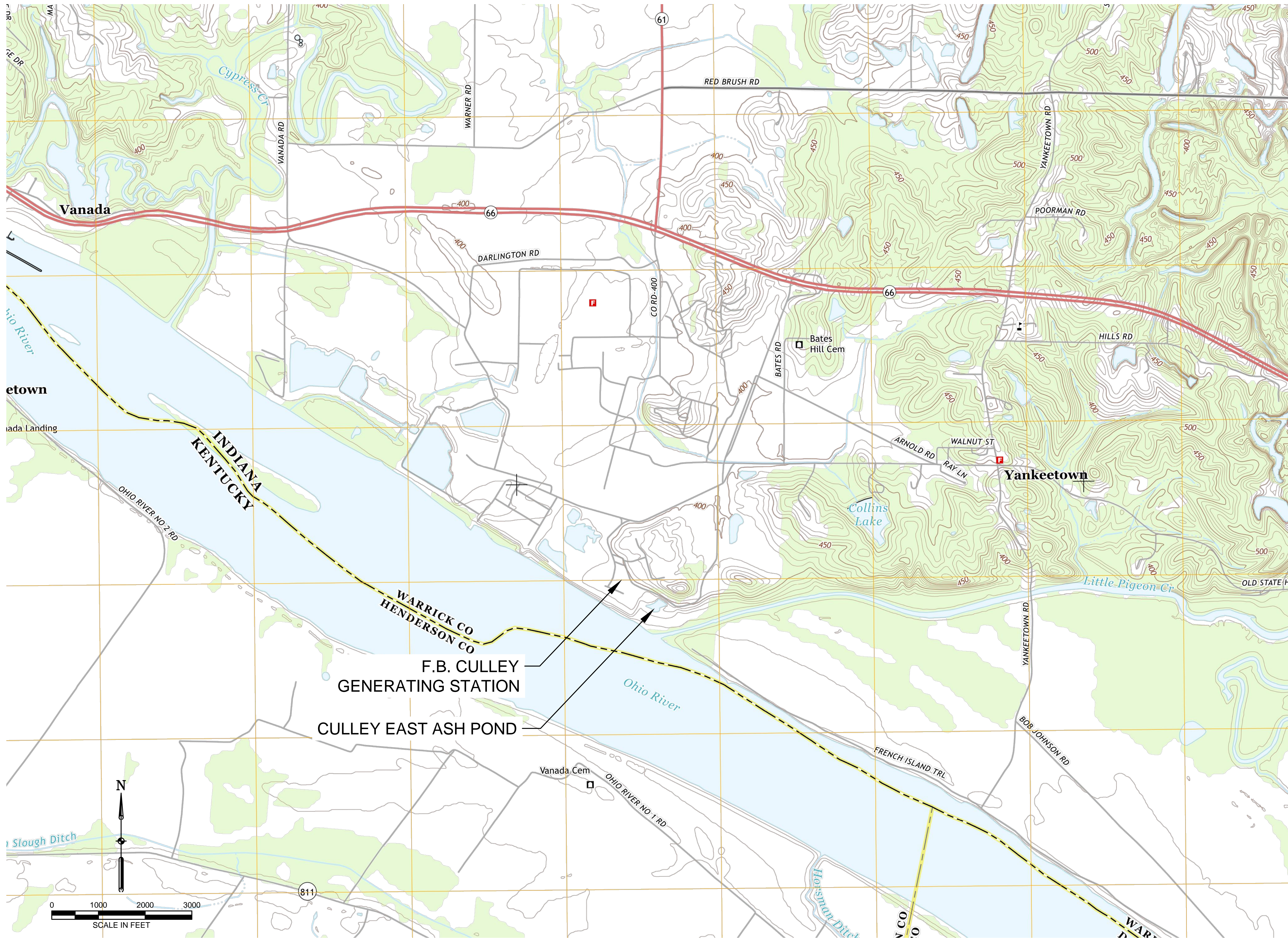
This development of the Annual Inspection was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented 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



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

**CCR ANNUAL
INSPECTION
EAST 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: MJC

DATE CREATED: 12/08/2017

PLOT DATE: 12/08/2017

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ACAD VER: 2014

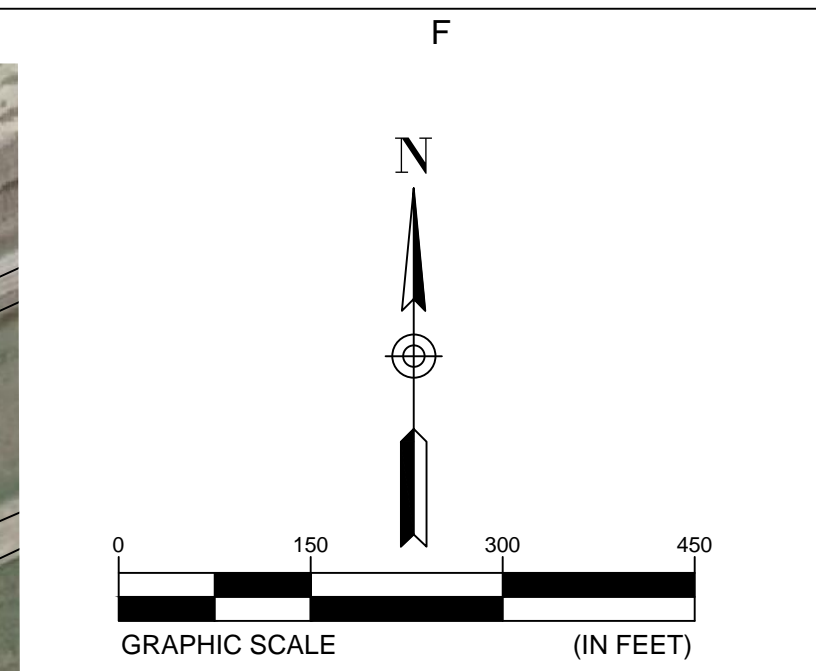
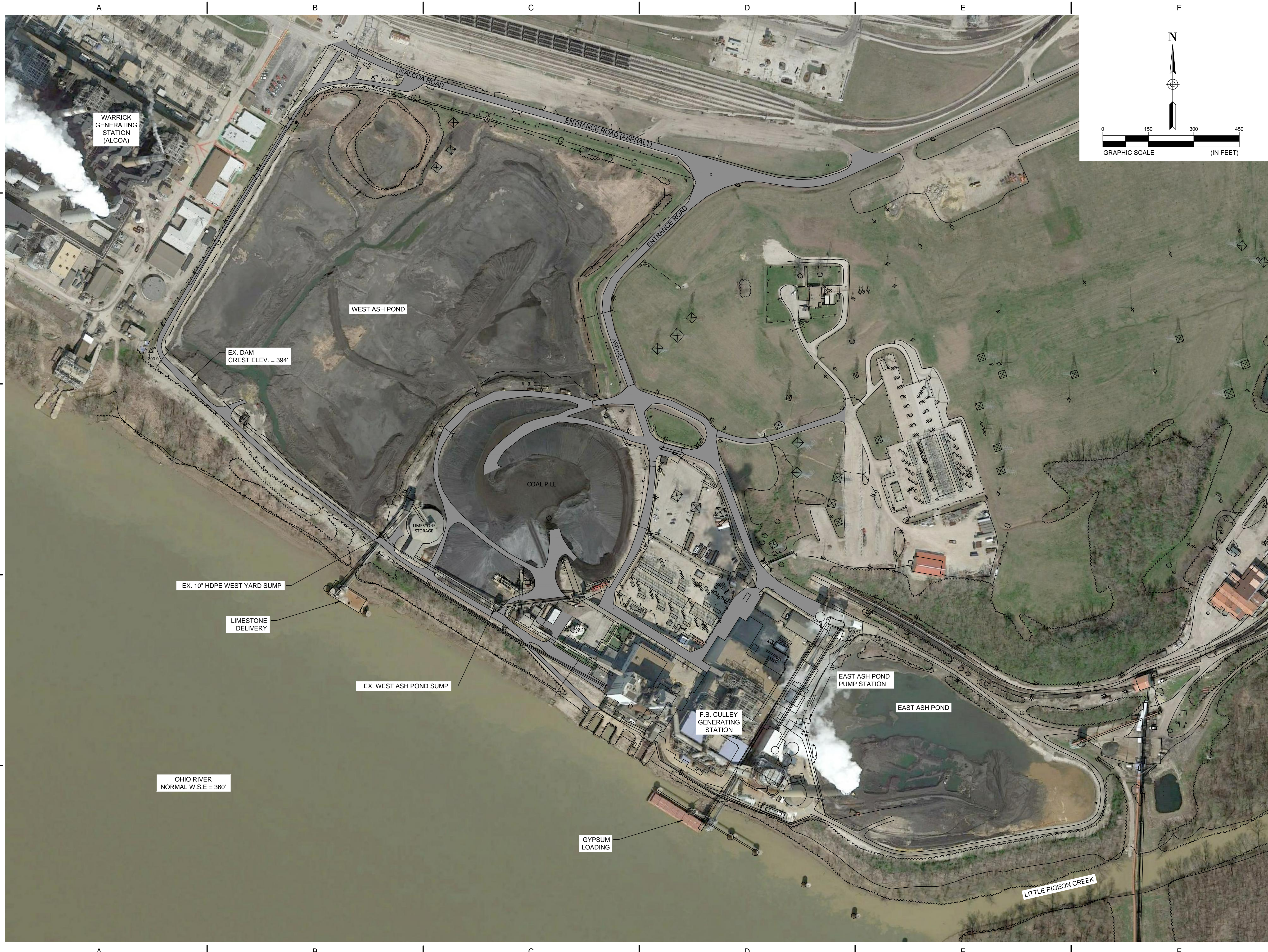
SHEET TITLE

LOCATION MAP

FIGURE 1

GOVINDARAJAN, ASHWIN, 12/15/2017 11:26 AM

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**F.B. CULLEY
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 NEWBURGH, IN**
**CCR ANNUAL
 INSPECTION
 EAST ASH POND**

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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:	MJC
DATE CREATED:	12/08/2017
PLOT DATE:	12/08/2017
SCALE:	1" = 150'
ACAD VER:	2014

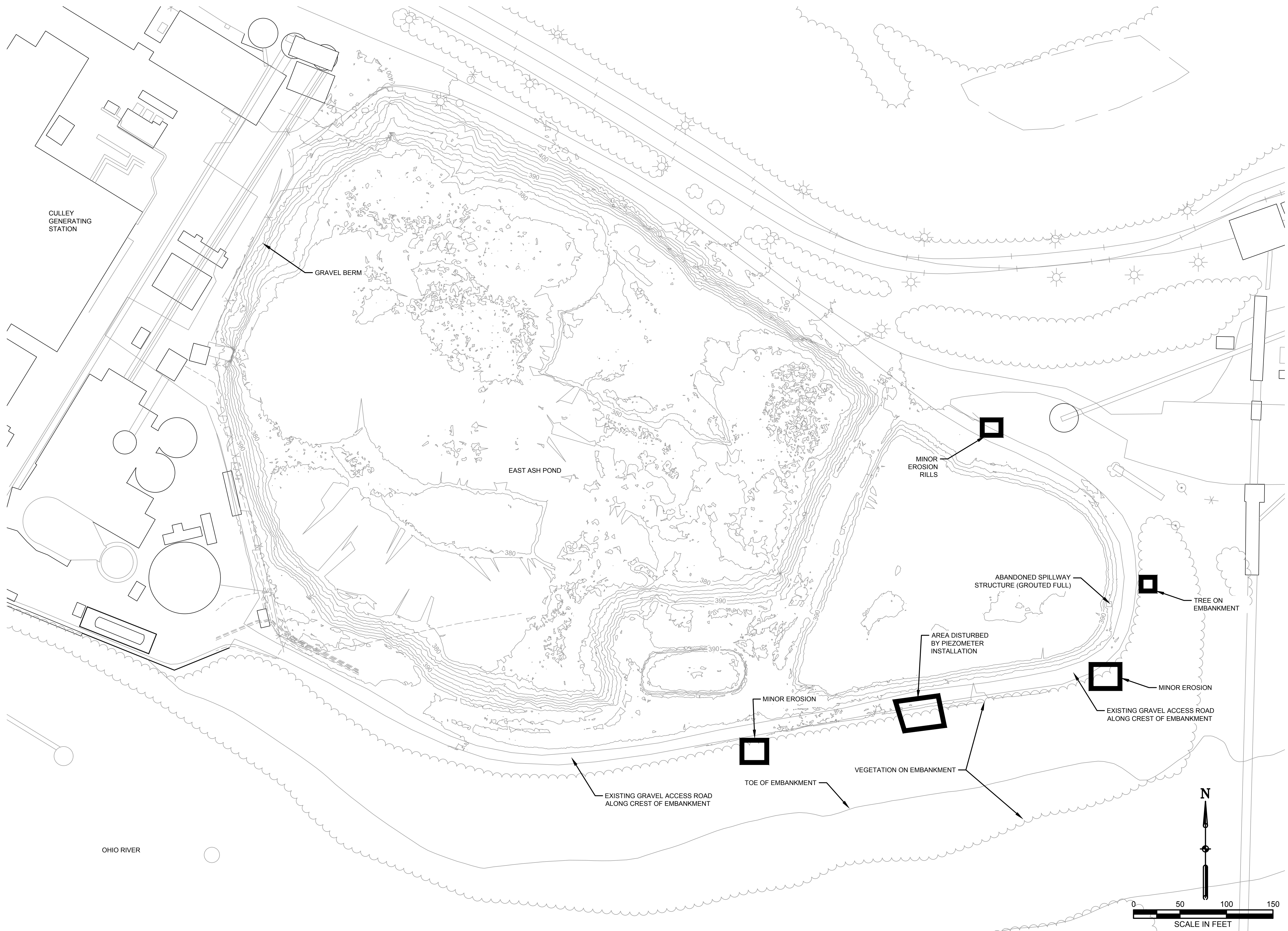
SHEET TITLE

SITE MAP

FIGURE 2

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NEWBURGH, IN**

**CCR ANNUAL
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EAST ASH POND**

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ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

NO.	DESCRIPTION	DATE
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AECOM PROJECT NO: 60586569

DRAWN BY: DMB

DESIGNED BY: DMB

CHECKED BY: JDM

DATE CREATED: 12/14/2018

PLOT DATE: 12/14/2018

SCALE: 1" = 50'

ACAD VER: 2016

SHEET TITLE

INSPECTION SITE PLAN

FIGURE 3

9400 Amberglen Boulevard
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About AECOM

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