



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

Submitted by
AECOM
9400 Amberglen Boulevard
Austin, Texas 78729

October 13, 2016

CCR Certification:
Initial Hazard Potential
Classification
§257.73 (a)(2)

for the

East Ash Pond

at the

F.B. Culley Generating Station

Revision 0

Table of Contents

Executive Summary ES-1

1 Introduction 1-1

 1.1 Purpose of This Report 1-1

 1.2 Brief Description of Impoundment 1-1

2 Hazard Potential Classification 2-1

 2.1 Method of Analysis 2-1

 2.2 Dam Breach Topographic Review 2-1

 2.3 EPA Assessment 2-1

3 Conclusions 3-1

4 Certification 4-1

5 Limitations 5-1

Tables

Table ES-1 Certification Summary

Table 1-1 CCR Rule Cross Reference Table

Appendices

Appendix A Figures

 Figure 1 – Location Map

 Figure 2 – Site Map

 Figure 3 – Regulatory Constraint Summary

Executive Summary

This Coal Combustion Residuals (CCR) Initial Hazard Potential Classification (Hazard Potential Classification) 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 §257.73 (a). These regulations require that the specified documentation, assessments and plans for an existing CCR surface impoundment be prepared by October 17, 2016.

This Hazard Potential Classification meets all requirements as summarized in **Table ES-1**.

Table ES-1 – Certification Summary				
Report Section	CCR Rule Reference	Requirement Summary	Requirement Met?	Comments
Initial Hazard Potential Classification				
3	§257.73 (a)(2)	<i>An initial hazard potential classification assessment is required for each CCR unit of High, Significant or Low.</i>	Yes	This Initial Hazard Assessment has been prepared based on conditions of the CCR unit as of October 16, 2016.

The Culley East Ash Pond is currently an active surface impoundment, classified as a Significant hazard as described in the CCR Rule. Documentation to support this classification is included within this report.

1 Introduction

1.1 Purpose of This Report

The purpose of the Initial Hazard Potential Classification (Hazard Potential Classification) is to document the classification requirements specified in Code of Federal Regulations (CFR) §257.73 have been met to support the certification required under each of those regulatory provisions for the F.B. Culley Generating Station (Culley) East Ash Pond. The East Ash Pond is an existing coal combustion residual (CCR) surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the hazard potential classification for an existing CCR surface impoundment be prepared by October 17, 2016.

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	Hazard Potential Classification	§257.73 (a)(2)(i)

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 & 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 1950's 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 grassy 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 several small pools that are being utilized for treatment and separation of CCR material within the pond as part of an ongoing construction project. The ponding water has a surface area of approximately 2.56 acres and has normal operating level of 387 feet.

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

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 Hazard Potential Classification

2.1 Method of Analysis

AECOM reviewed the local topography surrounding the partially incised unit. Analysis was completed for the probable flow path upon failure across the pond's dike based on the topographic features surrounding the pond. Additionally, the EPA assessment of the Culley station was reviewed and information contained in the report was considered in this assessment.

2.2 Dam Breach Topographic Review

Appendix A, Figure 3 shows the location of the above ground portions of the East Ash Pond dike. Upon failure of the dike, the flow path would follow the local topography surrounding the site. Review of the area suggests that loss of life would not be considered probable upon failure, but the close proximity to the Ohio River could potentially cause an environmental and economic impact.

2.3 EPA Assessment

Following the TVA Kingston dike failure in 2008, the EPA embarked on an initiative to prevent the catastrophic failure from occurring at other such facilities located at electric utilities in an effort to protect lives and property from the consequences of a dam or impoundment failure or the improper release of impounded slurry. As part of the EPA's effort to protect lives and the environment from a disaster similar to that experienced in 2008, Kleinfelder performed a site assessment at the Culley station. This report summarizes the observations and findings of the site assessment that occurred on August 17, 2010. (Kleinfelder West, 2011)

The report recommended a "Significant" classification for the pond based on proximity to the Ohio River and potential economic impacts caused by a potential failure.

3 Conclusions

Regulatory Citation: 40 CFR §257.73 (a)(2) Period hazard potential classification assessments.

- *(i) The owner or operator of the CCR unit must conduct initial and periodic hazard potential classification assessments of the CCR unit ... The owner or operator must document the hazard potential classification of each CCR unit as either a high hazard potential CCR surface impoundment, a significant hazard potential CCR surface impoundment, or a low hazard potential CCR surface impoundment. The owner or operator must also document the basis for each hazard potential classification.;*

Background and Assessment

CCR units are designated as one of three classes depending on likelihood of losses resulting from mis-operation or failure.

1. High hazard potential CCR surface impoundments are likely to cause loss of human life upon failure. The CCR Rule design storm for a High hazard potential facility is the full Probable Maximum Flood (PMF).
2. Significant hazard potential CCR surface impoundments are likely to cause economic loss, environmental damage, disruption of lifeline facilities, or other impacts; but not loss of life. The CCR Rule design storm for a Significant hazard potential facility is the 1000-year event.
3. Low hazard potential CCR surface impoundments are not likely to cause loss of life or significant economic or environmental losses. The CCR Rule design storm for a Low hazard potential facility is the 100-year event.

Likelihood of loss of human life is primarily discussed within this report, which is the deciding factor between Hazard Potential Classifications of Significant and High. Loss of life is not deemed probable based on the lack of nearby residences and local topography. The East Ash Pond does not qualify for a Low hazard potential due to its proximity to the Ohio River and the possibility of environmental loss.

Conclusion and Recommendation

Based upon the analyses reviewed, and completed by AECOM, we designate the Hazard Potential Classification of the East Ash Pond at the Culley station impoundment facility as "Significant" in regards to the requirement in §257.73 (a)(2).

4 Certification

This Certification Statement documents that the East Ash Pond at the F.B. Culley Generating Station meets the Initial Hazard Potential Classification requirements specified in 40 CFR §257.73 (a)(2). The East Ash Pond is an existing CCR surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the Initial Hazard Potential Classification for an existing CCR surface impoundment be prepared by October 17, 2016.

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

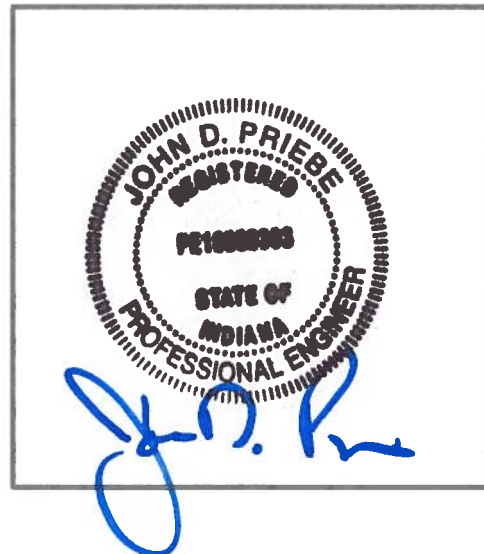
I, John Priebe, being a Registered Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the Initial Hazard Potential Classification dated October 13, 2016 meets the requirements of 40 CFR §257.73 (a)(2).

John D. Priebe

Printed Name

10/13/16

Date



5 Limitations

Background information, design basis, and other data have been furnished to AECOM by SIGECO, which AECOM has used in preparing this report. 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.

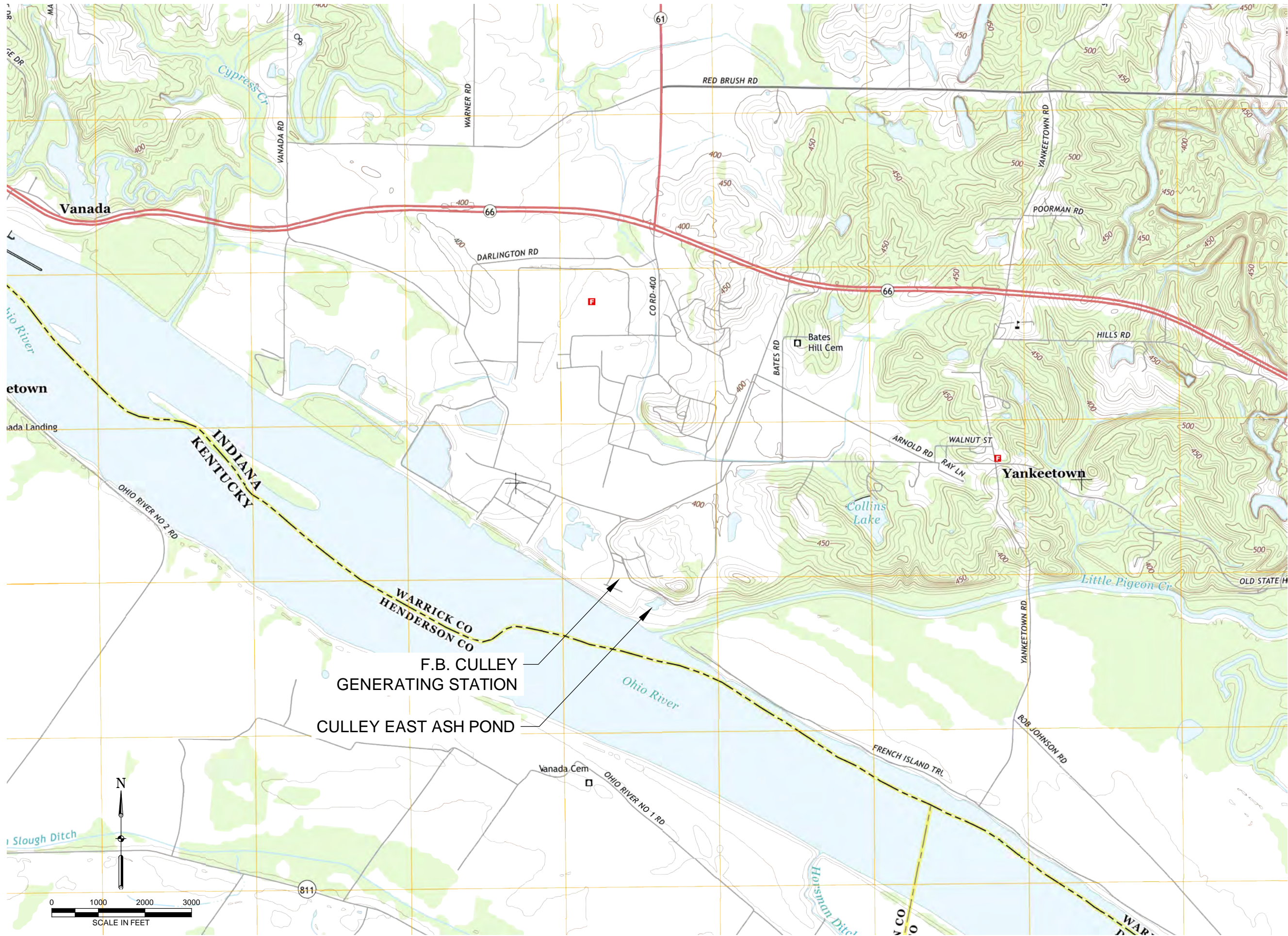
This hazard potential classification analysis was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions 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 – Regulatory Constraint Summary



9400 Amberglen 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 CERTIFICATION
 EAST ASH POND**

**ISSUED FOR
 CERTIFICATION**

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

NO.	DESCRIPTION	DATE
△		
△		
△		
△		
△		

AECOM PROJECT NO:	60442676
DRAWN BY:	MJC
DESIGNED BY:	MJC
CHECKED BY:	TLE
DATE CREATED:	8/18/2016
PLOT DATE:	4/22/2016
SCALE:	AS SHOWN
ACAD VER:	2014

SHEET TITLE

LOCATION MAP

FIGURE 1



9400 Amberglen 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 CERTIFICATION
 EAST ASH POND**

**ISSUED FOR
 CERTIFICATION**

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

NO.	DESCRIPTION	DATE
△		
△		
△		
△		
△		

AECOM PROJECT NO: 60442676

DRAWN BY: MJC

DESIGNED BY: MJC

CHECKED BY: TLE

DATE CREATED: 8/18/2016

PLOT DATE: 4/22/2016

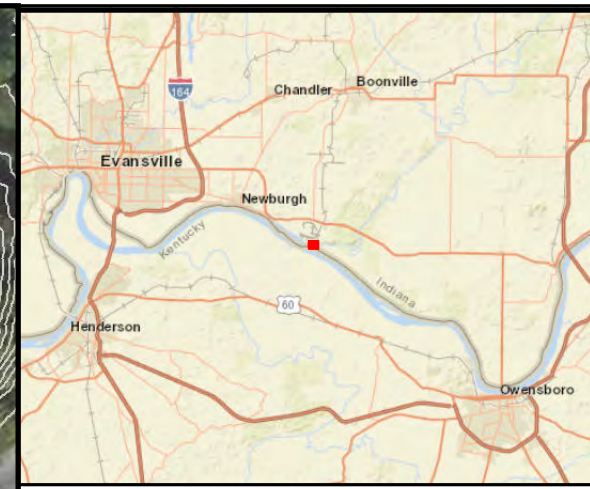
SCALE: AS SHOWN

ACAD VER: 2014

SHEET TITLE

SITE MAP

FIGURE 2



LEGEND

- Aboveground Dike
- Contour Analysis for Dike Failure
- Surface Elevation Contour (2')
- Approximate Culley East Pond Limits
- Area of Interpolated Surface Elevation Countours



TITLE CULLEY EAST ASH POND REGULATORY CONSTRAINT SUMMARY VECTREN CORPORATION YANKEETOWN, INDIANA		
FOR FB. CULLEY GENERATING STATION		
	SCALE: 1" = 100'	DES:
	DWG TYPE: GIS	DFTR: KB
	JOB NO. 60442676	CHKD: AS
DATE: 9/1/2016	ENGR: JP	
	APPD: JP	
DWG SIZE	DRAWING NO.	REVISION
11"X17"	Figure 3	0

9400 Amberglen Boulevard
Austin, Texas 78729
1-512-454-4797

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of \$6 billion.