AECOM

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Southern Indiana
Gas & Electric Company
(SIGECO)
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Evansville, IN 47708

Submitted by
AECOM
9400 Amberglen Boulevard
Austin, Texas 78729

April 2019

# Initial Hazard Classification Report

# for the

# West Ash Pond

# at the

# F.B. Culley Generating Station

# Revision 0

# Table of Contents



## Tables



## Appendices

# Executive Summary

This Coal Combustion Residuals (CCR) Initial Hazard Classification Certification Report classifies the surface impoundment and documents the classification requirements have been met to support the certification required under each of those regulatory provisions at the West Ash Pond at the Southern Indiana Gas and Electric Company (SIGECO), F.B. Culley Generating Station (Culley). This document meets the requirements specified in 40 CFR §257.73 (a)(2). The West Ash Pond was previously classified as an "inactive" CCR impoundment as defined by 40 CFR §257.53. SIGECO filed a Notice of Intent (NOI) to initiate closure of the West Ash Pond and placed the NOI in the facility's operating record on December 17, 2015. The unit is currently in the closure process.

On August 5, 2016, the EPA issued a "Direct Final Rule" (effective on October 4, 2016), constituting a vacatur of 40 CFR §257.100 (the "early closure" provision). The Direct Final Rule applies the requirements of "existing surface impoundments" (§257.102) to ponds that had been previously declared "inactive" (i.e. the West Ash Pond). As a result of this order, owners and operators of inactive CCR surface impoundments must comply with all of the requirements for existing CCR surface impoundments as listed in 40 CFR §257.102 of the CCR Rule. As the unit is currently in the process of closure, it is SIGECO's position that the requirements for the Initial Hazard Classification Certification are not applicable to the West Ash Pond. Nevertheless, in consideration of whether completion is reasonable given the current closure activities, this Initial Hazard Classification Certification document has been prepared and certified.

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

**Table ES-1 – Certification Summary**

| Report Section | CCR Rule Reference | Requirement Summary | Requirement Met? | Comments |
|---|---|---|---|---|
| 3 | §257.73 (a)(2) | *An initial hazard potential classification assessment is required for each CCR unit of High, Significant or Low.* | Yes | This Initial Hazard Assessment Report has been prepared based on conditions of the CCR unit as of April 2019. |

The CCR Surface Impoundment is 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 Classification Certification Report is to classify the surface impoundment and document the classification requirements have been met to support the certification required under each of those regulatory provisions for the Southern Indiana Gas & Electric Company (SIGECO) F.B. Culley Generating Station (Culley) West Ash Pond. This document meets the requirements specified in 40 CFR §257.73 (a)(2). The West Ash Pond was previously classified as an "inactive" CCR impoundment as defined by 40 CFR §257.53. SIGECO filed a Notice of Intent (NOI) to initiate closure of the West Ash Pond and placed the NOI in the facility's operating record on December 17, 2015. The unit is currently in the closure process.

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The following sections summarize the documentation required by the CCR Rule and the sections that specifically respond to those requirements, as summarized in Table 1-1:

**Table 1-1**

| Report Section | Title | CCR Rule Reference |
|---|---|---|
| 2 | Hazard Classification | §257.73 (a)(2)(i) |
| 3 | Documentation of the Hazard Potential | §257.73 (a)(2)(ii) |

## 1.2 Brief Description of Impoundments

The F.B. Culley Generating Station is a coal-fired power plant located near Newburgh in Warrick County, Indiana. The Station is situated on the north side of the Ohio River with the ash pond positioned on the west side of the generating station. A Site Location Map showing the area surrounding the station is in **Figure 1** of **Appendix A**. **Figure 2** in **Appendix A** presents the F.B. Culley Generating Station Site Map.

### 1.2.1 Design and Construction

The West Ash Pond, commissioned in the mid-1960's, is primarily an incised pond. The surrounding ground surface just west, north, and east of the pond is relatively flat or rises slightly above the existing crest. Along the southern perimeter of the unit, an embankment exists between the unit and the Ohio River. The horizontal distance from the crest to the river varies from about 100 to 200 feet. The elevation drop is about 40 to 50 feet with an intermediate flatter terrace about half to two-thirds down the slope. Visually, the downstream slope appears to be at 2H:1V to 3H:1V.

The normal pool elevation in the West Ash Pond was previously maintained at an operating level of 390' by a pumping station. However, as of January 2016, SIGECO began passive dewatering measures in the West Ash Pond and has maintained the water level at approximately 370' since the fall of 2017 by using a localized sump adjacent to the existing pumping station. It is SIGECO's stated intent that they plan on maintaining this lower water level until closure construction has been initiated. The unit is currently in the closure process.

### 1.2.2 Inflow from Plant Operations and Stormwater Runoff

The West Ash Pond has a surface area of approximately 32 acres and is used to store various waste from plant operations, about half of the stormwater that falls within the plant area, and the precipitation falling directly onto the pond surface.

The West Ash Pond does not have an open channel spillway or outlet works pipe. The pond is equipped with a pump station capable of recirculating water to the East Ash Pond. Material from the West Ash Pond was removed in 2008 and the pond has not been actively used since.

# 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 F.B. Culley Power Generating 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 F.B. Culley West 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 may 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, resulting in 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 F. B. Culley Power Generating 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

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 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 design storm for a Significant hazard potential facility is the 1000-year flood.
3. Low hazard potential CCR surface impoundments are not likely to cause loss of life or significant economic or environmental losses. The design storm for a Low hazard potential facility is the 100-year flood.

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 F.B. Culley West Ash Pond does not qualify for a Low hazard potential due to likelihood of environmental loss, as it is located along the Ohio River.

Based upon the analyses reviewed and completed by AECOM, we confirm the Hazard Potential Classification of the West Ash Pond at the F.B. Culley Generating Station impoundment facility as “Significant.”

# 4 Certification

This Certification Statement documents that the West 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 West Ash Pond is an existing (formerly inactive) CCR surface impoundment as defined by 40 CFR §257.53 and is currently in the process of closure. The CCR Rule requires that the Initial Hazard Potential Classification for the existing CCR surface impoundment be prepared by April 18, 2017.

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

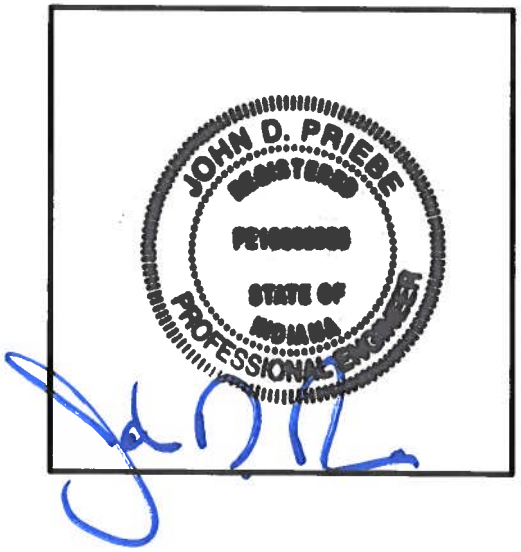
I, John Priebe, being a Registered Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the Initial Hazard Potential Classification dated April 2019 meets the requirements of 40 CFR §257.80 (b).

JOHN D. PRIEBE

*Printed Name*

4/11/19

*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 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 geological and geotechnical 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.

# 6 References

Kleinfelder. *Coal Ash Impoundment Site Assessment Report.* April, 2011.

National Oceanic and Atmospheric Administration (2018). NOAA Atlas 14 Point Precipitation Frequency Estimates, Volume 1, Version 5, http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=il.

USDA Natural Resources Conservation Service (2018). Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

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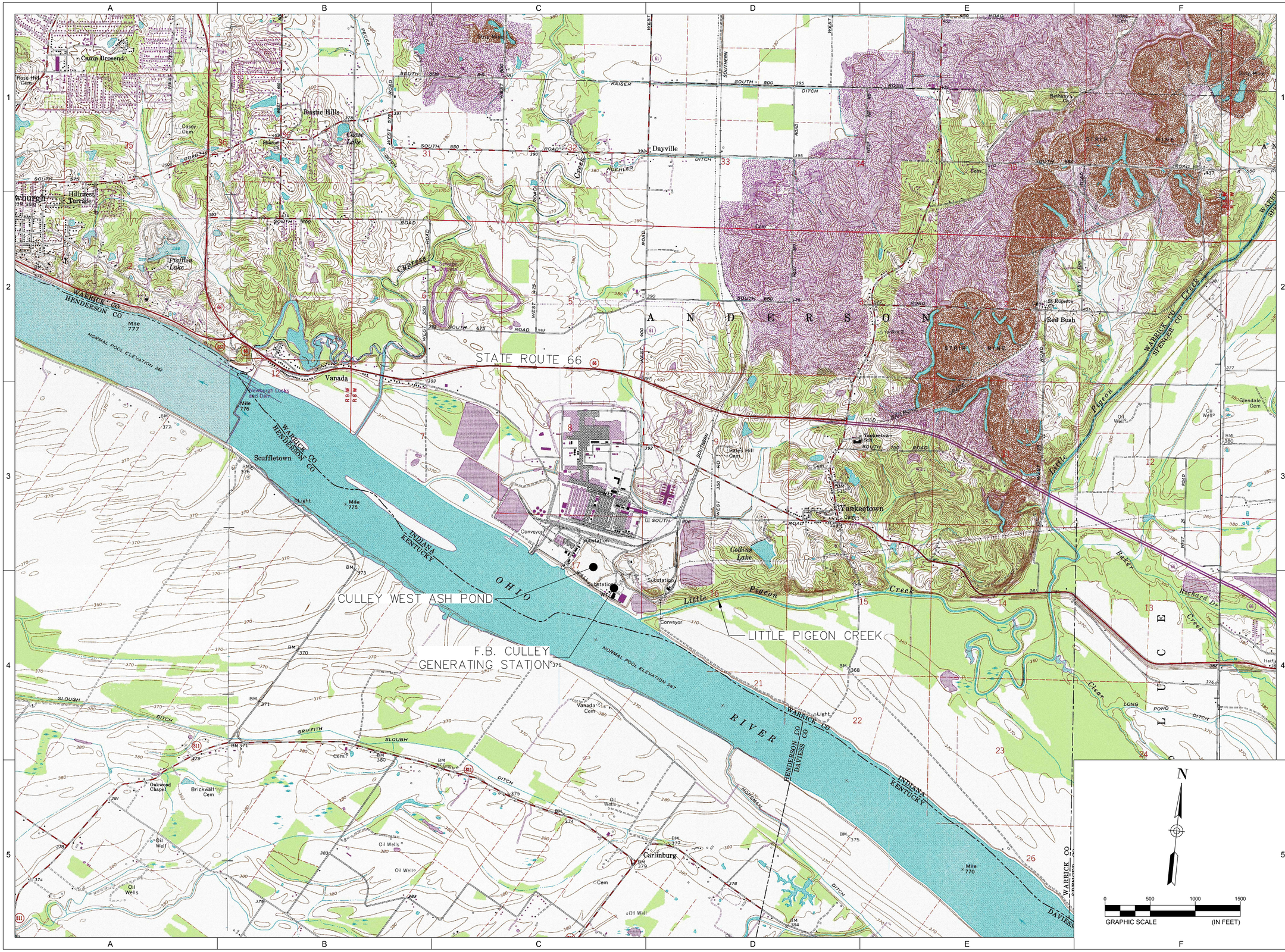
Federal Emergency Management Agency (FEMA), 2005. Federal Guidelines for Dam Safety: Hazard Potential Classification Systems for Dams, U.S. Department of Homeland Security, FEMA 333, September 1, 2005.

FEMA, July 2013. Federal guidelines for Dam Safety: Emergency Action Planning for Dam Owners, U.S. Department of Homeland Security, FEMA 64, July 2013.

FEMA, August 2013, Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design Floods for Dams, U.S. Department of Homeland Security, FEMA, October 1998, Reprinted August 1, 2013.

United States Environmental Protection Agency (USEPA), 2015, 40 CFR Part 257: Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities, April 17, 2015 (As subsequently amended).

# Appendix A
# Figures

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EVANSVILLE, IN 47708
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F.B. CULLEY GENERATING STATION
NEWBURGH, IN

CCR CERTIFICATION
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: | JMW |
| DESIGNED BY: | JMW |
| CHECKED BY: | RJB |
| DATE CREATED: | 12/19/2018 |
| PLOT DATE: | 12/19/2018 |
| SCALE: | AS SHOWN |
| ACAD VER: | CIVIL 3D 2018 |

SHEET TITLE

LOCATION MAP

**FIGURE 1**


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F.B. CULLEY GENERATING STATION
NEWBURGH, IN

CCR CERTIFICATION
WEST ASH POND

ISSUED FOR CERTIFICATION

ISSUED FOR BIDDING - - (DATE BY)

ISSUED FOR CONSTRUCTION (DATE BY)

REVISIONS

| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
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|---|---|
| AECOM PROJECT NO: | 60442676 |
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| DATE CREATED: | 12/19/2018 |
| PLOT DATE: | 12/19/2018 |
| SCALE: | AS SHOWN |
| ACAD VER: | CIVIL 3D 2018 |

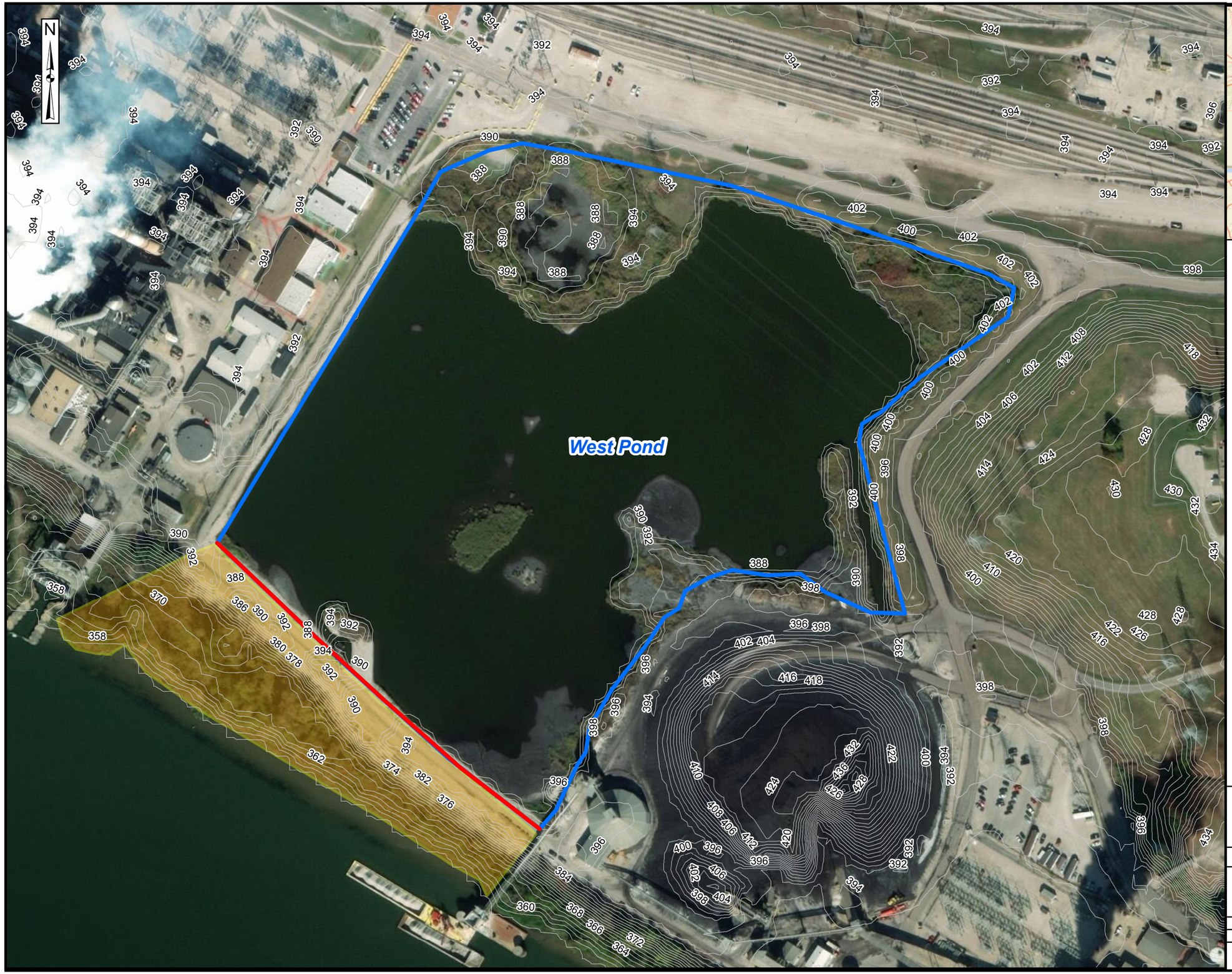
SHEET TITLE

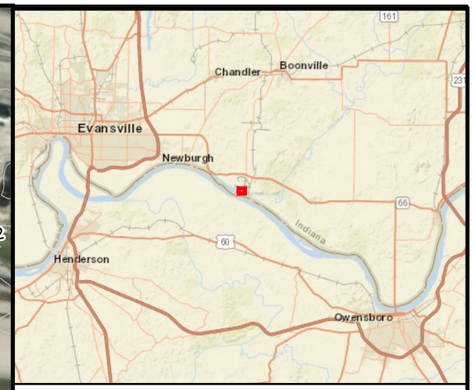
SITE MAP

N

0 200 400 600
GRAPHIC SCALE (IN FEET)

**FIGURE 2**




**LEGEND**

- Aboveground Dike
- Approximate Culley West Pond Limits
- Surface Elevation Contour (2')
- Contour Analysis for Dike Failure

0 100 200

GRAPHIC SCALE (IN FEET)

TITLE

**CULLEY WEST ASH POND**
**TOPOGRAPHIC REVIEW FOR DAM BREACH**

**SIGECO**
**YANKEETOWN, INDIANA**

FOR **F.B. CULLEY GENERATING STATION**

| | | |
|---|---|---|
| | SCALE: 1" = 100' | DES: |
| | DWG TYPE: GIS | DFTR: SF |
| | JOB NO. 60442676 | CHKD: AS |
| | DATE: 3/4/2019 | ENGR: JP |
| | | APPD: JP |

| DWG SIZE | DRAWING NO. | REVISION |
|---|---|---|
| 11"X17" | **FIGURE 3** | **0** |

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About AECOM

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