



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

Submitted by
AECOM
1300 East 9th Street
Suite 500
Cleveland, Ohio 44114

November 24, 2020

CCR Certification: Written Closure Plan §257.102 (b) & (d)

for the

Ash Pond

at the

A.B. Brown Generating Station

Revision 1

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Executive Summary

This Coal Combustion Residuals (CCR) Written Closure Plan (Closure Plan) for the Ash Pond at the Southern Indiana Gas & Electric Company Inc., A.B. Brown Generating Station has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 Code of Federal Regulations §257.102. These regulations require that the specified documentation, assessments and plans for an existing CCR surface impoundment be prepared by October 17, 2016. The Initial Closure Plan proposed a Closure-in-Place (CiP) methodology and was prepared in accordance with these requirements. This Closure Plan (Rev. 1) represents an update to the Initial Closure Plan (Rev. 0) considering recent developments to implement a closure by removal (CbR) methodology for closure of the Ash Pond.

This Closure Plan meets the regulatory requirements as summarized in **Table ES-1**.

Table ES-1 – Certification Summary				
Report Section	CCR Rule Reference	Requirement Summary	Requirement Met?	Comments
Closure Plan				
2.1	§257.102 (b)	<i>A written closure plan must be prepared that describes the steps necessary to close the unit</i>	Yes	This Closure Plan has been prepared based on a closure design. All steps necessary to close the unit and information as required concerning the unit are included in the Closure Plan.
2.2	§257.102 (c)	<i>Closure by Removal</i>	Yes	This Closure Plan has been prepared based on a closure by removal design. All steps necessary to close the unit and information as required concerning the unit are included in the Closure Plan.

The Ash Pond at the A.B. Brown Generating Station is currently an active surface impoundment. Upon decision and/or requirement to close this surface impoundment, a Notification of Intent to Initiate Closure will be placed in the Operating Record, closure operations will commence, and the surface impoundment will be closed within the time frame as allowed in the CCR Rule.

1 Introduction

1.1 Purpose of this Report

The purpose of the Closure Plan is to document that the requirements specified in 40 Code of Federal Regulations (CFR) §257.102 have been met to support the certification required under each of the applicable regulatory provisions for the Ash Pond at A.B. Brown Generating Station. The Ash Pond is an existing coal combustion residuals (CCR) surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the Initial Written Closure Plan for an existing CCR surface impoundment be prepared by October 17, 2016. The Initial Closure Plan proposed a Closure-in-Place (CiP) methodology and was prepared in accordance with these requirements. This Closure Plan (Rev. 1) represents an update to the Initial Closure Plan (Rev. 0) considering recent developments to implement a closure by removal (CbR) methodology for closure of the Ash Pond.

The A.B. Brown station has an interconnected existing CCR surface impoundment, the Ash Pond, which consists of a lower pool and an upper pool. The following table summarizes the documentation required within the CCR Rule and the sections that specifically respond to those requirements of this plan.

Table 1-1 – CCR Rule Cross Reference Table

Report Section	Title	CCR Rule Reference
2.1	Content of the Plan	§257.102 (b)(1)
2.2	Achievement of Performance Standards	§257.102 (c)

1.2 Brief Description of Impoundment

The A.B. Brown station is a coal-fired power plant located approximately 10 miles east of Mount Vernon in Posey County, Indiana and is owned and operated by Southern Indiana Gas & Electric Company. The A.B. Brown station is situated just west of the Vanderburgh-Posey County line and north of the Ohio River with the Ash Pond positioned on the east side of the generating station.

The Ash Pond was commissioned in 1978. An earthen dam was constructed across an existing valley to create the impoundment. In 2003, a second dam was constructed east of the original dam and further up the valley to increase the storage capacity. This temporarily created an upper pond and a lower pond. The upper and lower ponds were operated separately until 2016 when the upper dam was decommissioned. A 10-foot wide breach was installed in the upper embankment and the normal pool elevation was lowered. Currently, the upper pool and the lower pool act as one CCR unit referred to as the Ash Pond, which has a surface area of approximately 164 acres (identified as 159 acres in prior documents, but recently verified via aerial photogrammetry to be approximately 164-acres).

The lower pool dam embankment is approximately 1,540 feet long, 30 feet high, and has 3 to 1 (horizontal to vertical) side slopes covered with grassy vegetation. The embankment crest elevation is 450.9 feet¹ and has a crest width of 20 feet. An earthen buttress was constructed against the outboard slope of the dam. The buttress crest extends the length of the dam, is up to 200 feet wide and varies in elevation from 442 feet to 432 feet. 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 A.B. Brown Site Map.

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

2 Written Closure Plan

Regulatory Citation: 40 CFR §257.102 (b); Written closure plan—

- (1) *Content of the plan. The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.*

The Written Closure Plan for the Ash Pond is described in this section. Information about operational and maintenance procedures was provided by A.B. Brown plant personnel. The A.B. Brown station follows an established maintenance program that quickly identifies and resolves issues of concern.

2.1 Content of the Plan

2.1.1 Closure Plan Description

Regulatory Citation: 40 CFR §257.102 (b)(1);

- (i) *Narrative description of how the CCR unit will be closed in accordance with this section.*

The entire footprint of the Ash Pond will be excavated to remove CCR to pre-pond development grades. Excavated CCR materials will be classified and tested for subsequent recycling as raw material for cement manufacturing. CCR materials that conform to the cement manufacturer's specifications will be transferred via a sealed conveyor system to a barge along the Ohio River for transport to the cement manufacturer. Materials that are excavated that do not conform to the cement manufacturer's specifications will be hauled and transported to the on-site Type III Restricted Waste Landfill (FGD Landfill) owned by SIGECO, pending approval by IDEM. The Ash Pond will be dewatered to facilitate CCR excavation. Upon completion of CCR excavation, structural fill will be placed over the excavation grades and graded to 2% minimum slope to promote drainage towards stormwater conveyance channels. The stormwater conveyance channels will direct the stormwater runoff to an NPDES permitted outfall after the lower dam has been breached on the southern edge of the impoundment. Closure operations will involve:

- 1) Dewatering the impoundment;
- 2) Removal of the upper dam embankment fill;
- 3) Excavation and removal of all CCR materials;
- 4) Placement of structural fill and establishment of stormwater conveyance channels;
- 5) Breaching of the lower (southern) dam; and
- 6) Seeding and final vegetative stabilization

In accordance with §257.102(b)(3), this Closure Plan will be amended as needed to provide additional details after the final engineering design is completed. This Closure Plan reflects the information available to date.

Regulatory Citation: 40 CFR §257.102 (b)(1);

- *(ii) If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.*

Excavation in the Ash Pond footprint will advance until historical/pre-development grades have been achieved and all CCR has been removed from within the CCR unit. Upon attaining pre-development grades, a visual inspection will be conducted to identify any remnant CCR materials. Remnant CCR materials identified by this inspection will subsequently be removed by additional excavation. This process may be supplemented by analytical testing to satisfy state-specific closure protocols, as appropriate. Following completion of this process and consistent with current regulatory provisions, groundwater monitoring will be conducted until it can be confirmed that concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV.

Regulatory Citation: 40 CFR §257.102 (b)(1);

- *(iii) If closure of the CCR Unit will be accomplished by leaving CCR in place, a description of the final cover system and methods and procedures used to install the final cover.*

Not applicable.

2.1.2 Inventory and Area Estimates

Regulatory Citation: 40 CFR §257.102 (b);

- *(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.*

An estimate of the maximum inventory of CCR ever on-site over the active life is 5,930,000 cubic yards.

Regulatory Citation: 40 CFR §257.102 (b);

- *(v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.*

Not applicable.

2.1.3 Closure Schedule

Regulatory Citation: 40 CFR §257.102 (b)(1);

- *(vi) Schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed.*

The milestones and the associated timeframes are initial estimates. Some of the activities associated with the milestones will overlap. Amendments to the milestones and timeframes will be made as more information becomes available.

Table 2-1 – Closure Schedule	
Milestone	Schedule
Initial Written Closure Plan (Rev. 0)	October 17, 2016

Table 2-1 – Closure Schedule

Milestone	Schedule
Written Closure Plan (Rev. 1)	November 24, 2020
Notification of Intent to Close Placed in Operating Record	No later than the date closure of the CCR unit is initiated. Closure to commence in accordance with the applicable timeframes in 40 CFR 257.102(e).
Agency coordination and permit acquisition <ul style="list-style-type: none"> – Coordinating with state agencies for compliance. – Acquiring state permits. 	Years 1 – 3 (estimated) Year 1 (estimated)
Mobilization	Year 1 (estimated)
Closure Construction Activities CCR <ul style="list-style-type: none"> – Complete dewatering, as necessary – Upper Dam Removal – Complete excavation of CCR – Lower Dam Breach/Final Stabilization 	Years 1 – 3 (estimated) Years 3 - 5 (estimated) Years 10 - 11 (estimated) Year 13 (estimated)
Estimate of Year in which all closure activities will be completed.	Year 11

2.2 Achievement of Closure by Removal

Regulatory Citation: 40 CFR §257.102 (c); Closure by removal of CCR

An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV to this part.

Excavation in the Ash Pond footprint will advance until historical/pre-development grades have been achieved and all CCR has been removed from within the CCR unit. Upon attaining pre-development grades, a visual inspection will be conducted to identify any remnant CCR materials. Remnant CCR materials identified by this inspection will subsequently be removed by additional excavation. This process may be supplemented by analytical testing to satisfy state-specific closure protocols, as appropriate. Following completion of this process and consistent with current regulatory provisions, groundwater monitoring will be conducted until it can be confirmed that concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in Appendix IV.

2.3 Amendment to Initial or any Subsequent Written Closure Plan

The Initial Written Closure Plan (Rev. 0) dated October 17, 2016 is hereby being amended by this Written Closure Plan (Rev. 1) on November 24, 2020 as required by §257.102 (b)(3).

3 Certification

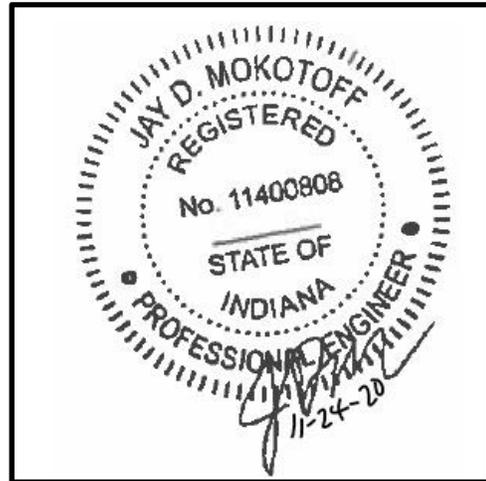
This Certification Statement documents that the Ash Pond at the A.B. Brown Generating Station meets the Written Closure Plan requirements specified in 40 CFR §257.102 (b) and the closure by removal requirements as specified in 40 CFR §257.102 (c). The Ash Pond is an existing CCR surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the Initial Written Closure Plan for an existing CCR surface impoundment be prepared by October 17, 2016. An amendment to the Initial Written Closure Plan is provided herein, dated November 24, 2020.

CCR Unit: Southern Indiana Gas & Electric Company; A.B. Brown Generating Station; 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 Initial Written Closure Plan dated October 13, 2016 and hereby amended on November 24, 2020 meets the requirements of 40 CFR § 257.102.

Jay D. Mokotoff
Printed Name

November 24, 2020
Date



4 Limitations

Background information, design basis, and other data which AECOM has used in preparing 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 provisions and 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 Closure Plan 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



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

**SOUTHERN INDIANA
 GAS AND ELECTRIC
 COMPANY**

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

**A.B. BROWN
 GENERATING STATION
 MT. VERNON, IN**

**CCR LOCATION
 RESTRICTIONS
 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:	AG
DESIGNED BY:	AG
CHECKED BY:	JDM
DATE CREATED:	12/07/2019
PLOT DATE:	12/08/2019
SCALE:	1" = 1000'
ACAD VER:	2018

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**

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

**A.B. BROWN
 GENERATING STATION
 MT. VERNON, IN**

**CCR ANNUAL
 INSPECTION
 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:	11/24/2020
PLOT DATE:	11/24/2020
SCALE:	AS SHOWN
ACAD VER:	2018

SHEET TITLE

SITE MAP

FIGURE 2

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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 nearly 100,000 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 \$19 billion.

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