

Prepared for:
Gavin Power, LLC

Amended Closure Plan—40 CFR 257.102(b)

Gavin Bottom Ash Pond

Gavin Plant

Cheshire, Ohio

15 April 2020

Project No.: 0545239

Signature Page

15 April 2020

Amended Closure Plan—40 CFR 257.102(b)

Gavin Bottom Ash Pond

Gavin Plant

Cheshire, Ohio



Reviewed By: J. Lawrence Hosmer
Partner in Charge



Joe Robb
Senior Project Manager



Approved By: James Hemme
Professional Engineer

ERM Consulting & Engineering, Inc.

One Beacon Street, 5th Floor
Boston, Massachusetts
02108

T: +1 617 646 7800

F: +1 617 267 6447

© Copyright 2020 by ERM Worldwide Group Ltd and/or its affiliates ("ERM").
All rights reserved. No part of this work may be reproduced or transmitted in any form,
or by any means, without the prior written permission of ERM.

Professional Engineer Certification – Bottom Ash Pond Closure Plan

I hereby certify that I am familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR), and that I or an agent under my review has prepared this Amended Bottom Ash Pond Closure Plan. I attest that this plan has been prepared in accordance with good engineering practices and meets the intent of 40 CFR 257.102(b). To the best of my knowledge, the information contained in this plan is true, complete, and accurate.



James A. Hemme, P.E.
State of Ohio License No.: 72851

Date: 4/15/2020

CONTENTS

1.	OBJECTIVE.....	1
2.	DESCRIPTION OF THE CCR UNIT.....	1
3.	DESCRIPTION OF CLOSURE PLAN—40 CFR 257.102(B)(1)(I).....	1
4.	CLOSURE IN PLACE—40 CFR 257.102(B)(1)(III)	1
4.1	Closure Performance Standards—40 CFR 257.102(d)(1)(i)–(v).....	2
4.2	Draining and Stabilizing the Surface Impoundments—40 CFR 257.102(d)(2)(i)–(ii).....	2
4.3	Final Cover System—40 CFR 257.102(d)(3).....	2
5.	ESTIMATE OF MAXIMUM CCR VOLUME—40 CFR 257.102(B)(1)(IV)	2
6.	ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER—40 CFR 257.102(B)(1)(V)	3
7.	CLOSURE SCHEDULE—40 CFR 257.102(B)(1)(VI)	3
8.	REFERENCES	3

Acronyms and Abbreviations

Name	Description
BAC	Bottom Ash Complex
BAP	Bottom Ash Pond
CCR	Coal Combustion Residual
CCR Rule	40 CFR 257
CFR	Code of Federal Regulations
ERM	ERM Consulting & Engineering, Inc.
Gavin	Gavin Power, LLC
NPDES	National Pollution Discharge Elimination System

1. OBJECTIVE

ERM Consulting & Engineering, Inc. (ERM) has prepared this report on behalf of Gavin Power, LLC (Gavin) to fulfill the requirements of 40 Code of Federal Regulations (CFR) 257 (the CCR Rule), specifically 257.102(b), which describes the criteria for a written closure plan for closing coal combustion residual (CCR) units. ERM has adapted this report from American Electric Power Service Corporation's October 2016 *Closure Plan* (AEP 2016a) to clarify that the Reclaim Pond, while a part of the bottom ash complex (BAC), is not a regulated CCR surface impoundment, and that this closure plan only applies to the Bottom Ash Pond (BAP).

2. DESCRIPTION OF THE CCR UNIT

The BAC is adjacent to Ohio State Route 7, immediately south of the Gavin plant, and west of the Ohio River. The BAC is accessed by plant roads and is owned and operated by Gavin. The facility has two surface impoundments for storing CCR: the BAP and the fly ash reservoir.

The BAC consists of two aboveground reservoirs surrounded by continuous earthen dikes: the 57.8-acre BAP and the 6.7-acre Reclaim Pond.

The BAP is a CCR surface impoundment subject to the CCR Rule; it is the focus of this closure plan.

The Reclaim Pond does not receive significant amounts of CCR from the BAP; was not designed to hold an accumulation of CCR; and does not treat, store, or dispose of CCR; therefore, it is not subject to the CCR Rule.

The dike height around the BAP and Reclaim Pond varies from 22 to 36 feet; the lowest crest elevation is approximately 586 feet above mean sea level. The BAP and Reclaim Pond pool levels are kept at approximately 578 feet and 576 feet, respectively, above mean sea level.

Operationally, bottom ash slurry is pumped into the BAP, and the water is decanted through a reinforced concrete drop inlet structure into the Reclaim Pond. The water in the Reclaim Pond is either pumped to the plant for reuse or discharged to the Ohio River via an overflow structure, in accordance with Gavin's National Pollutant Discharge Elimination System (NPDES) permit.

3. DESCRIPTION OF CLOSURE PLAN—40 CFR 257.102(b)(1)(i)

The BAP will be capped and closed in place. Prior to final cover system installation, the BAP will be drained of free water and the material will be regraded to achieve positive drainage off of the area to be capped and to provide a stable subgrade. The regraded surface will be covered with a flexible geomembrane liner, which will in turn be covered with an 18-inch soil infiltration layer and 6 inches of earthen material capable of sustaining native plant growth, for a total of 2 feet of soil fill. The surface soil will be fertilized, seeded and mulched to promote the growth of a vegetative cover.

4. CLOSURE IN PLACE—40 CFR 257.102(b)(1)(iii)

The final cover system will be a liner system (consisting of a flexible geomembrane, soil cover, and vegetative layer) that will have a permeability less than or equal to the permeability of the natural subsoils, and no greater than 1×10^{-5} centimeters per second. The geomembrane will minimize the infiltration of water and have properties allowing it to be stable at proposed final cover grades, resistant to potential differential settlement, and chemically compatible with the CCR materials it will cover. The geomembrane will be installed directly over the graded CCR material. The infiltration layer (18 inches of

earthen material and a 6-inch erosion layer of earthen material capable of sustaining native plant growth) will be installed on top of the geomembrane. The final cover will be fertilized, seeded and mulched to promote vegetative cover growth. The final cover slope will be a minimum 2 percent grade and convey water to an NPDES-permitted outfall.

4.1 Closure Performance Standards—40 CFR 257.102(d)(1)(i)–(v)

The final system will cover the CCR material and will have a permeability less than or equal to the permeability of the natural subsoils, and no greater than 1×10^{-5} centimeters per second.

The impoundment will be graded to a minimum slope of 2 percent to minimize the potential for ponding. This final configuration will be designed to meet the stability requirements required by the standard to prevent the sloughing or movement of the final cover system during the closure and post-closure care period. Design measures to meet this requirement will include a grading plan specifying specific maximum slope and lengths designed for long-term stability and diversion of stormwater runoff through stable conveyance structures and off of slopes and away from the toe of the regraded and covered area.

The final cover will be vegetated to prevent erosion and promote ease of maintenance. Final cover will meet local standards for planting mixes, schedules and maintenance requirements. Anticipated maintenance will include mowing and removal of impediments to positive stormwater drainage off of the closure area, as well as periodic inspections and removal of rodent populations and invasive species.

The CCR unit will be closed in a timeframe consistent with recognized and generally accepted good engineering practices. There is currently no schedule for closing this CCR unit.

4.2 Draining and Stabilizing the Surface Impoundment—40 CFR 257.102(d)(2)(i)–(ii)

Free standing water will be removed from the BAP as part of the closure, appropriately treated and discharged through an NPDES outlet. The remaining material that will make up the subgrade of the final cover system will be stabilized by removing and treating free liquids, and providing bridging material in order to achieve a uniform and stable foundation for the cap, as necessary.

4.3 Final Cover System—40 CFR 257.102(d)(3)

The final cover will be an engineered system (consisting of a flexible geomembrane, soil cover, and vegetative layer) that will have a permeability less than or equal to the permeability of the natural subsoils, and no greater than 1×10^{-5} centimeters per second. The geomembrane will be installed directly over the graded CCR material. The infiltration layer (18 inches of earthen material and a 6-inch erosion layer of earthen material capable of sustaining native plant growth) will be installed on top of the geomembrane. The final cover will be fertilized, seeded and mulched to promote vegetative cover growth. The final cover slope will be a minimum 2 percent grade to accommodate settling and subsidence, and will convey water to an NPDES-permitted outfall.

5. ESTIMATE OF MAXIMUM CCR VOLUME—40 CFR 257.102(b)(1)(iv)

Based on available information for the last several years, the estimated maximum inventory of CCR material in the BAP is approximately 561 acre-feet (AEP 2016b). As of 2019, the CCR inventory was approximately 448 acre-feet (ERM 2020). This estimate will be updated annually in the Annual Engineering Inspection Report.

6. ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER— 40 CFR 257.102(b)(1)(v)

The largest area of the CCR unit that will require a final cover is approximately 57.8 acres.

7. CLOSURE SCHEDULE—40 CFR 257.102(b)(1)(vi)

There are currently no plans to close this CCR unit. The sequential steps that will be taken to close the BAP and estimated timeframes for each include:

- Coordination with agencies and obtaining necessary permits (12 months)
- Dewatering and stabilization of CCR materials (24 months)
- Surface grading (12 months)
- Installation of the final cover system (12 months)

8. REFERENCES

American Electric Power Service Corporation. 2016a. *Closure Plan CFR 257.102(b): Bottom Ash Complex Gavin Plant, Cheshire, Ohio*. Document number GERS-16-021. Prepared for AEP Generation Resources. Columbus, Ohio: American Electric Power Service Corporation. October 2016.

American Electric Power Service Corporation. 2016b. *Dam & Dike Inspection Report: Bottom Ash Complex and Stingy Run Fly Ash Dam, Gavin Plant, Cheshire, Ohio*. Document number GERS-16-151. Prepared for AEP Service Corporation. Columbus, Ohio: American Electric Power Service Corporation. November 2016.

ERM Consulting & Engineering, Inc. 2020. *2019 Annual Inspection Report: Bottom Ash Pond and Stingy Run Fly Ash Reservoir*. Prepared for Gavin Power, LLC. Boston, MA: ERM Consulting & Engineering, Inc. 6 January 2020.

ERM has over 160 offices across the following countries and territories worldwide

Argentina	The Netherlands
Australia	New Zealand
Belgium	Norway
Brazil	Panama
Canada	Peru
Chile	Poland
China	Portugal
Colombia	Puerto Rico
France	Romania
Germany	Russia
Hong Kong	Singapore
India	South Africa
Indonesia	South Korea
Ireland	Spain
Italy	Sweden
Japan	Switzerland
Kazakhstan	Taiwan
Kenya	Thailand
Malaysia	UAE
Mexico	UK
Mozambique	US
Myanmar	Vietnam

ERM's Boston Office

One Beacon Street, 5th Floor
Boston, Massachusetts
02108

T: +1 617 646 7800

F: +1 617 267 6447

www.erm.com