



SURFACE IMPOUNDMENT CLOSURE PLAN

Possum Point Power Station – Ponds ABC and E
Permit # 617



Submitted To: Possum Point Power Station
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Dumfries, VA 22026

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CLOSURE PLAN

April 2018

Project No. 16-62150

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1.0 PLAN CERTIFICATION

This Closure Plan for the Possum Point Power Station’s Ponds ABC and E was prepared by Golder Associates Inc. (Golder). The document and Certification/Statement of Professional Opinion are based on and limited to information that Golder has relied on from Dominion Energy and others, but not independently verified, as well as work products produced by Golder.

On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Virginia that this document has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, at the same time, and in the same locale. It is my professional opinion that the document was prepared consistent with the requirements in §257.102 of the United States Environmental Protection Agency’s “Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments,” published in the Federal Register on April 17, 2015, with an effective date of October 19, 2015 (40 CFR §257.102), as well as with the requirements in §257.100 resulting from the EPA’s “Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Extension of Compliance Deadlines for Certain Inactive Surface Impoundments; Response to Partial Vacatur” published in the Federal Register on August 5, 2016 with an effective date of October 4, 2016 (40 CFR §257.100).

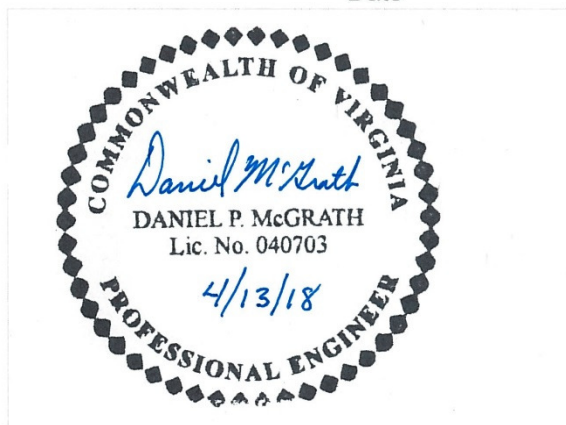
The use of the word “certification” and/or “certify” in this document shall be interpreted and construed as a Statement of Professional Opinion, and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

Daniel McGrath
Print Name

Associate and Senior Consultant
Title

Daniel McGrath
Signature

4/13/18
Date



2.0 INTRODUCTION

This Closure Plan (Plan) was prepared for the Possum Point Power Station's (Station) inactive Coal Combustion Residuals (CCR) surface impoundments, Ponds ABC and E. This Closure Plan was prepared in accordance with 40 CFR Part §257, Subpart D and is consistent with the requirements of 40 CFR §257.102 for closure of CCR surface impoundments, 40 CFR §257.100(e)(6)(i), and Virginia Solid Waste Management Regulations 9 VAC20-81-800. The Station, owned and operated by Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion), is located in Dumfries, Virginia at 19000 Possum Point Road, near the mouth of Quantico Creek.

Ponds ABC and E are being closed as CCR surface impoundments under the CCR rule provisions at 40 CFR §257. The ponds will be closed by removal of CCR pursuant to 40 CFR §257.102(c). All elevations noted in this document, unless stated otherwise, are in feet relative to the North American Vertical Datum of 1988 (NAVD-88).

2.1 General Impoundment Information

Ponds ABC are approximately 17.5-acres and were used for the storage of CCR from the Station. It was built as three ponds, A, B, and C; however, the ponds shared a common downstream embankment and decant outlet structure, so they are collectively known as Ponds ABC for convenience. The embankment top elevation is 20 feet. Ponds ABC contained approximately 155,000 cubic yards (CY) of CCR prior to the start of excavation activities.

Ponds ABC is currently regulated under the following permits:

- Virginia Department of Environmental Quality (DEQ) Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0002071
- Virginia Department of Conservation and Recreation (DCR) Operation and Maintenance Certificate, Inventory No. 153001 (Legacy No. 00788)

Pond E is an approximately 40-acre impoundment that was used for the storage of CCR from the Station. The embankment top elevation is 40 feet. Pond E contained approximately 730,000 CY of CCR prior to the start of excavation activities.

Pond E is currently regulated under the following permits:

- Virginia Department of Environmental Quality (DEQ) Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0002071
- Virginia Department of Conservation and Recreation (DCR) Operation and Maintenance Certificate, Inventory No. 153021 (Legacy No. 15321)

3.0 CLOSURE IMPLEMENTATION

3.1 Overview of Closure Approach

This plan provides for the closure of Ponds ABC and E by removal of the CCR material. Closure is considered complete under 40 CFR 257.102 and 9 VAC20-81-810 when:

1. A professional engineer licensed in Virginia certifies all CCR has been removed from the units followed by an over-excavation of approximately 6 inches of soil.
2. The unit's downgradient groundwater monitoring wells do not exhibit levels in excess of a maximum contaminant limit (MCL) or established groundwater protection standard for any CCR Appendix IV constituent for two consecutive monitoring events.

At the time of writing, the vast majority of CCR in the ponds had been removed to Pond D. Final CCR removal will either be consolidated in the Pond D CCR impoundment or disposed of in an off-site designated facility. After CCR removal and certification, the former pond subgrade will be shaped to drain through opening(s) in the embankment. Due to the breach of the embankment, the former ponds will not retain water and will no longer be regulated as impounding structures by DCR. During and after closure, the existing network of groundwater monitoring wells will be sampled and tested to determine the monitored constituent concentrations (40 CFR §257 Appendix IV).

CCRs identified in what appears to be a former laydown area west of Pond C will be removed and disposed offsite in an authorized disposal facility. This area is separate from the surface impoundments and will have dedicated erosion and sediment controls installed. After removal of these materials, a registered professional engineer will visually inspect the area to verify that all CCR is effectively removed.

4.0 CLOSURE TIMEFRAMES

Table 1 below outlines the estimated sequence of scheduled closure activities.

Table 1: Closure Schedule

Activity	Tentative Date
Completion of CCR Removal	By October 2018
Completion of Closure Construction	By January 2019
Certification of Construction Completion	By April 2019

Closure is considered complete when the elements of this Closure Plan specified above have been performed as certified by a Professional Engineer licensed in the Commonwealth of Virginia. This certification will be included as part of a closure certification report. In accordance with 40 CFR §257.102(h), Dominion will prepare a notification of closure of the CCR unit within 30 days of completion of closure, and place the notification in the operating record.

5.0 INVENTORY REMOVAL AND DISPOSAL

5.1 Waste Removal, Decontamination and Disposal

The protocol for closure by removal will involve removing accumulated CCR such that no residual materials remain visible, followed by over-excavating the removal footprint by approximately 6 inches. Removed CCR and CCR-mixed soil will either be consolidated in the Pond D CCR impoundment or taken to an off-site disposal facility. To facilitate stormwater management, construction, and/or structural stabilization of embankments or excavations, closure by removal of areas within the ponds may be achieved in phases. Phased closures may be sequenced as necessary to support traffic patterns, stormwater controls, etc.

Material removal against embankments may involve excavation of the upstream embankment face to near-vertical condition. Immediately after excavation and inspection of these areas for certification, fill soil will be placed and compacted against the embankment to re-establish stable slopes of no steeper than 2:1. After CCR removal and certification, the former pond subgrade will be shaped to drain and openings will be made in the embankments to preclude water storage in the former pond areas. Vegetative stabilization will be established to prevent erosion. The final configuration of the design grades and embankment breach geometry will be developed through the Prince William County and DCR permitting processes. Final grades shown in the plan drawings are conceptual.

5.2 Sampling and Testing Program

After removal of the 6-inch over-excavation material, the area will be visually inspected to verify the CCR and overexcavation has been achieved. The ponds will be further inspected by targeted soil cores for visual inspection to a depth of at least 6 inches at a frequency of at least one core per acre. The soil cores will be dug by hand using a hand auger or similar tool and be a minimum of 6-inches deep.

Verification surveys of the pond closure will be prepared by a Virginia-Licensed Land Surveyor and will consist of a survey of the “visually clean” surface and a survey of the “overexcavation” surface to verify the minimum 6-inch removal. Certification of the closure by removal will be provided by a Virginia-licensed Professional Engineer.

6.0 CLOSURE OF SUPPORT PONDS AND BASINS

There are no supporting ponds or basins associated with Ponds ABC and E.

7.0 CLOSURE IMPLEMENTATION

7.1 Posting

One sign will be posted at the site entrance to each pond notifying all persons of the final closure and prohibition against further receipt of CCR. Unauthorized access to the site will be controlled by natural barriers or lockable gates across the access roads.

7.2 Certification

Upon completion of closure construction, a certification statement signed by a licensed professional engineer will be placed in the operating record and submitted to the DEQ along with the documentation from the Sampling and Testing Program. The certification statement shall read as follows:

I certify that closure has been completed in accordance with the Closure Plan dated [DATE] for solid waste permit number 617 issued to Dominion, with the exception of the following discrepancies: [To Be Determined]

In addition, a sign(s) was (were) posted on [DATE] at the site entrance notifying all persons of the closing [and state other notification procedures if applicable] and barriers [indicate type] were installed at [location] to prevent new waste from being deposited.

[Signature, date and stamp of Professional Engineer]

7.3 Post-Closure Uses

No post-closure use of the area is proposed. The former pond areas will be allowed to revegetate and return to a natural habitat area.

8.0 CLOSURE COST ESTIMATE

The closure cost estimate for Ponds ABC and E is \$1,900,000. This estimated amount covers the remaining excavation, inspection, testing, and certification as proposed in this Plan.

Possum Point Power Station Ponds ABC & E
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Summary of Closure and Post-Closure Care Costs

Facility	Ponds ABC	Pond E	Total
Area, Acres	17.5	40	57.5
Closure Cost	\$ 692,102	\$ 1,238,341	\$ 1,930,442
Post-Closure Care Cost	\$ 1,261,313	\$ 1,553,640	\$ 2,814,953

Last Revised: March 2018

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Ponds ABC CCR Impoundment Closure by Removal Cost Estimate

Item No.	Description	Unit of Measure	Quantity	Unit Price	Total	Notes/Assumptions
1	Mobilization, demobilization and general conditions	LS	1	\$ 75,000	\$ 75,000	
2	Construction Engineering / Surveying	LS	1	\$ 12,500	\$ 12,500	
3	Maintain and inspect erosion / stormwater controls during	Month	4	\$ 5,000	\$ 20,000	
4	Stormwater pumping to Pond D	Month	6	\$ 27,300	\$ 163,800	
5	Silt Fence non-reinforced	LF	2,400	\$ 4.10	\$ 9,840	
6	Silt Fence removal and disposal	LF	2,400	\$ 1.00	\$ 2,400	
7	6-inch over-excavation (17 acres)	CY	15,100	\$ 9.50	\$ 143,450	Pond area +10%. Excavate, load, haul and place in Pond D
8	Soil backfill for slope stabilization	CY	2,500	\$ 15.50	\$ 38,750	100% On-site soil. Excavate, load, place and compact.
9	Site security - Gate	Ea	1	\$ 1,500	\$ 1,500	
10	Closure sign	Ea	1	\$ 125	\$ 125	
11	Contingency	%	467,365	10%	\$ 46,737	
12	3rd party certification survey	Ac	17	\$ 4,500	\$ 76,500	
13	Construction QA/QC oversight	LS	1	\$ 93,500	\$ 93,500	
14	Closure certification report	LS	1	\$ 8,000	\$ 8,000	
				Total	\$ 692,102	

- Notes 1. Estimate based on starting with current condition being fully excavated to visually clean condition
2. Estimate does not include final site stabilization, embankment breaching, or local permitting

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Pond E CCR Impoundment Closure by Removal Cost Estimate

Item No.	Description	Unit of Measure	Quantity	Unit Price	Total	Notes/Assumptions
1	Mobilization, demobilization and general conditions	LS	1	\$ 75,000	\$ 75,000	
2	Construction Engineering / Surveying	LS	1	\$ 26,000	\$ 26,000	
3	Maintain and inspect erosion / stormwater controls during	Month	6	\$ 5,000	\$ 30,000	
4	Stormwater pumping to Pond D	Month	8	\$ 27,300	\$ 218,400	
5	Silt Fence non-reinforced	LF	3,300	\$ 4.10	\$ 13,530	
6	Silt Fence removal and disposal	LF	3,300	\$ 1.00	\$ 3,300	
7	6-inch over-excavation (40 acres)	CY	35,500	\$ 8.50	\$ 301,750	Pond area +10%. Excavate, load, haul and place in Pond D
8	Soil backfill for slope stabilization	CY	5,500	\$ 15.50	\$ 85,250	100% On-site soil. Excavate, load, place and compact.
9	Site security - Gate	Ea	1	\$ 1,500	\$ 1,500	
10	Closure sign	Ea	1	\$ 125	\$ 125	
11	Contingency	%	754,855	10%	\$ 75,486	
12	3rd party certification survey	Ac	40	\$ 4,500	\$ 180,000	
13	Construction QA/QC oversight	LS	1	\$ 220,000	\$ 220,000	
14	Closure certification report	LS	1	\$ 8,000	\$ 8,000	
				Total	\$ 1,238,341	

Notes 1. Estimate based on starting with current condition being fully excavated to visually clean condition
2. Estimate does not include final site stabilization, embankment breaching, or local permitting

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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