Post-Closure Care Plan

POST-CLOSURE CARE PLAN

Yorktown Power Station Ash Landfill – Permit #457

Submitted To: Dominion Energy – Yorktown Power Station
1600 Waterview Road
Yorktown, VA 23692

Submitted By: Golder Associates Inc.
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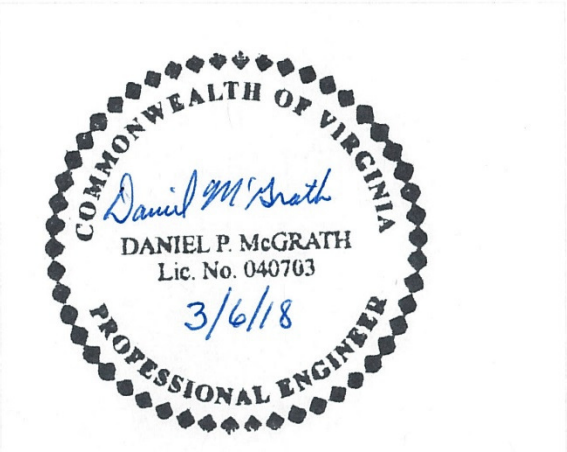
Table of Contents

Attachments

1.0 PLAN CERTIFICATION

I certify that the information contained within this Post-Closure Care Plan was prepared by me or under my direct supervision, and meets the requirements of Section §257.104 of the Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 CFR 257; the CCR rule) and the Virginia Solid Waste Management Regulations.

Daniel McGrath	Associate and Senior Consultant
Print Name	Title
Daniel McGrath	3/6/18
Signature	Date



2.0 PURPOSE

This Post-Closure Care Plan (Plan) is for the Yorktown Power Station Ash Landfill Facility (landfill) at the Yorktown Power Station (Station), York County, Virginia. This Facility is a captive industrial landfill and at closure will contain approximately 1,400,000 cubic yards of Coal Combustion Residuals (CCRs).

2.1 Post-Closure Period

The required post-closure care period for this landfill is 30 years in conformance with the Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule (the CCR Final Rule); 40 CFR 257.

2.2 Post-Closure Contact

The post-closure contact for this Facility will be:

Mr. Jason E. Williams
Director - Environmental
Dominion Energy Services
5000 Dominion Boulevard
Glen Allen, Virginia 23060
jason.e.williams@dominionenergy.com
(804) 273-2646

3.0 INSPECTION, MONITORING, AND MAINTENANCE PLAN

3.1 Security Control Devices

The perimeter of the landfill and access points into the landfill will be inspected at least once per calendar month to verify the proper functioning of gates, fencing, and other perimeter security measures. If repairs are found to be needed, the maintenance request will be routed through the Station's environmental representative.

3.2 Final Cover Integrity

The final cover of the landfill will be inspected at least once per calendar month or after severe storms to assess the condition of the cover and identify maintenance needs. Inspection items will include:

- Erosion damage to cover, stormwater channels, or stormwater basins;
- Settlement, subsidence, or displacement of the final cover;
- Evidence of animal intrusion or burrowing;
- Bare or dead vegetative cover;
- Woody vegetation growing on final cover areas; and,
- Evidence of seeps or saturated areas.

The landfill shall be mowed at least once per growing season or more as necessary to facilitate growth of grasses on the cover, enable inspection, and preclude the establishment of woody vegetation. Application of fertilizer and/or reseeding shall take place as needed to maintain a healthy stand of vegetative cover.

3.3 Run-on and Run-off Controls

As part of the monthly or post-storm inspection, the stormwater run-off control system shall be inspected. Stormwater conveyances shall be observed for erosion damage, accumulated sediment, unusual settlement, and excessive or insufficient vegetative growth. Culverts shall be checked for blockage due to accumulated debris or sediment. Drop inlets shall be checked for debris accumulation.

Small amounts of sediment or debris shall be removed from areas if possible. Areas requiring repairs or debris removal that are beyond the inspector's capacity shall be identified to the Station's environmental representative for correction.

3.4 Repair of Erosion Damaged Areas

Areas of the cover system that have been eroded will be backfilled. The areas will be seeded, then mulched or protected with erosion control matting to deter new erosion. Other areas that have been eroded will be graded to allow positive drainage, seeded, and mulched or protected with erosion control matting to deter new erosion.

3.5 Leachate Collection System

The leachate collection system shall be inspected as part of the monthly site inspection. Pump run-time meters shall be observed for change since the last inspection to identify nonworking or overworking pumps. Areas around the pump station and underground tank shall be inspected for leaks. Identified maintenance needs shall be directed to the Station's environmental representative.

The perimeter of the landfill will be inspected for the presence of leachate seeps. If a leachate seep is identified, the Station shall be notified to repair the seep and complete the following actions:

- Take immediate action to safely contain and properly manage the leachate at the source of the seep and,
- As feasible, to minimize, control, or eliminate the seep.

Following the immediate response to the seep, an evaluation shall be made to consider if further remedial action is required.

3.6 Groundwater Monitoring System

Groundwater monitoring throughout the post-closure period shall be performed semi-annually and comply with requirements outlined in 40 CFR 257.90-98 and in the Facility's *Groundwater Monitoring Plan*. Identified maintenance needs shall be coordinated through the Station's environmental representative as needed.

3.7 Landfill Gas Monitoring System

CCRs by their nature are non-putrescible, and do not decompose or produce landfill gas. Gas migration and odor is not anticipated to be a concern post-closure. Therefore, no post-closure landfill gas monitoring is proposed for this Facility.

3.8 Inspection

Inspections will be performed by a Dominion employee or independent licensed engineer or other qualified person. The Closure Inspection Checklist, or equivalent, provided in Attachment 1 will be used to document inspections. The closed CCR impoundment will be inspected at a frequency appropriate to maintain environmental and structural integrity of the cover system.

4.0 POST-CLOSURE USES

Post-closure use shall be in accordance with the provisions of the Virginia Solid Waste Management Regulations and the Final CCR Rule. Access to the site will be restricted. Post-closure activities will be designed and conducted so as to not disturb the integrity of the final cover, the components of any containment system, or the function of the Facility's monitoring systems.

5.0 POST-CLOSURE COST ESTIMATE

The estimated cost for post-closure care of the 48-acre landfill is $6,280,000. Attachment 2 contains the Cost Estimate Worksheets.

6.0 POST-CLOSURE CARE TERMINATION

At the end of the 30-year post-closure care period, Dominion will submit a request to terminate post-closure care in accordance with the Virginia Solid Waste Management Regulations and the Final CCR Rule.

6.1 Notification

Within 60 days of completion of post-closure care, a certification statement, signed by a licensed professional engineer, will be placed posted on a publicly accessible internet site, placed in the facility's operating record, and submitted to the DEQ in accordance with the Final CCR Rule.

Attachment 1
Post-Closure Inspection Checklist
Yorktown Ash Landfill Facility – Permit #457

Item	Inspection Items	Frequency of Inspection
Facility Area	Gate and Fence	Monthly
	Erosion of closure cover	Monthly or after severe storms
	Settlement & Subsidence	Monthly
	Deterioration of vegetative cover	Monthly or after severe storms
	Trash, litter	Monthly
	Stormwater control system	Monthly or after severe storms
Leachate Collection System	Leachate levels, pump operation hours / flows, manholes	Monthly
Groundwater Monitoring System	See Groundwater Monitoring Plan	See Groundwater Monitoring Plan

MONTHLY CLOSED CCR LANDFILL/POND INSPECTION CHECKLIST

Site Name		Inspected By		
Date of Inspection		Rain in Last 2-3 days? Circle One	Yes	No

Conditions Present	No Action Required	Investigate	Request Repair	Prompt Action Required	Comments (Include information on corrective actions/routine maintenance procedures that will be implemented to address the condition and any status updates)
	Place X in Box				
Inactive/Closed Area					
Animal Burrows					
Areas of Erosion					
Erosion control features					
Drains and drain systems					
Slide, slough, bulges, seeps					
Vegetative cover damage					
Vegetative mowing needed					
Leachate and Stormwater Pond Area					
Animal Burrows					
Areas of Erosion					
Leachate System Operation					
Visible liner damage					
Outlet operation					
Vegetative mowing or removal needed					

Conditions Present	No Action Required	Investigate	Request Repair	Prompt Action Required	Comments (Include information on corrective actions/routine maintenance procedures that will be implemented to address the condition and any status updates)
	Place X in Box				
Other Areas					
Groundwater wells					
Evidence of spills					
Security/Access					
Trash and Debris					

Previous Conditions for "Request Repair" or "Prompt Action Required" items have been addressed and the condition has returned to "No Action Required"? If no, provide date for completion in Comments box below.	Yes	No

Definitions

No Action Required	Observation indicates that landfill is operating in a normal safe condition protective of the environment. No further action is necessary.
Investigate	Observation indicates a condition that has changed from a "no action required" condition and requires investigation to determine whether condition is unsafe or not protective of the environment. Inspector will notify Operations, Engineering, or Environmental Services to investigate and/or evaluate condition further.
Request Repair	Observation indicates a condition that requires a near term repair to ensure that condition does not worsen and become a serious concern. Inspector will submit a repair ticket through their internal work order system or make contact with responsible party for repair.
Prompt Action Required	Observation indicates a condition that must be addressed immediately to ensure the safety of the surface impoundment, related facilities, or public or protection of the environment. Inspector will contact responsible site and/or corporate personnel to initiate an immediate evaluation and corrective measure, as necessary.

General Comments [Document any unusual events or conditions]:

Note: Completed inspection forms must be saved into the facility operating record and Environmental Documentum.

Attachment 2

Post-Closure Care Cost Estimate

Yorktown Power Station Ash Landfill, Permit No. 457
Yorktown, VA

Worksheet CEW-02: FORMAT FOR THE ESTIMATION OF POST-CLOSURE COSTS

FILL IN THE BOXES. THE REST WILL BE CALCULATED FOR YOU

I. Groundwater Monitoring

			Calculation or Conversion		
a. Total number of monitoring wells	10	wells			
b. Total number of sampling events/year	2	events/yr	a x b	20	samples/yr
c. Quantity of additional samples (e.g. QA/QC)	1	samples/event	a x c	10	samples/yr
d. Total samples per year			b + c	30	samples/yr
e. Analysis unit cost (Table 3.1 and 4 constituents)	$750.00	/sample	base price, ENCO Cost Sheet, VELAP Accredited		
f. *Total Analysis cost*			d x e	*$22,500.00*	/yr
g. GW Monitoring unit cost	$5,800.00	/event			
i. *Total sampling cost*			f + (g x b)	*$34,100.00*	/yr
j. Engineering fees & reports	$10,994	/yr			
Yearly Groundwater Monitoring Cost			i + j	***$45,094***	***/yr***

II. Landfill Gas Monitoring, Maintenance, and Control

a. Frequency of LFG compliance monitoring	0	events/yr			
b. LFG Monitoring unit cost	$549.73	/event			
c. *Total perimeter LFG monitoring cost*			a x b	*$0*	/yr
d. Frequency of suface monitoring (air permit)	0	events/yr			
e. Surface monitoring unit cost	$0.00	/event			
f. *Total surface monitoring cost*			d x e	*$0*	/yr
g. Control system operating unit cost	$0	/yr			
h. Frequency of LFG control system inspections	0	events/yr			
i. Control system inspection cost	$0.00	/event			
j. *Total constrol system cost*			g + (h x i)	*$0*	/yr
Yearly Landfill Gas Monitoring, Maintenance, & Control Cost			c + f + j	***$0***	***/yr***

III. Leachate Management

a. Quantity of leachate generated	3,650,000	gal/yr			
On-site Leachate Management or Pre-Treatment					
b. On-site treatment operating unit cost	$0.00	/gal			
c. *Total on-site management cost*			a x b	*$0*	/yr
Leachate Disposal					
d. Private disposal unit cost	$0.02	/gal			
e. POTW disposal unit cost	$0.0100	/gal			
f. Direct discharge to POTW unit cost	$0.0100	/gal			
g. Pump & Haul unit cost	$0.08	/gal			
h. Subtotal leachate disposal unit cost			d + e + f + g	$0.01	
i. *Total leachate disposal cost*			a x h	*$36,500*	/yr
j. Leachate sampling & analysis unit cost	$2,500.00	/sample			
k. Frequency of leachate sampling & analysis	1	sample/yr			
l. *Total leachate sampling & analysis cost*			j x k	*$2,500.00*	/yr
Yearly Leachate Management Cost			c + i + l	***$39,000***	***/yr***

IV. Cap Maintenance & Repair

a. Closed Landfill Area	48.5	acres			
Mowing & Fertilization					
b. Mowing frequency	3	visits/yr			
c. Mowing unit cost	$85.00	/acre/visit			
d. *Total mowing cost*			a x b x c	*$12,368*	/yr
e. Fertilizer frequency	1	visits/yr			
f. Fertilizer unit cost	$305.52	/acre/visit			
g. *Total fertilizer cost*			a x e x f	*$14,818*	/yr
Cap Erosion & Repair					
h. Area to reseed/year			33% x a	16.2	acres
i. Reseeding unit cost	$2,500.00	/acre			
j. *Total reseeding cost*			h x i	*$40,416.67*	/yr
k. Area of cap erosion/year			10% x a	4.85	acres
l. Cap erosion repair unit cost	$2,500.00	/acre			
m. Mobilization/Demobilization	$250.00	/yr			
n. *Total cap erosion repair cost*			(k x l) + m	*$12,375*	/yr
Yearly Cap Maintenance & Repair cost			d + g + j + n	***$79,977***	***/yr***

V. Sediment Basin Maintenance & Repair

a. Sediment basin cleanout frequency, 1 per	3	years	1 / a	0.33	event/yr
b. Sediment basin cleanout unit cost	$50,000	/event			
c. Mobilization/Demobilization	$2,500	/event			
d. *Total sediment basin maintenance cost*			a x (b + c)	*$17,500*	/yr
e. Total number of stormwater sampling locations	2	locations			
f. Stormwater sampling frequency	1	events/yr			
g. Total number of stormwater samples			e x f	2	samples/yr
h. Analysis unit cost (VPDES permit parameters)	$2,500	/sample			
i. *Total Analysis cost*			g x h	*$5,000*	/yr
j. Mobilization unit cost	$250.00	/event			
k. Technician field unit cost	$500.00	/event			
l. *Total sampling cost*			f x (j + k)	*$750.00*	/yr
m. Engineering fees & reports	$500	/yr			
n. *Total Stormwater Sampling & Analysis cost*			i + l + m	*$6,250*	*/yr*
Yearly Sediment Basin Maintenance & Repair			d + n	***$23,750***	***/yr***

VI. Vector & Rodent Control

a. Vector and rodent control unit cost	$2,000	/yr			
Yearly Vector and Rodent Control Cost			a	***$2,000***	***/yr***

VII. Post-Closure Care General Inspections

a. General Inspection unit cost	$1,250	/inspection			
b. Number of inspections per year	12				
Yearly Post-Closure Care General Inspection Cost			a x b	***$15,000***	***/yr***

Annual Post-Closure Care Cost (APCC)		I + … + VII	$204,821 /yr
Length of post-closure care (LPCC)	30 years		
Post-Closure Care Cost		APCC x LPCC	$6,144,642
City Cost Index (Small City)	100%=1		***1***
Adjusted Post-Closure Care Cost (AdjPCC)			$6,144,641.80
Engineering & Documentation		Engineering Sum	$75,705
Post-Closure Care Evaluation	$40,964	20% of Adj APCC	
Post-Closure Care Certification	$10,241	5% of Adj APCC	
Cost for survey and deed notation (if not completed at time of landfill closure)	$24,500	$500 per acre (49 acres)	
FA Mechanism Maintenance Cost	$2,048 /yr	FA maintenance x LPCC	$61,446
Total Post-Closure Care Cost		Post-Closure Cost + Engineering + FA Maintenance	**$6,281,794**