Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stefanie K. Taillon
Secretary of Natural and Historic Resources

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Director

SOLID WASTE FACILITY PERMIT
SWP619

Facility Name: Chesterfield Power Station

Facility Type: CCR Surface Impoundments **Latitude:** N 37° 23' 08"

Site Location: Chesterfield County, Virginia **Longitude:** W 77° 24' 01"

Location Description: The facility is located at 500 Coxendale Road in North Chesterfield County, Virginia. The surface impoundments are located to the southeast of the Chesterfield Power Station and bordered to the north by Coxendale Road and to the east by Henricus Park Road, to the south by Dutch Gap Conservation Area, and to the west by the James River.

Background: The facility consists of two privately owned/operated surface impoundments, otherwise known as the Lower Ash Pond (LAP) and Upper Ash Pond (UAP). The LAP and UAP managed sluiced (or wet) coal combustion residuals (CCR) from the Chesterfield Power Station in accordance with Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0004146.

The two CCR surface impoundments consist of the "Lower Ash Pond" (LAP) and the "Upper Ash Pond" (UAP). The LAP was constructed in two phases – the first phase in 1964, and the second phase in 1967-68, which increased the top elevation 15 to 20 feet. The LAP is approximately 111 acres in size and contains approximately 2.8 million cubic yards of CCR to be removed. The UAP was constructed in 1985, is approximately 113 acres in size, and contains approximately 11.8 million cubic yards of CCR to be removed. The facility ceased sluicing CCR to the LAP in 2018. Closure of both the LAP and the UAP were initiated under 40 CFR 257 in 2019.

Pursuant to 40 CFR 257.102(c) and 10.1-1402.03 of the Code of Virginia, Dominion submitted a "Notice of Intent for Part B Solid Waste Permit Application for Closure of the Lower and Upper Ash Ponds," dated and received on February 5, 2021.

The operation of the CCR Surface Impoundments as part of the wastewater treatment system for this facility has been regulated under VPDES Permit No. VA0004146. The LAP historically discharged via VPDES Outfall 004. Currently, all the discharge from the LAP and UAP are treated in the Station's Central Source Wastewater Treatment System and discharged via internal Outfall

101. The facility continues to be subject to VPDES Permit No. VA0004146, including for any potential discharges related to the dewatering of the CCR Surface Impoundments.

This solid waste permit will govern the closure of the CCR surface impoundments, groundwater monitoring and surface water monitoring of the UAP and LAP CCR Surface Impoundments.

THIS IS TO CERTIFY THAT:

Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060

is hereby granted a permit to close and maintain the LAP and UAP at the Chesterfield Power Station as described in the attached Permit Modules I, XI, and XII, and XVIII and permit documents incorporated by reference. These Permit Modules and Permit Documents are as referenced hereinafter and are incorporated into and become a part of this permit.

The herein described activity is to close in accordance with the terms and conditions of this permit and the plans, specifications, and reports submitted and cited in the permit. The facility shall comply with all regulations of the Virginia Waste Management Board. The permit contains such conditions and requirements as are deemed necessary to comply with the requirements of the Virginia Code, the regulations of the Board, and to prevent substantial or present danger to human health or the environment.

Failure to comply with the terms and conditions of this permit shall constitute grounds for the initiation of necessary enforcement actions.

The permit is issued in accordance with the provisions of § 10.1-1408.1 A, Chapter 14, Title 10.1, Code of Virginia (1950) as amended.

DRAFT

APPROVED: _____
Jaime L Robb
Deputy Regional Director

DATE: _____
Permit Issuance

PERMIT MODULES
REFERENCE LIST

PERMIT MODULE I – GENERAL PERMIT CONDITIONS

PERMIT MODULE XI – MODIFIED ASSESSMENT MONITORING

PERMIT MODULE XII – CLOSURE

PERMIT MODULE XVIII – SURFACE WATER MONITORING

PERMIT DOCUMENTS

The documents listed below are hereby incorporated into this permit and the permittee is subject to all conditions contained therein. It is the responsibility of the permittee to properly maintain and update these documents. To the extent any of these documents conflict with the Permit, VSWMR, or the EPA CCR Rule, the Permit, VSWMR, or the EPA CCR Rule shall prevail. Any version with a revision date other than as listed below is not considered to be the official approved version and is subject to Department review and approval prior to being recognized as the "permitted" version.

1. *Surface Impoundment Closure Plan, Lower Ash Pond*, prepared by AECOM, dated July 2024;
2. *Surface Impoundment Closure Plan, Upper Ash Pond*, prepared by AECOM, dated July 2024;
3. *Groundwater Monitoring Plan, Chesterfield Power Station, Upper and Lower Ash Ponds*, prepared by WSP USA Inc., dated August 2023.

PERMIT MODULE I
GENERAL PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Sections 10.1-1402(18), 10.1-1402(19), or 10.1-1402(21) of the Virginia Waste Management Act (Chapter 14, Title 10.1, Code of Virginia (1950), as amended); or any other law or regulation for protection of public health or the environment. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. For purposes of this permit, terms used herein shall have the same meaning as those in the Virginia Waste Management Act, and Part I and other pertinent parts of the Virginia Solid Waste Management Regulations (VSWMR, 9VAC20-81), unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by the generally accepted scientific or industrial meaning of the term or a standard dictionary reference. "Director" means the Director of the Department of Environmental Quality, or his designated or authorized representative.

I.B. DUTIES AND REQUIREMENTS

The permittee shall comply with all conditions of this permit and 9VAC20-81. The effect of this permit is detailed in 9VAC20-81-490, and it shall be the duty of the permittee to ensure the applicable requirements are met. Additionally, the permittee is subject to the recording and reporting requirements detailed in 9VAC20-81-530. In addition to these requirements, the following additional conditions are invoked per 9VAC20-81-430, and shall be complied with:

I.B.1. Noncompliance may be authorized by a schedule of compliance [9VAC20-81-490.D. and 9VAC20-81-490.H.]. Any other permit noncompliance constitutes a violation of Virginia Waste Management Act and is grounds for enforcement action, or for permit revocation, revocation and reissuance, or modification [9VAC20-81-570 and 9VAC20-81-600].

I.B.2 The permittee shall comply with the requirements of this permit and applicable provisions of RCRA Subtitle D. This permit may not act as a shield against compliance with any part of RCRA or any other applicable federal regulation, state regulation or state law.

I.B.3. In an enforcement action, it shall not be a defense for the permittee that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.B.4. In the event of noncompliance with this permit, the permittee shall take all reasonable steps to minimize releases of solid wastes or waste constituents to the environment and shall carry out measures to prevent substantial adverse impacts on human health or the environment.

I.B.5. The permittee shall at all times properly maintain all units (and related appurtenances) which are installed or used by the permittee to achieve compliance with and the conditions of this permit. Proper maintenance includes effective performance, adequate funding, adequate staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary equipment only when necessary to achieve compliance with the conditions of this permit.

I.B.6. The permittee shall furnish to the Director, within a reasonable time, any relevant information that the Director may request to determine compliance with this permit, regulations or the Act. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit by the date specified in the request.

I.B.7. The permittee shall allow the Director, or an authorized representative, at a reasonable time, upon the presentation of appropriate credentials, to:

I.B.7.a. Enter the permitted facility where a regulated unit or activity is located or conducted, or where records must be kept under the conditions of this permit;

I.B.7.b. Have access to and copy any records that must be kept under the conditions of this permit;

I.B.7.c. Inspect any unit, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

I.B.7.d. Sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by Virginia Waste Management Act, any substances or parameters at any location within his control.

I.B.8. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed must be the appropriate method from the latest edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA Publication SW-846, if available.

Laboratory samples shall be analyzed in accordance with 1 VAC 30-45, Certification for Noncommercial Environmental Laboratories, or 1 VAC

30-46, Accreditation for Commercial Environmental Laboratories.

I.B.9. This permit is not transferable to any person, unless approved by the Director. The Director may require modification or revocation and reissuance of the permit pursuant to 9VAC20-81-490.G.

I.B.10. Specifications for all drainage media should specify that the material shall contain no greater than 15% calcium carbonate equivalent. Department literature regarding research on leachate collection media indicates that weight loss greater than 15% results in an unacceptable loss of performance. If a greater percentage is specified or allowed, a demonstration that performance is not adversely affected must be provided to the Department for review and approval.

I.B.11. Recirculation of collected leachate shall not be allowed.

I.B.12. The closure cost estimate must reflect the maximum cost of closure at all times. The owner has the responsibility to maintain the closure and post closure cost estimate and associated financial assurance funding as conditions change.

I.B.13. Land-clearing, excavation, and construction activities that involve the disturbance of wetlands or streams shall not commence without authorization from the Virginia Water Protection (VWP) Program and/or Army Corps of Engineers.

I.B.14. The facility shall maintain and follow an approved Erosion & Sediment Control Plan for all land-disturbing activities in accordance with the Erosion and Stormwater Management Regulations, 9 VAC 25-875. The facility shall ensure proper stormwater management and control including in accordance with applicable stormwater management plan, as well as sediment management and control and accordance with any applicable local or state regulation or permit.

I.C. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The permittee shall maintain a complete copy of the Solid Waste Permit and incorporated Permit Documents at the facility, or another location approved by the director, and shall maintain amendments, revisions, and modification to these documents. In addition, the facility shall maintain the following additional documents:

I.C.1. Detailed, written estimate, in current dollars, of the cost of closing the facility and corrective action measures

I.C.2. All other documents/records required and applicable from the following:

I.C.2.a. Monitoring records from groundwater monitoring and surface water monitoring.

I.C.2.b. Inspection records as required from construction/installation, closure, and records of weekly and annual inspections required by 40 CFR 257.83(a) and (b).

I.C.2.c. Construction quality assurance reports, record drawings and engineers certifications for all final cover construction

I.C.3. All records required by 40 CFR 257.105. These records shall be maintained in the written operating record for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, record or study unless another timeframe is prescribed in 40 CFR 257.105

I.D. DOCUMENTS TO BE SUBMITTED

In addition to the documents/records/reports to be submitted per the requirements of this permit or 9VAC20-81, the permittee shall also submit the following documents to the Director according to indicated schedules:

I.D.1. The as-built plans of all new groundwater monitoring wells shall be submitted as these wells are installed. Information to be included on the as-built plans shall include, but is not limited to, the total depth of the well, the surveyed elevations of the top of casing and ground surface (or apron), and the length and location of the screened interval and annular space seal. All dimensions are to be shown on well construction schematics.

I.D.2. The facility shall submit all notifications required by 40 CFR 257.106 to the DEQ Director before the close of business on the day the notification is required to be completed.

I.E. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DIRECTOR

All reports, notifications, or other submissions which are required by this permit to be sent or given to the Director and the Region should be emailed or sent to:

Virginia Department of Environmental Quality
Division of Land Protection & Revitalization
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060

If the report, notification, or other submission is required by 40 CFR 257.106, such report, notification, or other submission shall be sent or given to the contact above in addition to the DEQ Director.

I.F. SITE SPECIFIC CONDITIONS

The provisions of this section are in addition to the permit conditions and regulatory requirements and are specifically developed for this facility. The permittee shall comply with all conditions of this section, as follows:

I.F.1. Groundwater monitoring at this facility shall commence under the Modified Assessment Groundwater Monitoring Program as detailed in Module XI of this permit.

I.F.2. Surface Water Monitoring at this facility shall commence as detailed in Module XVIII of this permit. A Surface Water Monitoring Plan shall be developed and submitted to the Department for approval within 90 days of permit issuance and implemented within 30 days of approval by the Department.

I.F.3. The facility shall maintain a publicly accessible Internet site (CCR Web site), titled "CCR Rule Compliance Data and Information" as required by 40 CFR 257.107. The applicable information must be posted to the CCR Web site within 30 days of placing the pertinent information required by 40 CFR 257.105 in the operating record. The information must remain on the CCR Web site for at least five years following the date on which the information was first posted unless another timeframe is prescribed in 40 CFR 257.107.

I.F.4. The CCR surface impoundments are subject to the U.S. Environmental Protection Agency's final rule "Standards for the Disposal of CCR from Electric Utilities" (EPA CCR Rule) (as amended) and as incorporated into the VSWMR. The permittee shall comply with these provisions. To the extent a conflict may exist or arise between the requirements of the EPA CCR Rule, other provisions of the VSWMR, or this permit, the facility shall comply with the more stringent of the requirements.

I.F.5. In accordance with Condition I.F.4, the permittee shall comply with the applicable requirements and deadlines for an "Existing CCR Surface Impoundment: established by the EPA CCR Rule for the Upper and Lower Ash Ponds.

I.F.6. Management of CCR and non-CCR waste streams during the closure process shall be in accordance with the requirements of VPDES Permit VA0004146, the VSWMR, and the EPA CCR Rule as applicable.

I.F.7. Upon completion of CCR removal activities associated with the closure of the Upper and Lower Ash Ponds, the facility must submit a map delineating any deposits of CCR released from a CCR unit. The submission should include documentation regarding final management and disposition of the material. The material must be removed when encountered and removal must be certified by a professional engineer.

I.F.8. In addition to any groundwater monitoring and surface water monitoring required under this permit, pursuant to and consistent with state and federal law, the facility shall notify DEQ of any groundwater or other seeps observed at the units which may contain pollutants and are visibly discharging or have the potential to discharge to surface waters. Any identified seep must be addressed in accordance with State Water Control Law and Regulation, and/or pursuant to EPA CCR Rule as applicable. Pursuant to such requirements and/or when notified or required by DEQ, sampling, monitoring, or other action may be required including additional actions pursuant to the Surface Water Monitoring Permit Module XVIII.

PERMIT MODULE XI
MODIFIED ASSESSMENT MONITORING REQUIREMENTS

The monitoring program described herein is designed to recognize when impacts to the uppermost aquifer have exceeded natural site background and site-specific groundwater protection standards. The Module combines actions otherwise required in the VSWMR, Detection Monitoring (40 CFR 257.94), Assessment Monitoring (40 CFR 257.95) and includes the requirement that groundwater protection standards be established. Any exceedance of a groundwater protection standard would trigger potential groundwater remediation actions. This Module also addresses demonstration of compliance with the closure by removal of CCR performance standard (40 CFR 257.102(c)).

Monitoring at this facility will take place under the program described herein and the actions undertaken shall be consistent with 9 VAC 20-81-250 of the VSWMR as well as applicable requirements of 40 CFR 257.90-98 and 257.105-107. Where a groundwater requirement is defined in both 40 CFR 257.90-98 and/or 257.105-107 as well as within the VSWMR or this Module, the stricter of the referenced requirements shall apply.

XI.A. GROUNDWATER COMPLIANCE POINT

XI.A.1. Uppermost Aquifer

XI.A.1.a. Prior to monitoring well installation, the uppermost aquifer must be characterized by completion of a site-specific hydrologic investigation. This hydrologic investigation must be completed in a manner consistent with available EPA Resource Conservation and Recovery Act (RCRA) Subtitle C, D and/or CCR technical guidance documents.

XI.A.1.b. Point of compliance monitoring wells must be installed within the identified uppermost aquifer on site and shall be screened at depths appropriate to monitor all preferential contaminant migration pathways identified during XI.A.1.a above.

XI.A.1.c. All monitoring wells on site shall be screened solely within the saturated portion of the aquifer such that at no time during the life of the sampling program, will portions of the well screen be exposed to the unsaturated zone or capillary fringe zone, above the zone of saturation.

XI.A.1.d. The owner/operator may choose, or the Director may determine, that additional monitoring wells are needed to act as sentinel wells to further characterize potential risk to human health or the environment. These wells may be exempt from the location requirements of XI.B.1.b below with Director approval, but must otherwise be installed in a manner consistent with XIA.1.b and c above.

XI.A.1.e. Any monitoring wells installed by the owner/operator pursuant to 40 CFR 257.102(c) as a means to demonstrate closure by removal of CCR, will be exempt from the location requirements of XI.B.1.a and b below.

XI.A.1.f. Any monitoring wells installed on site, which lie within the limits of the FEMA 100-year flood zone, must be installed in a manner which prevents them from being submerged beneath flood waters (which could allow surface water to enter the well) or be damaged by flood wave or current actions.

XI.B. MONITORING NETWORK REQUIREMENTS

XI.B.1. The point of compliance groundwater monitoring well network shall:

XI.B.1.a. contain no fewer than one (1) upgradient, and three (3) downgradient wells;

XI.B.1.b. consist of monitoring wells located at, or as close as practicable to, the CCR unit boundary;

XI.B.1.c. include as needed, nested well pairs screened at different depths below ground surface to monitor all the potential contaminant migration pathways identified under XI.A.1.a above;

XI.B.1d. not exhibit lateral spacing between downgradient point of compliance wells that exceeds 500 feet unless the owner/operator has successfully demonstrated to the Director that physical or topographic limitations exist on site preventing a closer linear well spacing;

XI.B.1.e. not include monitoring wells located outside of the permitted facility boundary/property boundary; and

XI.B.1.f. not include any new monitoring wells screened within or penetrating through CCR.

XI.B.2. Installation, Operations and Maintenance

XI.B.2.a. All wells shall be installed, operated and maintained in a manner which is consistent with existing RCRA guidance and allows them to operate as designed during the life of the groundwater monitoring program.

XI.B.2.b. Wells requiring replacement due to non-performance shall be reported to the Department within 30 days of recognizing the non-performance. The notification shall include a site plan depicting the proposed

location for the replacement well(s) for Department review.

XI.B.2.c. Wells that require replacement due to non-performance must be replaced prior to the next regularly scheduled groundwater sampling event unless the Director has granted an extension.

XI.B.2.d. Any wells that require abandonment due to non-performance shall be sealed and abandoned in accordance with existing EPA RCRA guidance as well as any applicable state or local requirements.

XI.B.2.e. No well onsite shall be abandoned without prior approval from the Director.

XI.B.3. Well Designations

The following wells shall be included in the solid waste groundwater monitoring network covered by this permit. Number designations including (D) and (S) shall be used when nested pairs are screened as deep (D) or shallow (S) sampling horizons.

LOWER ASH POND (LAP) MONITORING WELLS[1]			
Background Wells	Downgradient Wells[2]		
MW-29U	MW-20	MW-25	MW-32SR **(**MW-32**)**
MW-35S	MW-21R **(**MW-21**)**	MW-26	MW-33R **(**MW-33**)**
	MW-22R **(**MW-22**)**	MW-27	MW-34
	MW-23R **(**MW-23**)**	MW-28	MW-36S **(**MW-B40A**)**

[1] All wells installed in uppermost ***Columbia Formation*** unless otherwise noted.

[2] Wells in parentheses have been replaced; however, prior sampling data may be used to calculate background for the replacement well as detailed in XI.H**.**

UPPER ASH POND (UAP) MONITORING WELLS[1]			
Background Wells	Downgradient Wells		
MW-29U	MW-1	MW-6D (T)	MW-14 (P)
MW-30U (P)	MW-1D (P)	MW-7 (P)	MW-15
MW-35S	MW-2	MW-8R	MW-16
MW-35D (P)	MW-3S	MW-9R	MW-16D (P)
	MW-3D (T)	MW-10 (P)	MW-17S
	MW-4 (P)	MW-11	MW-B31
	MW-5	MW-12	MW-B32 (P)
	MW-6 (P)	MW-13	

[1] All wells installed in uppermost ***Columbia Formation*** unless otherwise noted.
(P) - installed in ***Potomac Formation***
(T) - installed in ***Triassic Formation***

All point of compliance wells shall:

XI.B.3.a. be identified within the *Groundwater Monitoring Plan* in a manner which clearly identifies the wells and the CCR surface impoundment that they are associated with, and

XI.B.3.b. be shown on a site map included in the Plan. The Plan text and any related figures must be updated within 90-days of any changes to the point of compliance wells.

Any non-point of compliance monitoring wells used on site as:

XI.B.3.c. sentinel wells shall be listed and identified in a manner consistent with B.3.a and b above.

XI.B.3.d. demonstration wells used for closure by removal of CCR actions shall be identified in the *Groundwater Monitoring Plan* and in its text.

XI.C. AQUIFER DATA

XI.C.1. Data Acquisition - Requirements

XI.C.1.a. Static groundwater elevations shall be:

XI.C.1.a.(1) measured in all monitoring wells prior to purging.

XI.C.1.a.(2) measured to an accuracy of 0.01 foot.

XI.C.1.a.(3) measured each time groundwater is sampled on site.

XI.C.1.a.(4) obtained from all wells in the network within a single 24 hour period to avoid temporal variations/fluctuations in the groundwater table.

XI.C.1.b. Groundwater flow rate and direction shall be determined each time groundwater is sampled on site, using a method accepted for use in EPA RCRA groundwater programs.

XI.C.2. Data Acquisition - Response

Except for those wells utilized as demonstration or sentinel wells, the Permittee shall evaluate the upgradient or downgradient function of each monitoring network well each time groundwater is sampled. If the evaluation shows that one or more of the well(s) no longer functions in a manner that meets performance requirements of the VSWMR, the Permittee shall follow the requirements of XI.B.2 above.

XI.D. SAMPLING and ANALYTICAL ACTIONS

The Permittee shall:

XI.D.1. utilize a groundwater monitoring program and sampling actions that meet the requirements of the VSWMR, 40 CFR 257.90-95 and this Module;

XI.D.2. collect and analyze unfiltered samples of groundwater from each monitoring well sampled consistent with 40 CFR 257.93(h)(2)(i);

XI.D.3. utilize, where applicable, EPA SW-846 analytical methods (as amended) conducted at a VELAP accredited laboratory;

XI.D.4. provide the Department final laboratory results as total metals (parts per billion) for all metals constituents; and

XI.D.5. provide final results showing total Chromium and (speciation of) total hexavalent Chromium.

XI.E. SAMPLING FREQUENCY

The Permittee shall, during the closure and post-closure care monitoring period, sample and analyze groundwater from all point of compliance monitoring wells on at least a semi-annual basis, which shall be an interval corresponding to approximately 180 days. For the purposes of scheduling monitoring activities, sampling within 30 days of the 180-day interval will be considered 'semiannual.'

XI.F. SAMPLING LIST

XI.F.1. All 40 CFR 257 Appendix III constituents.

XI.F.2. All 40 CFR 257 Appendix IV constituents, any VSWMR Table 3.1 metal not included in 40 CFR 257 Appendix III or IV, and Boron.

XI.F.3. Any constituent or parameter included in groundwater sampling actions conducted pursuant to VPDES Permit No. VA0004146 that is otherwise not included in XI.F.1 or 2 above.

XI.F.4. Speciation of Chromium (Total Chromium and Hexavalent Chromium).

XI.F.5. The sampling list shall be included in the site *Groundwater Monitoring Plan* and shall be updated by the owner or operator as directed by the Director.

XI.G. DETERMINATION OF BACKGROUND & GPS

XI.G.1. The Permittee shall establish site-specific background values for the constituents of XI.F. in a manner consistent with EPA requirements within 40 CFR 257.93(d) and 94(b).

XI.G.2. Consistent with requirements of Modified Assessment monitoring, the Permittee shall establish site-specific Groundwater Protection Standards (GPS) using:

XI.G.2.a. the process EPA defined within 40 CFR 257.95(h) for all 40 CFR 257 Appendix IV constituents.

XI.G.2.b. the Virginia Unified Risk Assessment Model (VURAM) for Boron, and risk based Alternate Concentration Levels as described under 9VAC20-81-250.A.6.b.(4)(a) for any metal within the sampling list not found within 40 CFR 257 Appendix IV.

XI.G.2.c. Department approved background values as described under 9 VAC 20-81-250.A.6.(b)(2).

XI.G.3. Groundwater Protection Standards shall be updated:

XI.G.3.a. immediately upon promulgation of a new or revised Federal maximum contaminant level (MCL) or EPA determined alternate GPS;

XI.G.3.b. every two years for background-based GPS such that the eight most recent background well sampling results shall replace the oldest eight background well sampling results.

XI.G.3.c when changed by DEQ for Alternate Concentration Level based on GPS by following process under 9 VAC 20-81-250.A.6.e.

XI.G.4. For the purposes of this permit for determining an exceedance:

XI.G.4.a. the MCL or EPA determined alternate GPS promulgated in the CCR rule shall be immediately effective as the GPS.

XI.G.4.b. the MCL and EPA alternate GPS shall remain the GPS until such time as the Department approves a site-specific background value for the constituent which is higher than the MCL or EPA alternate GPS consistent with 40 CFR 257.95(h)(3) and XI.G.2.c.

XI.G.4.c. the use of risk-based Alternate Concentration Levels upon Director approval for as described under XI.G.2.b.

XI.G.5. A table of GPS shall be included in the facility's operating record and shall be updated as directed by 9 VAC 20-81-250.A.6.d and e.

XI.H. STATISTICAL PROCEDURES

When evaluating the groundwater sampling event results at CCR point of compliance wells [and any demonstration and sentinel wells], the Permittee shall:

XI.H.1. Have a qualified professional engineer certify the selected statistical method used by the Permittee is appropriate for evaluating the groundwater monitoring data consistent with 40 CFR 257.93(f)(6). The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data.

XI.H.2. Within 30 days of completion of the laboratory analysis for each semiannual sampling event, determine whether or not there is a statistically significant increase over site background for Detection monitoring constituents and GPS for Modified Assessment monitoring constituents using a statistical method consistent with 40 CFR 257.93(f) and (g).

XI.H.3. Within 30 days of completion of the laboratory analysis for each semiannual sampling event for any downgradient well located adjacent to the LAP slurry wall (MW-22R, MW-23R, MW-25, MW-26, MW-27, MW-32SR, MW-33R, MW-34, MW-36S), the Permittee must perform an additional SSI determination process and compare the result to the downgradient well's own "background." A minimum of eight sampling results obtained prior to the installation of the adjacent slurry wall shall be used to determine the downgradient well's own background for this process. Replacement wells shall use the de-commissioned well's pre-slurry wall data to determine the replacement well's background (MW-22R/MW-22, MW-23R/MW-23, MW-32SR/MW-32, MW-33R/MW-33, MW-36S/MW-B40A). Supplemental control charts may be prepared for surface water indicator parameters pH, chloride and boron.

XI.H.4. For the purpose of this Permit, laboratory analysis is considered complete upon issuance of the final analytical report under laboratory signature.

XI.H.5. If there is a statistically significant increase (SSI) over background or GPS for any Modified Assessment monitoring constituent listed in XI.F, the Permittee will:

XI.H.5.a. notify the DEQ of the SSI over background and/or GPS within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and/or GPS and noting whether the facility intends to identify an Alternate Source for the SSI as described under XI.M below, or

XI.H.5.b. begin the initial steps toward groundwater Corrective Action if the SSI is associated with a GPS exceedance., or

XI.H.6. When evaluating the groundwater sampling event results at other groundwater monitoring wells, within 30 days of completion of the laboratory analysis for each semiannual sampling event, the Permittee shall:

XI.H.6.a. determine whether or not there is a statistically significant increase over site background for Modified Assessment monitoring constituents using a statistical method consistent with 40 CFR 257.93(f) and (g), and

XI.H.6.b. notify the DEQ of the SSI over background and/or GPS within 44 days of issuance of the laboratory report identifying the metal(s) which exceed background and/or GPS and identifying whether the facility intends to identify an Alternate Source for the SSI as described under XI.M below.

XI.H.7. Based on the information contained in the notification under XI.H.6. above, the Director may require further Interim Measures under the VSWMR or other action be undertaken.

XI.I. RECORD-KEEPING REQUIREMENTS

XI.I.1. The Permittee shall comply with the applicable record-keeping and public accessible internet site requirements of 40 CFR 257.

XI.I.2. The Permittee shall retain all records identified under 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The records shall be retained within the operating record at the facility or at an alternate location approved by the Director.

XI.J. REPORTING REQUIREMENTS

The Permittee shall meet all the reporting and notification requirements of 40 CFR 257 and 9 VAC 20-81-250.E.1 as well as 530.B.1 and B.2 throughout the closure and post-closure care periods. The Regional Office shall be copied on any groundwater report, notification, request, demonstration, certification, or documentation submitted pursuant to 40 CFR 257.

XI.J.1. Groundwater Monitoring Reports

XI.J.1.a. The Annual Groundwater Monitoring Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the second semi-annual event and no later than January 31 of the following calendar year. The Annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.a and 40

CFR 257.90(e)(1-5) and shall be submitted in a format consistent with existing DEQ Submission Instructions.

XI.J.1.b. A Semi-annual Report shall be due no later than 120 days from the completion of sampling and analysis conducted for the 1st semi-annual groundwater sampling event. The Semi-annual Report shall include at a minimum the content found under 9 VAC 20-81-250.E.2.b and shall be submitted in a format consistent with existing DEQ Submission Instructions.

XI.J.2. Facility Background Determination Report

XI.J.2.a. Within 30 days of initially establishing background, re-establishing background due to the installation of new monitoring wells or a change in sampling technique, the Permittee shall report the background values and statistical computations forming the basis for those values in a report entitled *Facility Background Determination Report*.

XI.J.2.b. The background determination results shall be submitted in the timeframe defined under 9 VAC 20-81-250.C.3.b.(2).

XI.J.3. Well Installation Report

Within 44 days of well completion, the Permittee shall supply the Director a *Well Installation Report* containing the well number, surveyed elevation, boring log, casing length, total depth, and a completion diagram for each monitoring well, along with a certification from a qualified professional engineer that the monitoring wells have been installed in accordance with the submitted plans.

XI.J.4. Well Abandonment Report

XI.J.4.a. Consistent with XI.B.2.e above, the Director shall be notified and grant approval prior to any monitoring well abandonment.

XI.J.4.b. Within 44 days of well abandonment, the Permittee shall supply the Director a *Well Abandonment Report* containing information including field methods utilized, and a certification from a qualified professional engineer verifying the well abandonment activities met all applicable requirements.

XI.K. NOTIFICATION REQUIREMENTS

XI.K.1. *GPS SSI Notifications* shall be submitted to the Director within 44 days of issuance of the laboratory report and shall indicate which groundwater

constituent(s) have shown an SSI over Facility-specific GPS.

XI.K.2. *Well Non-Performance Notifications* shall be submitted to the Director within 30 days of recognizing the non-performance issue.

XI.K.3. *Off-site Plume Notifications* shall be submitted to the affected landowner and copied to the Director within 15 days of identifying constituents which exceed their GPS.

XI.L. MISCELLANEOUS ALLOWANCES

XI.L.1. Use of Alternate Site Background. The Permittee may request the Director allow site background to be developed using wells that are not hydrologically upgradient of the disposal unit as long as the request addresses the technical criteria contained in VSWMR and 40 CFR 257 and is certified by a qualified professional engineer. Until such time as Director approval is obtained, background shall be determined by sampling wells which are upgradient of the disposal unit.

XI.L.2. Use of Alternate Statistical Method. The Permittee may request the Director allow the use of an Alternate Statistical Method as long as the Permittee can demonstrate the alternate method can meet the technical criteria defined under 9 VAC 20-81-250.D.2 and 40 CFR 257.93(g). Until such time as Director approval is obtained, the statistical test(s) applied to site groundwater data shall be compliant with 9 VAC 20-81-250.D.1 and 40 CFR 257.93(f)(1-5). Whichever method is approved for use at the site, the method should be listed in the *Groundwater Monitoring Plan*.

XI.L.3. Verification Sampling. The Permittee, at any time within 30 days of receipt of the laboratory report for a semi-annual sampling event, may obtain verification samples. Undertaking verification sampling shall not alter the timeframes associated with determining or reporting a statistically significant increase.

XI.L.4. Data Validation. The owner or operator may at any time within the 30 day statistical determination period undertake third-party data validation of the analytical data received from the laboratory. Undertaking such validation efforts shall not alter the timeframes associated with determining or reporting a statistically significant increase.

XI.M. MISCELLANEOUS DEMONSTRATIONS

To address an exceedance which is the result of something other than a release of CCR constituents, the Permittee may submit a report entitled *Alternate Source Demonstration*, certified by a qualified professional engineer for review and approval by the Director,

within 90 days of providing the initial Detection or Modified Assessment monitoring SSI notification.

XI.M.1. If a successful demonstration of an alternate source for the noted increase is made by the Permittee and approved by the Director within the 90 day timeframe, the Permittee may continue in the applicable monitoring program as defined in this Permit Module.

XI.M.2. If a successful demonstration of an alternate source for the noted increase is not made by the Permittee within the 90 day timeframe, the Permittee shall take actions required under 9 VAC 20-81-260 and 40 CFR 257 within the required timeframes.

XI.N. PERMIT RELATED GROUNDWATER MONITORING PLAN

The Permittee must have a plan that includes detailed instructions concerning groundwater monitoring. These instructions must at a minimum cover the items listed under 40 CFR 257.90-95, 9 VAC 20-81-250.A.4.a, and other applicable information under 9 VAC 20-81-250. The document containing these instructions, called the *Groundwater Monitoring Plan*, shall be placed in the operating record.

It shall be the responsibility of the Permittee to update this monitoring plan as needed, which may include actions otherwise defined under 9 VAC 20-81-600.A – F, if changes to the monitoring program have taken place since original plan development.

XI.O. LIMITATIONS/AUTHORITIES

XI.O.1. The groundwater monitoring and reporting requirements set forth here are minimum requirements. The Director may require, by amending the Permit, any owner or operator to install, operate, and maintain a groundwater monitoring system and program that contains requirements more stringent than those of the Regulations whenever it is determined that such requirements are necessary to prevent significant adverse effects on public health or the environment.

XI.O.2. Should information contained in a *Groundwater Monitoring Plan* conflict with any requirement or condition of this Module, the VSWMR, or the EPA CCR Rule, this Module and/or regulatory condition shall prevail over the language in the *Groundwater Monitoring Plan*.

XI.O.3. When the Permittee recognizes a failure to submit any relevant facts or has submitted incorrect information in any groundwater monitoring report to the Director, he shall, within 7 days, submit such omitted facts or the correct information with a full explanation.

PERMIT MODULE XII
CLOSURE

XII.A. CLOSURE PLAN AND CLOSURE PLAN MODIFICATION

XII.A.1. The owner or operator shall maintain a written closure plan in accordance with 9 VAC 20-81-160.B.1. and 40 CFR 257.102(b).

XII.A.2. The closure plan shall be amended as required by 40 CFR 257.102(b)(3). All amended closure plans shall contain a written certification by a professional engineer that the plan amendment meets the requirements of 40 CFR 257.102(b)(4).

XII.B. TIMEFRAMES ASSOCIATED WITH CLOSURE

The owner or operator shall complete closure in accordance with the timeframes in 40 CFR 257.102.

XII.C. CLOSURE BY REMOVAL CERTIFICATION AND APPROVAL FOR UPPER AND LOWER ASH PONDS

XII.C.1. The owner or operator shall submit notification to the Director of completion of CCR excavation in accordance with the closure plan and map in accordance with Module I, Section I.F.7 within 30-days of completing the action for the Department to conduct an inspection to confirm removal.

XII.C.2. The owner or operator shall submit notification to the Director of completion of regrading activities within 30-days of completing the action.

XII.C.3. Upon completion of regrading activities, the owner or operator shall propose installation of one (1) additional groundwater monitoring well within the Upper Ash Pond and one (1) within the Lower Ash Pond and shall install such wells upon approval by the Department. The wells installed pursuant to this provision shall be monitored and managed in accordance with Module XI until data collected from them shows no Statistically Significant Increase (SSI) over established Groundwater Protection Standards (GPS) for any of the sampled constituents for two consecutive sampling events.

XII.C.4. The owner or operator shall monitor groundwater using approved groundwater demonstration wells at the former boundary of the excavated CCR unit to demonstrate completion of closure by removal. Sampling of the demonstration wells located at the former boundary of the excavated units shall continue until data collected shows no Statistically Significant Increase (SSI) over established Groundwater Protection Standards (GPS) for any of the sampled constituents consistent with 257.102(c) and a stable or descending trend in groundwater results for ten independent sampling events (the last two of which must be

consecutive events). These wells shall be monitored and managed in accordance with Module XI.

XII.C.5. Upon completion of all groundwater monitoring demonstration requirements in XII.C.3 and C.4 above, the owner or operator shall submit a certified report entitled *Termination of Groundwater Monitoring for Closure by Removal Demonstration* for review by the Department. The report shall include sufficient groundwater monitoring data and statistical analysis to demonstrate that the closure by removal standard has been met.

XII.C.6. Upon Department approval of the submission defined under C.5. above, the owner or operator may submit the information required to satisfy closure results of 40 CFR 257.102(f)(3) including at a minimum, the notification and certification, signed by a registered professional engineer, verifying that closure by removal has been completed in accordance with the permit, approved plans/ specifications, and 40 CFR 257.102.

XII.C.7. Upon Department approval of the request for *Termination of Groundwater Monitoring for Closure by Removal Demonstration*, the facility will evaluate the need for abandonment of the groundwater monitoring wells used for the closure demonstration. Groundwater monitoring wells that are part of the monitoring network will continue to be utilized for sampling. A plan will be submitted to the Department with the identification of wells to be abandoned along with the procedure to be used for abandonment. Upon Department approval, the facility will proceed with the plan. Within 44 days of well abandonment, the Permittee shall supply the Director a *Well Abandonment Report* containing information including field methods utilized, and a certification from a qualified professional engineer verifying the well abandonment activities met all applicable requirements.

PERMIT MODULE XVIII
SURFACE WATER MONITORING REQUIREMENTS

This monitoring program is designed to determine if there is an impact to surface water that may be occurring as a result of potential groundwater to surface water exchange.

Surface Water Monitoring at this facility will take place under the program described herein and the actions undertaken shall be consistent with VSWMR, water quality standards (WQS), and VPDES regulations as applicable. The Permittee must maintain a surface water monitoring program that meets the requirements of this module and outline that program in the *Surface Water Monitoring Plan*.

Nothing in this permit module authorizes the Permittee to have an unauthorized discharge in contravention of State Water Control Law or accompanying regulations.

The *Surface Water Monitoring Plan* shall be developed in accordance with these requirements and submitted to the Department for approval within 90 days of permit issuance and shall be implemented within 30 days of approval by the Department.

XVIII.A. SAMPLING LOCATIONS

XVIII.A.1. Sample locations shall be identified and approved by the Department. At a minimum, the locations shall be near-shore of the property where groundwater potentially could intersect with surface water and represent results from the CCR units located at the facility. These locations:

XVIII.A.1.a. shall be noted on a site facility map and identified with GPS coordinates;

XVIII.A.1.b. may be augmented by additional sampling locations as needed, based on the results of the surface water sampling program, and to ensure potential impacts from groundwater to surface water are identified;

XVIII.A.1.c. shall be permanently marked or flagged at the nearest shore to allow easy identification; and

XVIII.A.1.d. shall include sampling locations down gradient of the Lower Ash Pond, downgradient of the Upper Ash Pond, and within the main channel of the James River itself.

XVIII.A.2. Sampling locations which do not contain a sufficient surface water column within which to sample will not be required to be re-sampled during the compliance period. However, sampling locations which have insufficient yield for 2 consecutive monitoring periods shall be evaluated for relocation and a new location proposed for approval by the Department.

XVIII.B. SAMPLING ACTIONS

The Permittee shall:

XVIII.B.1. Collect samples from the surface water columns at the designated locations identified in XVIII.A. The samples shall be taken at mid-depth of the water column. Tidal samples shall be collected at low tide if feasible.

XVIII.B.2. Conduct the surface water column sampling actions in a manner equivalent to the QA/QC procedures specified in the most current version of the Department's Standard Operating Procedures Manual, Water Monitoring and Assessment Program, Section 4.8 - Collection of Trace Elemental Samples (Clean Metals), and others as applicable.

XVIII.B.3. Analyze surface water column samples in accordance with methods approved by the Department and performed by a VELAP accredited laboratory.

XVIII.B.4. Provide final results of surface water column samples as dissolved metals.

XVIII.C. SAMPLING FREQUENCY

XVIII.C.1. The Permittee shall, during the closure and post-closure care periods, sample surface water following a calendar quarterly schedule.

XVIII.C.2. The length of the quarterly sampling period shall be an interval corresponding to approximately 90 days. For the purposes of scheduling monitoring activities, sampling within 15 days of each 90-day interval will be considered 'quarterly'.

XVIII.C.3. The Permittee shall sample more frequently when requested by the Department.

XVIII.D. SAMPLING CONSTITUENTS

XVIII.D.1. The Permittee shall sample for the following constituents: Antimony, Arsenic, Boron, Cadmium, Calcium, Chromium (total, III, and VI), Cobalt, Copper, Lead, Lithium, Magnesium, Molybdenum, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

XVIII.D.2. Additional indicator and field collection data shall be provided including hardness, pH, and temperature.

XVIII.D.3. Any constituent not listed in XVIII.D.1. that has an exceedance of a Groundwater Protection Standard established in Permit Module XI shall be included.

XVIII.D.4. Any additional constituents or parameters when notified in writing by the Department shall be included.

XVIII.E. DETERMINATION OF APPLICABLE STANDARDS FOR COMPARISON

Sampling results from surface water column testing of the constituents identified in XVIII.D.1. shall be compared to the lowest of the applicable standards established by 9 VAC 25-260-140. For any constituent not listed in XVIII.D.1. that has an exceedance of a Groundwater Protection Standard established in Permit Module XI, the constituent shall be compared to the Groundwater Protection Standard.

XVIII.F. REPORTING REQUIREMENTS

XVIII.F.1. After each quarterly sampling event, the permittee shall submit a surface water monitoring report under separate cover to the Department no later than 60 days from the completion of sampling and analysis unless as allowed under a director-approved extension. The surface water monitoring report shall include:

XVIII.F.1.a. signature page certifying the results by a facility representative;

XVIII.F.1.b. facility name and permit number;

XVIII.F.1.c. statement noting whether or not all sampling locations were sampled and if so, the reason a sample was not obtained or reported. If the sampling location did not contain sufficient water column for sampling, a statement noting the number of occurrences of lack of sufficient water column and, based upon the number of occurrences, a new proposed sampling location; and

XVIII.F.1.d. copy of the full Laboratory Analytical Report including dated signature page from laboratory manager or representative.

XVIII.F.2. The Permittee shall retain all surface water monitoring records throughout the closure and post-closure care period. The records shall be retained at the facility, or alternate location approved by the Director, within the facility's operating record and made available to the Department upon request.

XVIII.G. NOTIFICATION REQUIREMENTS

Verified laboratory results indicating surface water column results above a standard identified in XVIII.E shall be submitted to the Director within 30 days of issuance of the laboratory report results.

XVIII.H. REQUIRED ACTIONS

XVIII.H.1. Within 60 days of submitting a notification in XVIII.G., the permittee shall submit a *Surface Water Investigation Report*. The following information shall be assessed in the investigation and discussed in the report:

XVIII.H.1.a. Any error in the collection of the sample that may be identified;

XVIII.H.1.b. Additional conditions and information regarding the surface water at the time of collection;

XVIII.H.1.c. Whether the constituent(s) were detected in groundwater monitoring sampling results;

XVIII.H.1.d. The identified or potential source(s) of the observed impacts, including any potential facility activities;

XVIII.H.1.e. Additional sampling, if any, undertaken by the permittee; and

XVIII.H.1.f. Mitigation action or other actions, if any, undertaken by the permittee.

XVIII.H.2. The permittee, depending on the results of this investigation and as directed by the Department, may be required to conduct additional monitoring, additional source investigation, sampling including interstitial sampling or sediment sampling as feasible, or assessment measures including fish tissue sampling.

XVIII.H.3. The permittee shall submit an action plan for Department review and approval or take other action in accordance with Permit Module XI when required by the Department in response to the *Surface Water Investigation Report*.

XVIII.I. PERMIT DOCUMENTS

The Department-approved *Surface Water Monitoring Plan* shall be placed in the facility's operating record. This *Surface Water Monitoring Plan* shall include at a

minimum the measures required for the facility to accomplish the monitoring required by this module.

XVIII.I.1 It shall be the responsibility of the Permittee to update this monitoring plan as needed, which may include actions otherwise defined if changes to the monitoring program have taken place since original Plan development.

XVIII.I.2. Should information contained in a Permittee authored *Surface Water Monitoring Plan* conflict with any requirement or condition of this Module, the Module condition shall prevail over the language in the Permittee supplied document.

XVIII.I.3 The Permittee shall review and modify the surface water monitoring plan within 30 days of notification of the agency of required/requested modifications.

XVIII.I.4. When the Permittee recognizes a failure to submit any relevant facts or has submitted incorrect information in any surface water monitoring report to the Director, he shall, within 7 days, submit such omitted facts or the correct information with a full explanation.

XVIII.J. LIMITATIONS/AUTHORITIES

The surface water monitoring and reporting requirements set forth herein are minimum requirements. The Director may require, by amending the Permit, any owner or operator to maintain a surface monitoring system and program that contains requirements more stringent than those of the Regulations and in this current permit module whenever it is determined that such requirements are necessary. Nothing in this permit module limits the Director or the Department from requiring additional actions consistent with applicable laws and regulations.